

Physics : Card No. 1
Alternative sources of Energy

Chapter -1

I. Choose the correct answer and write.

1. Which of the following is not a biomass energy source
 - a) Gobar gas
 - b) Coal
 - c) Dry wood
 - d) Nuclear energy
2. Minimum speed of wind to operate generator to produce electricity is
 - a) 8 m/s
 - b) 25 m/s
 - c) 30 m/s
 - d) 100 m/s
3. Which the place in India where wind mills are aplenty is
 - a) Kanyakumari
 - b) Meerut
 - c) Bengaluru
 - d) Jaduguda
4. Geothermal energy has a temperature about
 - a) 500°C
 - b) 300°C
 - c) 13000°C
 - d) 1300°C
5. Geotherma energy is obtained from the heat present at depth of
 - a) 10 Km from surface of earth.
 - b) 20 Km from the surface of the earth.
 - c) 1300 Km from surface of earth.
 - d) 40 Km from the surface of the earth.

1. What are the non-renewable sources of energy? Give two examples

A: Resources which are exhausted after continuous use and take a long time to replenish are called non renewable or exhaustible resources.

Eg: Coal, petroleum, minerals etc.,

2. What are renewable sources of energy? Give two examples.

Resources which are not exhausted even after continues use and can replenished quickly in nature are called renewable or inexhaustible resources.Ex: Solar Energy, air, water, soil, forest, wild life.

3. What are the advantageous of having non-conventional sources of energy?

- * They are in exhustale

- * They are not concentrated over an area.

4. What is Solar Energy? How it reaches the earth? What is the cause of Solar energy?

The energy obtained from sun in the form of heat and light is called solar energy. Continuous thermo nuclear fusion reaction taking place inside the sun, this is the source of solar energy. Solar energy reaches earth in the form of electromagnetic radiations.

5. What are solar collectors? Give any 2 exampes

The devices which convert solar energy into thermal energy and stroes them are called solar collectors.

Ex. Solar, Cooker, Solar pond.

6. What is the principle of a Solar Cell?

The principle of solar cell is photo voltaic effect.

7. What is bio-energy?

Energy produced by the biological matter is called bio-energy.

8. How is bio energy advantageous?

- * It offers clean fuel for energy.

- * It maintains an unpolluted environment and reduces the carbondioxide content in the atmosphere.

9. Write any two plants which are directly or indirectly used to prepare biodiesel.

- * Jatropha

- * Pongamia Pinnata (Honge)

10. How is electricity generated from wind energy?

The Kinetic energy of the wind is utilized to rotate wind mills which converts wind energy into electrical energy.

11. What are the limitations of wind energy?

- * It cannot be installed everywhere.

- * Wind speed is not same through out the year.

12. Where do you find the largest collectors of wind mills in India?

Near Kanyakumari in Tamil Nadu.

13. What should be the speed of wind to convert it in to electrical energy?

The speed of wind should be between 8 and 22 m per sec.

14. What are wind mills?

The devices which convert wind energy in to electrical energy called wind mills.

15. Which places in India are suitable to install the plants which convert wave energy into electrical energy?

The tropical coastline of our country, especially the south west coast line, is found to be highly suitable for establishing energy conversion plants.

16. What are the limitations of wave energy?

- * The cost of energy conversion per unit is very high.

- * It can't be produced everywhere.

17. What is geothermal energy?

Thermal energy hidden in the earth's crust is called geothermal energy.

18. Write any two places in India where geothermal energy is used?

Puga, Manikaran, Tatapani and Bakneshwar.

Physics: Card No. 1
Types of Motion

Chapter -8

I. Choose the correct answer:

1. Time period(T) and frequency(n) of the wave are related by
a) $T = n$ b) $T = \frac{1}{n}$ c) $\frac{n}{T} = 1$ d) $nT = 2$
2. The following is an example for non-mechanical waves is
a) Sound waves b) electromagnetic wave
c) Water waves d) Tides
3. The relation among wavelength (λ) frequency (n) and wave velocity is
a) $V = n/\lambda$ b) $n\lambda = n$ c) $v = \lambda/n$ d) $v = n\lambda$
4. Any object of hing by a thread is
a) Simple pendulem b) bob
c) weight d) Rigid body
5. The periodic deturbance at a point in a medium is
a) motion b) wave c) kinetic energy d. Friction
6. An example for transverse wave
a. Sound waves b) straight motion of a spring
c. Vibration of molecules in air
d. Electromagnetic radiation.

II. Answer the following in a sentence each:-

1. What are waves? which are the two types

The disturbance set up in a medium is called as a wave.

The two types of wave are

1. Mechanical waves.

2. Electromagnetic waves.

2. What are longitudinal waves? give an example.

The waves in which particles of the medium vibrate parallel to the direction of motion.

Ex. Sound waves

3. What are transverse waves? Give a example.

* After The waves in which particles of the medium vibrate perpendicular to the direction of motion.

Ex. Electromagnetic waves.

4. Write any two characteristics of wave motion?

The two characteristics of wave motion are

1. A wave is produced by a periodic disturbance.

2. When a wave propagates in a medium the particles vibrate about their mean position and energy is transferred without the transfer of the particles of the medium.

5. What are mechanical waves? Give an examples.

The waves which need material medium for their propagation are called mechanical waves for their propagation are called mechanical waves.

Ex. Sound waves

6. What is simple harmonic motion? Give an example.

The motion which repeats after regular intervals of time is called simple harmonic motion.

7. What are the uses of studying wave motion?

Study of wave motion helps us to why microwaves are used in ovens and how radio waves are used in radio stations etc.,

8. Write any two applications of studying simple harmonic motion.

1. Simple harmonic motion of a pendulum was used for the measurement of time.

2. Tuning the musical instrument is done with the vibrating tuning fork which executes simple harmonic motion.

9. What is amplitude of a wave?

The maximum displacement of a particle from its mean position is called amplitude of a wave.

10. What are oscillations of a simple pendulum?

One complete to and fro motion of the particle about its mean position is called oscillation.

11. What is the time period of a simple pendulum?

Time taken by the body to complete one oscillation is called Time period.

13. What is the relation between time period and frequency of a simple pendulum?

$$T = \frac{1}{n}$$

T = time period

n = frequency

14. V is velocity, n is frequency and λ is the wave length of a wave, write the equation to relate these three.

$$V = n\lambda$$

v = velocity

n = frequency

λ = wave length

15. What are electromagnetic waves ?

The waves which don't need material medium for their propagation, produced by an acceleration of an electric charges are called Electromagnetic waves.

16. Simple harmonic motion can be used to measure time How?

Simple pendulum executes simple harmonic motion using this time can be measured.

17. What is transferred through a wave?

Energy is transferred through a wave.

18. Write the unit of the following .

a. frequency b. wave length.

The unit of frequency is Hertz(HZ)

The unit of wave length is meter (m)

19. Which two factors affect the velocity of a wave?

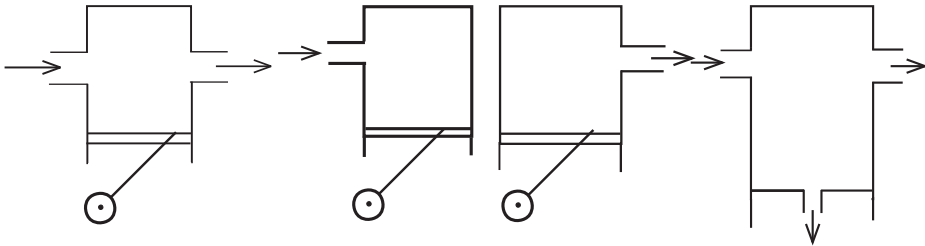
Wave length and frequency affect velocity of a wave.

Physicas Card No. 1
Heat MCQ Easy

Chapter -9

I. Choose the correct answer and write.

1. This represents the cylinder and piston in a heat engine



2. The part in a steam engine which converts linear motion into rotation
- | | |
|-----------------|---------------|
| a) Inlet valve | b) cylinder |
| c) outlet valve | d) crankshaft |
3. First commercial steam engine was designed by
- | | |
|----------------|------------------|
| a) James Watt | c) Thomas Savery |
| c) Thomas Cook | d) Newton |
4. The improved steam engine with cylinder and valves was designed by
- | | |
|------------------|------------------|
| a) Thomas Savery | b) Carl Diesel |
| c) James Watt | d) Thomas Edison |
5. Rudolf Diesel and Nicholas Otto are credited to designing?
- | | |
|-------------------------|-------------------------------|
| a) Steam engine | b) External combustion engine |
| c) Railway steam engine | d) Internal combustion engine |

II. Answer in a Sentence.

1. What is heat engine?

A heat engine is a device which converts heat energy into mechanical energy.

2. Name the two types of heat engine.

a. External combustion engine

b. Internal combustion engine.

3. What is the effect of heat?

a. Increase in the temperature of a body.

b. Expansion of the body

c. change of state of matter

d. chemical change in the body

4. Name the two types of movements of Air flow.

Air flow has two type of movements.

a. random movement of molecules within the system.

b. Enmass laminar flow along the direction of flow.

5. What is balanced force?

If net resultant force is zero then is called as balanced force.

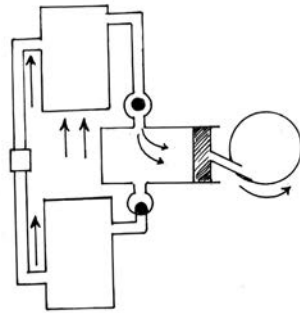
6. Who designed steam engine?

Thomas savery designed commercially useful steam engine.

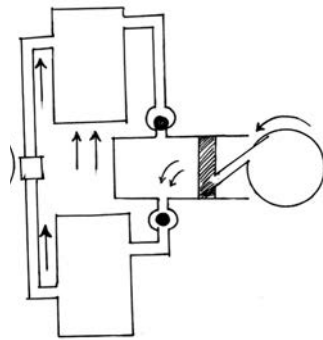
7. What is eternal combustion engine.

Engine which burns the fuel outside is called external combustion engine.

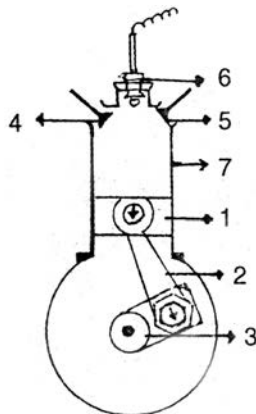
8. Draw a neat label diagram of expansion stroke.



9. Draw a neat diagram of Exhaust stroke.



10. Draw a labelled diagram of petrol engine.



11. Define the function of Crank shaft.

Crank shaft converts linear movement into circular motion. The wheel of the crank shaft makes half rotation during the expansion stroke.

12. Define the function of Petrol engine.

Spark plug:- The compressed air and petrol mixture is ignited by the sparks produced by the spark plug.

Crank shaft:- crank shaft converts linear movement into circular motion.

Carburettor:- In the carburettor petrol and air are mixed in proper proportions.

Outlet valve:- makes the spent gases to go out of cylinder.

13. Define the 5 stages of working petrol engine.

a. Intake stroke:- The vapourised mixture of petrol and air is let in through the inlet valve. The outlet valve remains closed. Piston moves away from the spark plug.

B. Compression stroke:- Both the valves are closed and the mixture of air and petrol is compressed by the piston moving towards the spark plug. Though the compression increases the temperature of the mixture it is not sufficient to ignite the petrol.

c. Power stroke:- The ignition stage and the expansion stage are together called power stroke.

d. Exhaust stroke: Here outlet valve opens Piston moves back. The products of combustion gases are pushed out of the cylinder through the exhaust valve.

Physics: Card No. 1

Sound

Chapter -14

I. Multiple choice questions.

1. The device which uses ultrasound waves to measure the distance of an object is
 - a) radar
 - b) scanner
 - c) sonar
 - d) spectro scope
2. A normal human ear can hear sound waves of frequencies
 - a) less than 20HZ
 - b) greater than 20,000HZ
 - c) in the range 20 HZ-20000HZ
 - d) greater than 400,000HZ
3. Which of these animals can hear ultrasound?
 - a. birds
 - b. man
 - c) bat
 - d) ant
4. A sonar uses
 - a) Infrasonic waves
 - b. audible waves
 - c) ultrasound waves
 - d. Radio waves
5. ECG stands for
 - a. Electro cardio gram
 - b. Echocardiogram
 - c. electronic cardiograph
 - d. Electro encephalogram

1. Why is study of sound important?
A. Study of sound helps us to know how speech is produced there by to correct speech impairment.
2. What is an echo?
A. A Sound heard after reflection from a rigid surface is called Echo.
3. What is persistence of hearing?
A. The sensation of sound persists in our ear for about 0.15, this is called persistence of hearing.
4. What is the minimum distance from the obstacle to hear a clear echo?
A. 17m
5. Calculate the distance of the obstacle from source of sound if the echo is heard after 45 and velocity of sound in air is 340 ms⁻¹.

$$d = \frac{vt}{2} = \frac{340 \times 4}{2} = 680m$$

The distance of the obstacle from the source of sound is 680m.

6. When can we here a multiple echo?
A. If the sound reflects from the number of reflecting surface then we can hear multiple echos.
7. How do we hear thunder?
A. We hear thunder by the multiple reflections of sound from many reflecting surface of clouds.
8. When is sound produced.
A. Sound is produced by the vibration of bodies.

9. What is Audible range?

A. 20 HZ to 20000HZ

10. What is infrasonic sound.

A. A sound of frequency less than 20HZ is called infrasonic sound.

11. What is ultrasonic sound?

A. A sound of frequency greater than 20000 HZ is called ultrasonic sound.

12. Name some animals which can produce ultrasound.

A. Bats, Dolphins, dogs

13. Name some animals which can hear ultrasound.

A. Bats, Dolphins.

14. Why the energy of ultrasound is high?

A. Because of high frequency.

15. What is SONAR

A. Sonar stands for "SOUND NAVIGATION AND RANGING"

16. What are the uses of sonar?

A. 1. To measure depth of sea.
2. To locate underwater objects.

17. Which are the two parts of Sonar?

A. 1. Transmitter 2. Detector

18. What is the function of transmitter in SONAR?

A. A Transmitter produces ultrasound waves and transmits them in to the water all around.

19. What is the function of detector in SONAR?

A. A detector detects the reflected ultrasound waves and converts it to electrical signals.

20. Write the relation ship between speed, time and distance of sound waves.

A. $d=vt$ d =distance of the object from sonar
 v = velocity of ultrasound wave in water
 t = time interval between transmission and reception of ultrasound waves.

21. What is ECG?

A. It is a technique to examine heart by ultrasound waves called Echo cardiogram.

22. Why is ultrasound scanning is preferred over x-rays?

A. Ultrasound waves are less harmful when compared to x-rays.

23. What is doppler effect?

A. The apparent change in the frequency of a sound wave or light wave when there is relative motion between the source and the observe is called Doppler effect.

24. Who discovered doppler effect?

A. J.C Doppler.

25. Who showed that radio waves are reflected from metal objects?

A. Heinrich Hertz.

26. Which instruments is used to detect vehicles crossing speed limit?

A. Radar Gun.

27. What is the relation ship between frequency, wavelength and speed of a wave?

A. $V=f\lambda$

28. List any four uses of ultrasound waves?

1. Study of ultrasound waves through a medium reveals physical properties like elasticity, configuration of atoms.
2. Used to detect cracks and flows in metal mouldings
3. Used in mixing of immiscible liquids.
4. used in the manufacturing of alloys.
5. used in drycleaning.
6. used as insect repellants
7. used in sterilization.
8. used to cure neuralgic and rheumatic pains.
9. used in bloodless surgery.
10. used to break gallstones.

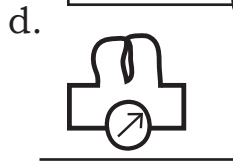
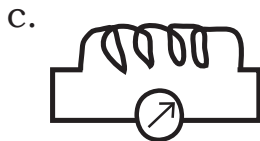
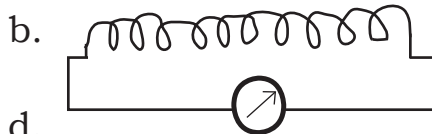
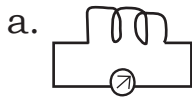
Physics: Card No. 1
Electromagnetic Industries

Chapter-16

1. 'volt' is the unit of which of the following quantities?

- A. a. Electric current b. Potential difference
c. Electro motive energy c. power

2. The magnet is pushed in all four coils shown below the coil which produces lowest e.m.f is



3. How many times direction of the electric current change when the armature of an A.C. dynamo makes one cycle

- a. 5 b. 10 c. 2 d. 20

4. A device converting mechanical energy into electrical energy is

- a. Dry cell b. motor c. dynamo d. solar cell

5. A primary coil of a transformer has 10 turns and secondary has 100 turns the transformer is called

- A. a. step up transformer
b. step in transformer
c. step out transformer.
d. step down transformer

1. Who discovered that “The current carrying conductor induces magnetic field around it”

A: Oersted.

2. Define electro magnetic induction.

A. Rate of change of the magnetic field linked with the coil induces on e.m.f in the coil. This is called electro magnetic induction.

3. State flemings night hand rule?

A. Arrange the first three fingers of your right hand mutually perpendicular to each other. If fore-finger indicates magnetic field, thumb indicates motion of conductor, then second finger indicates the direction of induced current flowing through the conductor.

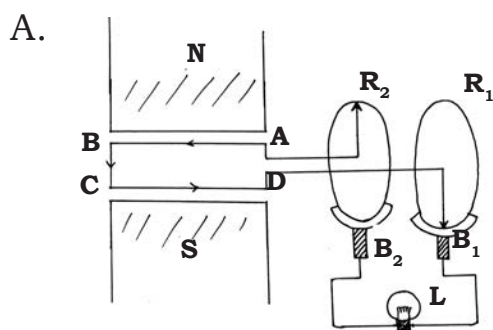
4. What is magnetic effect of electric current?

A. An electric current passing through the coil produces magnetic field around it. This effect is called magnetic effect of electric current.

5. Name two instruments which work on electromagnetic induction.

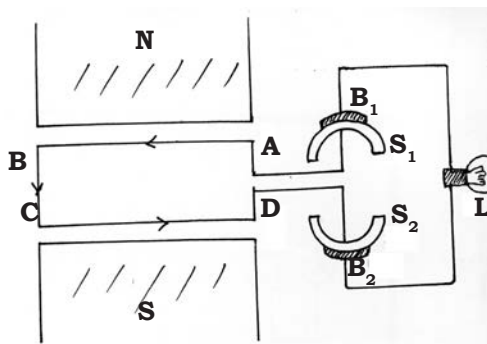
A. 1) Dynamo 2) Transformer

6. Draw a neat diagram of AC dynamo



7. Draw neat diagram of DC dynamo

A.



8. Define dynamo.

A. It is a device which converts mechanical energy in to electrical energy.

9. What is a motor.

A. It is a device which converts electrical energy in to mechanical energy.

10. Name two instruments having A.C. Motor.

A. Fan, mixer, grinder.

11. What are electric transformers?

A. It is a device used for stepping up or stepping down the AC voltage.

12. Define mutual inductions.

A. Production of induced e.m.f in one coil due to change of current in a neighbouring coil is called mutual induction.

13. Name two types of transformers.

A. a) Step up transformer.
b) Step down transformer.

14. Write the relation b/w primary and secondary current and voltage.

A. $\frac{V_s}{V_p} = \frac{I_p}{I_s}$

15.State Flemings left hand rule.

A. The first three fingers of your left hand mutually perpendicular to each other. If for finger indicates the direction of magnetic field. second finger indicates the direction of current passing through the conductor then thumb indicates the direction of mechanical force acting on the conductor.

16.State the factors which influences the induced e.m.f. in a coil.

- A. a) the number of turns of the coil
b) the strength of the magnetic field
c) the strength of the magnetic field
d) area of the coil

17.State faradays laws of electromagnetic induction.

A. I Law : Whenever a magnetic field a linked with a conductor changes an induced e.m.f is generated in the conductor.

II Law : The magnitude of induced e.m.f is directly proportional to the rate of change of magnetic field linked with the conductor.

18.Write any two uses of A.C.

- A. 1. AC is used in ultrasonics
2. It is used in RADARS
3. Used in Domestic appliances.

19.Write a difference between motor and dynamo

A.

Motor	Dynamo
Converts Electrical energy in to mechanical energy	Converts mechanical energy in to electrical energy

20. Write any two differences between AC dynamo and DC dynamo.

A.

AC dynamo	DC dynamo
Produces Alternating current slip rings are used	Produces direct current split rings are used.

7. How does the resistance of a semiconductor vary with temperature?
- A. The resistance of a semiconductor decreases with increase in temperature.
8. Which is the most suitable semiconductor in electronics?
- A. Silicon.
9. What is an extrinsic semiconductor.
- A. A doped semiconductor is called an extrinsic semiconductor.
10. What is doping of a semiconductor?
- A. It is a process of adding impurity atoms to a pure semiconductor crystal to increase its electrical conductivity.
11. What are dopants?
- A. The impurity atoms added to a pure semiconductor to increase conductivity are called dopants.
12. Name the types of extrinsic semiconductors.
- A. The two types of extrinsic semiconductors are N-type and P-type semiconductors.
13. Which are the dopants used to form P-type semiconductor?
- A. Boron, Indium, Gallium, Aluminium.
14. Which are the dopants used to form N-type semiconductor?
- A. Arsenic, Antimony, Phosphorous.
15. What is a hole?
- A. The hole is a set of positive charge which is produced when an electron breaks away from a covalent bond in a semiconductor.

16. What are the types of semiconductors?

- A. a) Intrinsic semiconductor
- b) Extrinsic semiconductor

17. What is a PN junction?

- A. The junction between a P-type and N-type semiconductor is such way that the crystal structure remains continuous at the boundary is called an PN junction.

18. When a PN junction is said to be forward biased?

- A. PN junction is said to be forward biased when p-side of the junction is connected to positive terminal of the battery and n side of the junction is connected to negative terminal of the battery.

19. When a PN junction is said to be reverse biased?

- A. PN junction is said to be reverse biased if P-region is connected to negative terminal and N-region is connected to positive terminal of the battery.

20. Which are the two important characteristics of the forward biased PN junction?

- a. Conductivity is high.
- b. Resistance is low.

21. Which are the two important characteristics of the reverse biased PN junction.

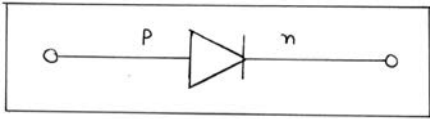
- A. a) Conductivity is low.
- b) Resistance is high.

22. Why, in a reverse biased junction small current flows?

Due to minority charge carriers on either side of PN Junction.

23. Give the Circuit Symbol of the diode.

A.



24. What is rectification?

A. The process of converting alternative current to direct current is known as rectification.

25. Why diode is called as rectifier?

A. It conducts only in one direction hence it is called rectifier.

26. What is a transistor?

A. A transistor is a semiconductor device consisting of 2 PN junctions back to back.

27. Name three regions of transistor.

emitter, base, collector.

28. Name doping concentration of each region of a transistor?

A. emitter - heavily doped

base - lightly doped

collector - moderately doped.

29. Mention function of each regions of a transistor.

emitter - emits majority charge carriers to the base

base - controls the flow of majority charge carriers.

collector - collects the majority charge carriers from the base.

30. Mention the size of each regions of a transistor.

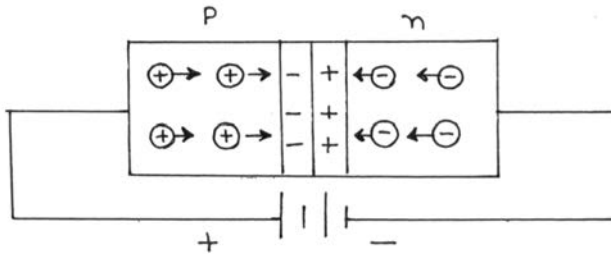
emitter - Moderate in size

base - very thin

collector - large in size.

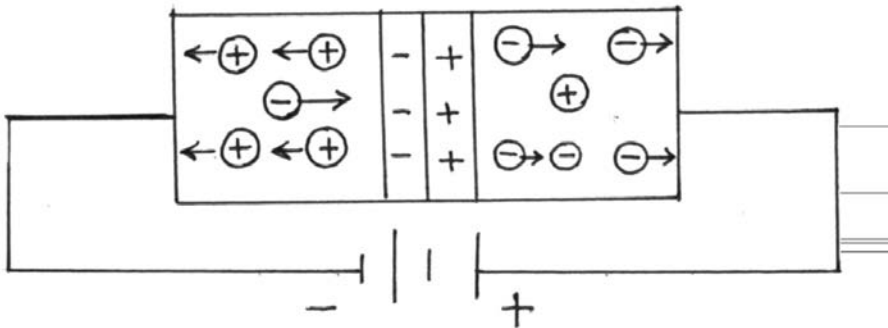
31. Draw a neat diagram of a forward biased diode.

A.



32. Draw a neat diagram of a reverse biased diode.

A.

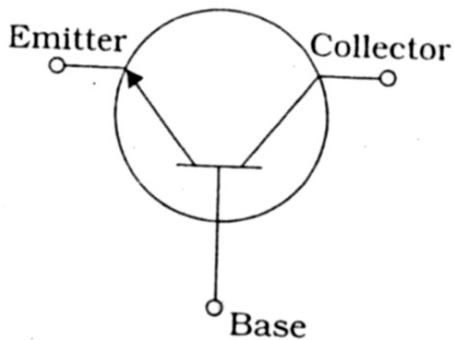


33. Mention any one application of diode.

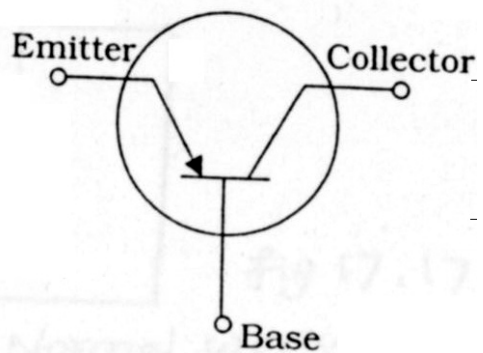
A. It is used to convert AC in to DC.

34. Draw the circuit symbol of NPN and PNP transistor.

A.



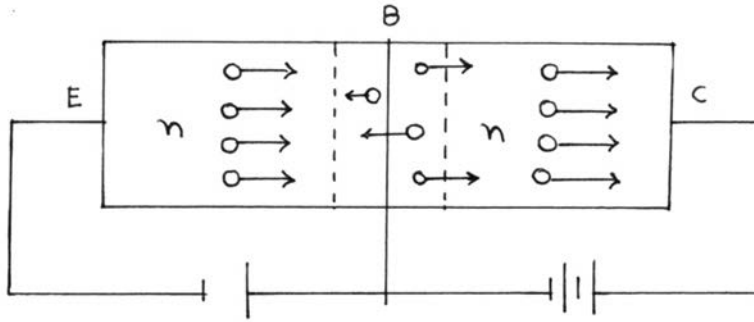
Npn transistor



PNP transistor

35. Draw simple transistor circuit.

A.



36. Mention the applications of transistor.

A. It is used in

1. Amplifiers.
2. Oscillators.
3. Switching circuits.

37. What is super conductors?

A. The property by virtue of which certain materials show almost zero resistance at a very low temperature is called super conductivity.

38. Define critical temperature.

A. The temperature below which a material becomes a super conductor is called critical temperature (T_c)

39. Mention any one used of super conductors.

A. They are used in powerful electromagnets.

Physics: Card No. 1
Behaviour of gases

Chapter-17

1. Which of the following is a correct statement of Boyle's law

- a) $P/T = \text{constant}$ b) $PV = \text{constant}$
c) $V \times T = \text{constant}$ d) $\frac{P}{V} = \text{constant}$

A. b) $PV = \text{constant}$

2. The move meant of molecules of air from a region of higher concentration to lower concentration is called.

- a) Diffusion b) flow
c) rectification d) all the above

A. a) Diffusion.

3. The value of absolute zero temperature is

- a) 0°C b) 273°C
c) -273°C d) 273K

A. c) -273°C

4. the mathematical form of Graham's law of Diffusions is

- a) $r = k\sqrt{\frac{r}{d}}$ b) $k = r\sqrt{\frac{1}{d}}$
c) $k = d\sqrt{\frac{1}{r}}$ d) $k = r\sqrt{d}$

A. d) $k = r\sqrt{d}$

5. A cotton dipped in HCl and another cotton dipped in NH_3 are kept in extrearms of a glass tube closed at either ends fumes of NH_4Cl is produced near

- a) HCL c) Middle d) NH_3 d) All the above

A. a) HCL

1. Which is the matter having least density?
A. Gases.
2. List the main features of gases?
A.
 1. Gases are highly compressible
 2. Gases exert pressure equally in all directions.
 3. Gases mix evenly in all proportions without any mechanical aid.
 4. Gases are least dense than other two states of matter.
3. State charles law.
A. “At constant pressure, the volume of a fixed mass of a gas is directly proportional to its absolute temperature”
Mathematically, $V \propto T$
$$V = KT \text{ (where } k \text{ is proportionality constant)}$$
4. Mention any two applications of charles law.
A.
 1. balloons pops out during hot summer more frequently than in winter.
 2. Soda bottles may explode on exposure to heat.
5. State Boyle’s law.
A. “ At constant temperature the volume of a given mass of dry gas is inversly proportional to its pressure”
Mathematically, $V \propto \frac{1}{P}$
$$V = k \times \frac{1}{P} \text{ (} k \text{ is proportionality constant)}$$
6. Mention two applications of Boyle’s law?
A.
 1. Bubbles exhaled by suicha diver grows as its approaches the surface of ocean.
 2. Popping of ballon when squeezed due to increase in the pressure.

7. What is diffusion?

Random movement gaseous molecules from the region of higher concentration to the region of lower concentration is known as diffusion.

8. Define rate of diffusion?

A. The rate of diffusion of a gas is equal to the volume of a gas diffusing per unit time.

9. State Graham's law of diffusion.

A. " The rate of diffusion of a gas is inversely proportional to the square root of its density.

10. What is the relation between diffusion and mass.

A.
$$r = k \sqrt{\frac{r}{d}}$$

The rate of diffusion inversely proportional to mass of the gas.

Physics: Card No. 1
(A) Space Science

Chapter-17

- I. The element which was condensed to form a protostar is.
 - a. Hydrogen
 - b. Helium
 - c. Lithium
 - d. Carbon.
2. The value of chandrashekar limit is
 - a) 1.4 times the earth mass
 - b) 1.4 times the sun mass
 - c) 14 times the earth mass
 - d) 14 times the sun mass
3. The celestial object emitting radiation in pulses is called
 - a. Quasar
 - b. Black hole
 - c. white dwarf
 - d. Pulsar.
4. The period of revolution of the Sun in the milky way galaxy is
 - a. about 250 years
 - b. about 250 million light years.
 - c. about 100 years
 - d. about 25 million years.
5. The theory which explains about the begining of the universe is
 - a. Supernova theory
 - b. steady state theory
 - c. Bigbang theory
 - d. Antiuniverse theory

- II. 1. Which is the first stage in the evolution of stars?
2. What is planetary nebulla?
3. Define pulsars.
4. What is supernova explosion?
5. Name the types of galaxies.
6. Write an exmple for spiral galaxy.
7. Name the theory that explains about the origin of universe.
8. What is big bang?

B. Rockets and Artificial Satellites.

- 34

Physics: Card No. 1

Key -Answers Space science (A) Stars and Galaxies

- I. 1. a) Hydrogen
2. b) 1.4 times the sun mass
3. c) Pulsar
4. d) About 250 million years.
5. c) Big bang theory.
- II. 1. Protostar
2. The outer envelope of the Red giant gets detached and thrown out into space. It forms a cloud called Planetary Nebula.
3. The neutron star which emits radiation in pulses are called Pulsars.
4. The explosion of stars which are 5 times more massive than sun, after Red giant state is called Supernova explosion.
5. a. Elliptical galaxies.
b. Spiral galaxies
c. Irregular galaxies.
6. Milky way or Akasha ganga
7. Big bang theory.
8. The explosion of Primordial Fire ball with a bang which led to the beginning of universe is called "Big bang".

Physics: Card No. 1

Key -Answers .B Rocket and Artifical Satellites.

- I. 1. a) 11.2 KM/s
2. c) Scientific instrument.
3. b) Artificial satellite.
4. c) 36,000 Km
- II. 1. The mixture of oxidiser and fuel is called propellant.
2. a) Liquid hydrogen and liquid oxygen.
b) Kerosene and liquid oxygen
c) Hydrazine and Nitric acide.
3. Newton's third law of motion- " For every action there will be be equal and opposite reaction, where action and reacton are occuring on the different objects".
4. Law of 'conservation of Momentum"-The total momentum of the system is conserved when the net force acting on the system is zero".
5. Expression for recoil velocity. $V = -\frac{mv}{m}$
6. The velocity of the satellite along a circular path is called the orbital velocity (v_o)
7. The minimum velocity with which a body must be projected so that it escapes from the gravitational field of earth is called escape velocity.
8. $V_e = \sqrt{2.v_o}$ where V_e -escape velocity
 V_o - Orbital velocity.

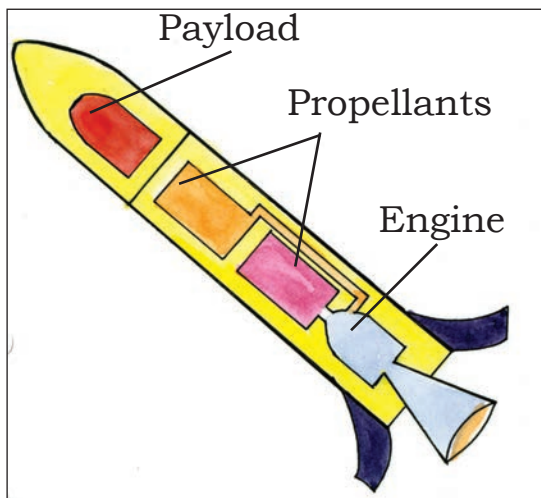
9. The rocket in which several rockets are joined together one on top of the other to increase efficiency is called multistaged rocket.

10. PSLV : Polar satellite launch vehicle.

GSLV : Geosynchronous satellite launch vehicle

ISRO : Indian space research Organisation.

11. Diagram of single stage rocket.



Card - 2

Alternative Sources of Energy

Chapter- 8

I.

1. The energy from the sun reaches us in the form of
(a) Atoms (b) photons (c) particles (d) sound
2. Solar collections are used in
(a) Heating water (b) cooking food
(c) deslaynisation of sea water (d) all the above
3. Solar panels used in traffic signals work on the principle of
(a) Electrolysis (b) Photosynthens
(c) Photoelectric effect (d) Chemical combination
4. The following cities of India may be suitable for installing wave energy source
(a) Bangalore (b) Delhi (c) Mangalore (d) Hyderabad
5. The major contributor in producing energy from waste in towns and cities is
(a) Sugar industry (b) Paper industry
(c) Domestic waste (d) All the above
6. Bio mass is considered as a renewable sourced energy if
(a) more and more plants are cut periodically
(b) more and more animals all killed periodically
(c) more and more plants are grown periodically
(d) old plants are saved and no new plants are grown

7. If you are living in North pole, the type of alternate source of energy, you cannot use is
 - (a) Geothermal energy
 - (b) Solar collections
 - (c) Wind mill
 - (d) All the above
8. 'Swatch Bharath Abhiyan' can also target the production of energy from
 - (a) Industrical waste
 - (b) Domestic waste
 - (c) Muncipal waste
 - (d) Chemical waste
9. One major advantage of Geothermal energy over other alternate source of energy is
 - (a) It can be harvested throughout the year
 - (b) It is cheap
 - (c) It can produce more energy
 - (d) It can be produced everywhere

1. Differentiate between solar cells and solar collections.

Solar cells

Solar collections

* Convert solar energy in to electrical energy

* Convert solar energy into thermal energy

2. Write the advantages of Jatropa over other plants of similar use?

Jatropa is a hardy plant which can grow on any type of soil, under any kind of agro climate conditions. The plant can easily be propagated through seeds or stem cuttings. It grows very fast. Moreover it is not grazed by animals even during periods of drought.

3. What is the advantage of wave energy over wind energy?

Wave energy is more reliable than wind energy since the fluctuations are comparatively less pronounced.

Card - 2

Types of Motion

Chapter-8

1. A plastic ball put on water waves move up and down do not come to the edge. Why?

The plastic ball put on water wave move up and down because the water molecules during wave motion move up and down.

2. Briefly explain the method of transfer of energy from source to the observer in the case of sound waves?

As the source vibrates the particles of the medium neighbouring to it vibrates which results in compressions and rarefaction of which compress the neighbouring particles. This cycle continues and wave propagates.

3. Why is oscillation of a simple pendulum is simple harmonic?

The oscillation of a simple pendulum is periodic because it repeats at regular intervals.

4. On what factors the time period of a simple pendulum depends?

The period of a simple pendulum depends on length of the pendulum and acceleration due to gravity.

5. If velocity of light wave is $3 \times 10^8 \text{ ms}^{-1}$ and its frequency is $2 \times 10^{14} \text{ Hz}$, calculate the wavelength?

$$v = 3 \times 10^8 \text{ ms}^{-1}$$

$$n = 2 \times 10^{14} \text{ Hz}$$

$$\lambda = ?$$

$$v = n\lambda$$

$$3 \times 10^8 = 2 \times 10^{14} \times \lambda$$

$$\lambda = \frac{3 \times 10^8}{2 \times 10^{14}} \Rightarrow \lambda = 1.5 \times 10^{-6} \text{ m}$$

6. The frequency of a wave is 2500Hz and its wavelength is 200nm calculate its velocity.

$$n = 2500\text{Hz}$$

$$\lambda = 200\text{nm}$$

$$v = ?$$

$$v = n \times \lambda$$

$$= 2500 \times 200 \times 10^{-9}$$

$$= 500000 \times 10^{-9}$$

$$v = 0.0005\text{ms}^{-1}$$

7. If the frequency of a wave is 20Hz, what is its time period?

$$n = 20\text{Hz}$$

$$T = \frac{1}{n}$$

$$T =$$

$$T = 0.05\text{s}$$

8. Give two examples for motion which are imperceptible motion.

1. Motion of constituents of solid
2. The revolution and spin of the earth.

Card - 2

Heat Engines

Chapter - 9

1. The kickstart in petrol engine would produce
 - (a) High pressure inside the cylinder
 - (b) Low pressure inside the cylinder
 - (c) Ignites the fuel in intake stroke
 - (c) Sends the waste gases out of cylinder
2. The efficiency of a heat engine is 40%. If you want to get a work of 200KJ, the amount of heat energy to be supplied is
 - (a) 200KJ
 - (b) 500KJ
 - (c) 2000KJ
 - (d) 800KJ
3. The main reason that steam engine cannot be used in small vehicles is
 - (a) Less efficiency
 - (b) More cost
 - (c) Bulky by structure
 - (d) Chance of bursting
4. The reason, that diesel engine is preferred to petrol engine is
 - (a) Comparatively petrol does not undergo combustion completely
 - (b) Cost of petrol is more
 - (c) Diesel engines cost more
 - (d) Petrol releases more energy than diesel

II.

1. Change of state of a substance from liquid to gas can be utilised to convert heat energy into other forms of energy.
2. In a small quantity of water is converted into steam, it occupies more volume by expansion and exerts pressure. Approximately the volume of steam will be 700 times more at STP than the volume of water from which it is obtained by heating. Chemical change of liquid fuels like

petrol and diesel when undergo combustion produces large volume of gases and exert pressure.

3. K.E. of molecules of steam is more than the water at the same temperature hence steam has more energy.
4. Water is heated in a boiler, to generate steam of high pressure which is passed into a cylinder fitted with a piston steam occupies a much larger volume than the same amount of water as steam expands pushes piston back crankshaft moves and converts linear motion of piston rod in to rotational motion wheel rotates half rotation. This is expansion stroke. As steam loses its K.E. condenses to water. Piston is pushed back due to low pressure due to inertial wheel makes another half rotation and completes one cycle. This is exhaust stroke.
5. One
6. Limitations of steam engine
 - (a) Boiler is bulky, hence cannot be fitted to light vehicles.
 - (b) There is a risk of bursting of boiler
 - (c) Cannot start instantaneously
 - (d) Efficiency is low
7. The steam is stored under pressure in the boiler hence there is a risk of bursting of boiler.
8. A part of heat is wasted when steam is travelling from boiler to cylinder hence its efficiency is less.
9. To increase the temperature of water and turn it into steam time is needed hence it cannot start instantaneously.
10. The heat needed for the engine is produced inside the engine hence it is called internal combustion engine.
11.

$H = 1800\text{KJ}$
 $W = 720\text{KJ}$
 $E = ?$

$$E =$$

$$= \frac{7240^0}{1800} \times 100 \times 100$$

$$E = 40\%$$

$$12. E = 40\%$$

$$W = 2000\text{KJ}$$

$$H = ?$$

$$E =$$

$$40 = \frac{2000}{H} \times 100$$

$$H = H = \frac{2000^50^0}{40} \times 100$$

$$H = 5000\text{KJ}$$

13. Boiler of steam engine is bulky hence it cannot be fitted to small vehicles.

14. Air is compressed to high pressure. The temperature of air increases to 1000K, hence automatically diesel is ignited at this temperature.

$$\frac{W}{H} \times 100$$

Card - 2

Sound

Chapter - 14

1. Which of the following is not an application of Doppler effect?
 - (a) Estimating the speed of aeroplanes
 - (b) Detecting vehicles crossing the speed limit
 - (c) Discovery of double stars
 - (d) Mixing immiscible substances like oil and water
2. Doppler effect on sound is observed as a change in its
 - (a) Pitch
 - (b) Velocity
 - (c) medium of propagation
 - (d) amplitude
3. A device which uses ultrasonic waves to measure the distance direction and speed of under water object is
 - (a) ultrasound scanner
 - (b) sonar
 - (c) transmitter
 - (d) detector
4. Which of the following is true? When celestial bodies are moving away from us
 - (a) The frequency of light emitted by the body decreases
 - (b) No doppler effect due to light is observed
 - (c) The light emitted by the body appears bluish
 - (d) Wavelength of light emitted decreases
5. A radar gun works on the principle of :
 - (a) Doppler effect due to light
 - (b) Raman effect
 - (c) Doppler effect of sound
 - (d) Doppler effect of radiowaves

1. Calculate the minimum distance needed to here a clear echo.

The sensation of sound persists in our ear for about 0.1s. To hear a distinct echo the time interval between the original sound and the reflected sound must be later or equal to 0.1s

$$d = ?, \quad t = 0.1s, \quad v = 340ms^{-1} \text{ in air}$$

$$d = \quad \quad \quad = 17m$$

To here echo distinctly, the reflecting surface should be at a minimum distance of 17m from the listner.

2. How are ultrasound waves produced?

Ultrasound waves are produced by a thin quartz slice is placed between two thin metallic plates. And the metallic plates are connected to an A.C. source of frequency more than 20KHz. When the current flows through the metallic plates the quartz slice vibrates with a frequency more than 20KHz producing ultrasonic sound.

$$\frac{340 \times 0.1}{2} = 17m$$

3. How bats fly unearingly during nights?

Bats can produce and here sound of frequency upto 100KHz. The sound produced by flying bats gets reflected from obstacle in front of it. By hearing this reflected sound it can detect the obstacle even during nights.

4. How do you find out cracks in the metal moulding using ultrasound waves?

Ultrasound waves are passed through metal mouldings and transmitted waves are detected. If there is any defect, the ultrasound gets reflected back showing to defect.

5. A ship sends ultrasound waves, it returns from sea bed and it is detected after 6s. If the speed of ultrasound through sea water is $1.5kms^{-1}$. what is the depth of the sea.

$$t = 6s, \quad v = 1.5kms^{-1}, \quad d = ?$$

$$d = \quad \quad \quad = 4.5km$$

6. A shoal of fish is 2km deep from the surface of water in ocean. If velocity of sound in water is 1.5kms^{-1} then what is the time taken by ultrasound waves to reach shoal of fish?

$$d = 2\text{km}, \quad v = 1.5\text{kms}^{-1}, \quad t = ?$$

$$d =$$

$$2 =$$

$$t =$$

$$t = 2.66\text{sec}$$

7. Ultrasound waves are reflected from a shoal of fish in 2s and from the depth of sea it takes 3s to return then calculate the distance between fish and the ocean bed? ($v = 1.5\text{kms}^{-1}$)

$$d = ?, \quad t = 2\text{s}, \quad v = 1.5\text{kms}^{-1}$$

$$d = \quad = 1.5\text{km}$$

distance of the shoal of fish is 1.5km

$$d = ?, \quad t = 3\text{s}, \quad v = 1.5\text{kms}^{-1}$$

$$d = \quad = 2.25\text{km}$$

depth of the sea is 2.25km.

Distance between fish and ocean bed = $2.25 - 1.5 = 0.75\text{km}$

8. How is ultrasound waves used to see internal organs of the body?

An ultrasound scanner is used to see internal organs of the body.

Ultrasound waves are directed towards the area on the body to be scanned.

When there is a change in the tissue density, the waves are reflected.

The image of the internal organ is displayed either as a static image or as a movie.

9. How RADAR detects objects in the sky?

Radar transmits radiowaves from an antenna and then detects the reflected wave after it bounces off the target. By knowing the speed of radio waves and time taken for the signal to bounce off the object and hit the receiver the distance of the object can be detected.

10. How Radar gun detects speed of vehicles?

The radio waves from the radar gun are sent in the direction of the speeding vehicle and the reflected waves are received. The change in the frequency of the incident and the reflected waves help to determine the speed of the speeding vehicle.

Card - 2

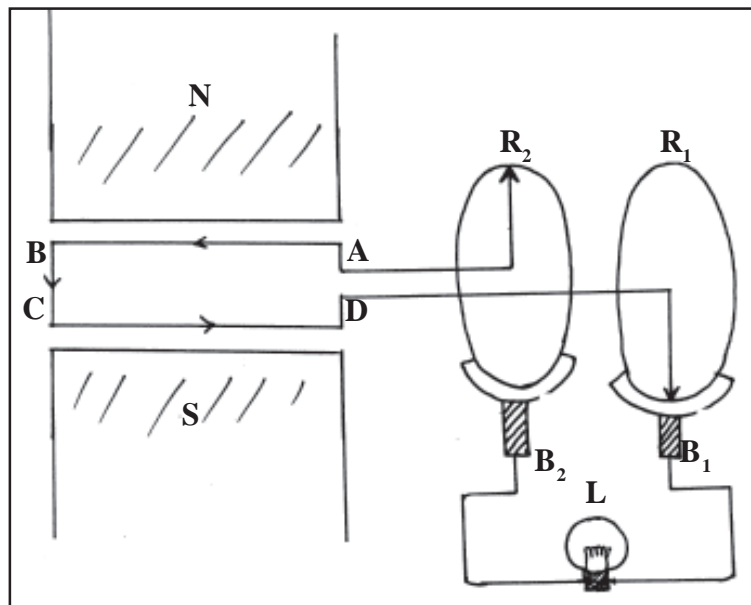
Electromagnetic Induction

Chapter - 16

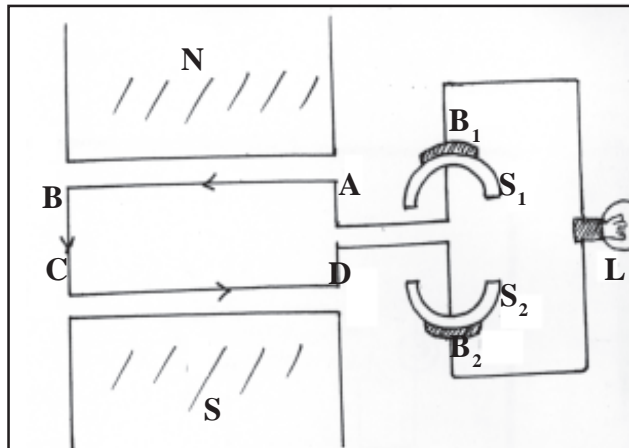
1. An AC has a frequency of 50Hz. The number of the armature should be produce it direction changes, the current makes in one second
(a) 25 (b) 50 (c) 100 (d) 200
2. The frequency of OC in India is
(a) 25Hz (b) 50Hz (c) 20Hz (d) 0Hz
3. A transformer has 20 turns in the primary coil and 80 turns in the secondary. If 10v is given in the primary coil , the voltage in the secondary coil would be
(a) 10v (b) 20v (c) 40v (d) 80v
4. The turns ration in a stepdown transformed will be
(a) > 1 (b) ≤ 1 (c) 0 (d) ≥ 0
5. The part of a DC dynamo which may not be present in AC dynamo is
(a) split rings (b) slip rings (c) armature (d) magnet

1. What are the factors influencing induced emf in the secondary coil in the transformers?
 - (a) e.m.f in the primary
 - (b) Number of turns in the primary
 - (c) Number of turns in the secondary
 - (d) The core material
2. Explain the working of an AC dynamo?

When the armature is rotated the current moves in the direction ABCD during first half of the rotation. During the second half of the rotation the current moves in the direction DCBA. The current in the external circuit therefore flows in one direction, for one half cycle and in the opposite direction for the second half cycle. It is therefore an alternating current. The dynamo is called alternating current dynamo.



3. Explain the working of a DC dynamo?



When the armature is rotated, during first half of rotation the current flows along ABCD in the coil and along $B_2 < B_1$ in the external circuit, the split rings changes their contact. S_1 comes in contact with B_2 S_2 with B_1 . In the second half, the current is along DCBA in the coil but along $B_2 > B_1$ in the external circuit. But the magnitude of the current is not constant.

4. Differentiate between stepup transformer and stepdown transformer.

Step up transformer	Stepdown transformer
1. No of turns of secondary is more than primary	1. Number of turns in primary is more than secondary
2. Primary coil should have thick wire to sustain larger current	2. Secondary coil should have thick wire to sustain larger current

Card - 2

Electronics

Chapter - 17

1. When a trivalent impurity is added to pure semiconductor, the majority charge carries in so obtained impure semiconductor
 - (a) electrons
 - (b) holes
 - (c) both electrons and holes
 - (d) neither electrons nor holes
2. The number of free electrons available for conduction in an intrinsic semiconductor at lowest temperature is
 - (a) Nearer to infinity
 - (b) Nearer to zero
 - (c) Exactly 10
 - (d) All the above
3. A major difference between a conductor and a diode in working is
 - (a) Both of them conducts electricity
 - (b) Conductors allows current in any direction but diode allows only in one direction
 - (c) Diode cannot control the flow of current where as conductor can
 - (d) Conductor allows current only in one direction but diode allows in two directions also
4. The critical temperature of mercury is 4.2K. It means the current given to mercury
 - (a) can flow for few microseconds
 - (b) can flow for long time
 - (c) is stopped at very short intervals
 - (d) always increases before input is given

1. Why at low temperatures Germanium and Silicon behaves as insulators?

At low temperatures (OK) the atoms of silicon and germanium have 4 electrons each in their outer most shell. These electrons are involved in covalent bonding and are not free. Hence these elements should behave like insulators.

2. How does conductivity of a semiconductor change with temperature?

The conductivity of a semiconductor increases with raise of temperature because more covalent bonds in semiconductor get broken with the rise of temperature providing more number of electrons and holes as current carriers.

3. Differentiate between N type and P type semi conductors?

N type semi conductor	P type semi conductor
1. It is obtained by doping pentavalent impurity atoms to a pure semi conductor	1. It is obtained by doping trivalent impurity atoms to a pure semi conductor
2. The majority charge carries are electrons and minority charge carriers are holes	2. The majority charge carriers are holes and minority charge carriers are electrons

4. Differentiate between intrinsic and extrinsic semi conductors?

Intrinsic semi conductor	Extrinsic semi conductors
1. It is pure semi conductor	1. It is formed when minute traces of other elements are added to intrinsic semi conductors
2. They have equal number of holes and electrons	2. They have unequal number of holes and electrons
3. Their conductivity is very small	3. Their conductivity is more than intrinsic semi conductor

5. Differentiate between npn transistor and pnp transistor.

npn transistor	pnp transistor
1. When one p side is sandwiched between two n regions, a npn transistor is formed	1. When one n side region is sandwiched between two p regions a pnp transistor is formed
2. The function of emitter, is to emit electrons to the base	2. The function of emitter is to emit holes to the base

Card - 2

Stars and Galaxies

Chapter- 24

1. The evidence for the universal expansion is
 - (a) Doppler effect of light
 - (b) Doppler effect of sound
 - (b) Existence of black hole
 - (d) Existence of solar system
2. A star to end its life as white dwarf its mass after redgiant stage must be
 - (a) Equal to Chandrashekar limit
 - (b) Greater to Chandrashekar limit
 - (c) Lesser to Chandrashekar limit
 - (d) 1.4 times lesser to its original mass
3. The stages of evolution of stars
 - (a) Protostar → Red giant → White dwarf → Steady state
 - (b) Protostar → Neutron star → Red gaint → Black hole
 - (c) Protostar → Steady state → Red gaint → Neutron star
 - (d) Protostar → Steady state → White dwarf → Neutron star
4. What is galaxy?

Galaxy is a group of billions of stars, gas, and dust which are bound by huge gravitation force.
5. State Hubble's law.

Hubble's law - "The velocity of the recession of a celestial body is proportional to its distance from us".
6. Name our native galaxy.

Milky way or Akasha ganga
7. A star observed to be bluish white in colour. What is the approximate temperature on its surface?

About 10,000K - 50,000K

8. Write the differences between

(a) Pulsars and Quasars

(b) Neutron star and black hole

(a)

Pulsars	Quasars
* It is a fast spinning neutron star	* Group of stellar objects, emitting radiation
* Emits radiation in pulses	* They emit more of radio waves

(b)

Neutron star	Black hole
* Emits radiation	* Does not emit radiation
* Possible to identify in space	* Not possible to identify in space

9. Super match

<u>Temp.</u>	<u>Colour</u>	<u>Star</u>
2000-3500K	Yellow	Arturus
3500-5000K	Bluish white	Sirius
5000-6000K	Orange yellow	Betelgeause
6000-10,000K	Red	Sun
10000-50000K	Yellowish white	Rigel

Ans :

<u>Temp.</u>	<u>Colour</u>	<u>Star</u>
2000-3500K	Red	Betelgeause
3500-5000K	Orange yellow	Arcturus
5000-6000K	Yellow	Sun
6000-10,000K	Yellowish white	Sirius
10000-50000K	Bluish white	Rigel

10. Write a short note on milky way.

Milky way galaxy is our native galaxy, where our solar system is present. It is a spiral galaxy. It consists of about 200 billion stars in it. Its diameter is about 1 lakh light year. Its diameter is about 1 lakh light year. Its central thickness is about 6000 light year. Sun is located about 28000 light years from the centre.

11. What is stellar evolution.

The process from birth to the death of star is called stellar evolution.

12. Write the different stages of evolution of star having the mass lesser than the Chandrasekhar limit.

Protostar \longrightarrow Steady state \longrightarrow Red giant stage \longrightarrow White dwarf

13. Write the different stages of evolution of a star having the mass greater than the Chandrasekhar limit.

(a) 5 times greater mass than sun

Protostar \longrightarrow Steady state \longrightarrow Red giant Neutron

(b) 30 times greater mass than sun

Protostar \longrightarrow Steady state \longrightarrow Red giant Neutronstar \longrightarrow Blackhole

14. Explain the changes that occur in a star to reach its steady state.

Huge hydrogen gas clouds are contracted due to gravity

- increase in density and pressure
- spherical mass formed at the centre
- 99% mass concentrated at centre - protostar
- huge ball contracts due to gravitation
- temp. increases to millions of Kelvin
- hydrogen fuses to form helium, heat, light radiation are emitted
- outward force due to radiation expands star
- outward force balances inward gravitational pull \longrightarrow steady state.

15. Write the changes that occur in the star before it reaches the red giant stage.

After steady state - outward radiation force increase – Outer layer expands - surface area increases – Temperature decreases - emits radiation of lesser frequencies - appears red in colour.

Card - 2

Rockets and Satellites

Chapter - 1

1. Which among the following is not a fuel?
(a) Liquid hydrogen (b) Aluminium percolate
(c) Hydrazine (d) Synthetic rubber
2. The equation of the Thrust on the rocket is given by
(a) $R V_{ex} = M \cdot a$ (b) $R \cdot M = V_{ex} \cdot a$
(c) (d) $R \cdot a = M \cdot V_{ex}$
3. The satellite which is placed at the height of 36,000Km is
(a) Remote sensing (b) Meteorological
(c) Geo stationary (d) Rohini
4. The first artificial satellite launched by the Indians is
(a) Rohini (b) IRS (c) Bhaskar (d) Aryabhata
5. What is pay load?

The scientific instrument which is placed in the front region of the rocket is called payload.

6. Give the relation between thrust, rate of combustion of fuel and exhaust velocity.

$$\text{Thrust} = R \cdot V_{ex}$$

7. Write the relation between escape velocity and acceleration due to gravity.

$$V_e = \sqrt{2Rg}$$

8. What are geostationary satellites?

The satellites whose period of revolution is same as the period of rotation of the earth are called Geostationary satellites.

9. What is the need of adding oxidiser to fuel in the rockets?

Because as we move away from the earth surface the availability of oxygen required for the combustion of the fuel decreases and almost nil when it crosses atmosphere. Therefore to supply the required oxygen the oxidisers are used.

10. Define "pay load ratio" in rocket designing.

The ratio of the pay load mass(m) to the fuel mass(M) is called pay load ratio.

11. How a multistage rocket is advantageous over a single stage rocket?

Advantages of multistaged rockets.

- * Efficiency is more
- * Fuel consumption can be minimised
- * Heavy payloads could be taken to the greater height.

12. Classify the following into Rockets and satellites. Aryabhata, GSLV, Rohini, APPLE, IRS-1A, RSLV.

Rockets - GSLV, PSLV

Satellite - Rohini, APPLE, IRS-1A, Aryabhata

13. Match the numerical values with the relative constants.

G	11.2Km/s
g	$6.672 \times 10^{-11} \text{ Nm}^2\text{kg}^{-2}$
RE	9.8 m/s
Ve	$6.37 \times 10^6 \text{ m}$

Ans :

G	$6.672 \times 10^{-11} \text{ Nm}^2\text{kg}^{-2}$
g	9.8m/s
R_E	$6.37 \times 10^6\text{m}$
V_e	11.2km/s

14. In the automobiles which travel on the ground only fuel is filled not oxidiser. Why?

Because the oxygen required for the combustion process of the fuel is available in the atmosphere.

15. What happens to the mass, acceleration due to gravity and atmospheric resistance as the rocket-ascends?

Mass of the rocket	}	decreases as the rocket ascends
Acceleration due to gravity		
Atmospheric resistance		

Card III

Difficult

Physics

1. Alternate sources of energy
8. Types of motion
9. Heat engines
14. Sound
16. Electromagnetic Induction
17. Electronics
18. Behaviour of gases
24. Space science.

Resource Persons

1. Rajesh Y.N
G.H.S. Mallapura
Najanguda TQ
Mysuru Dist
2. C.V. Srinatha
G.H.S. Thumbasoge
H.D. Kote TQ
Mysuru Dist
3. Naveen Kumar R
G.H.S, Beerihundi
Mysuru TQ,
Mysuru Dist

Alternate Sources of Energy (Difficult)

1. The diagram shows how geothermal Energy can be harnessed which instrument should be placed at B, to obtain useful form of energy.

-
- Cold water Hot water steam
- Hot crust

- a) Solor pond b) Solar cell
- c) Solar water heaters d) Solar collectors

- a) Kanyakumari region b) Benglal region
c) Himachal region d) Rajasthan region

More the energy available more the production of the other goods, by next commercial processes country can gain its capital.

2. Government should encourage the use of ethanol in the transport vehicles. Give scientific reasons.

- * It is Produced by molasses which is a waste in sugar industry
- * It burns releasing CO_2 and H_2O which causes very less pollution.
- * Farmers can get more cost per unit ton.

3. Write a note on energy from waste.

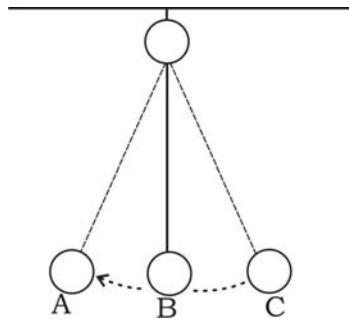
Waste generated in towns cities and industries can be converted in to energy.

such a conversion not only yeilds energy but also supports recycles of materials which decreases the demand of fresh raw materials.

Card No. 3
Types of Motion

Chapter -8

1. A wave has a frequency of 20Hz . The distance between two consecutive compression is 2m . The wave speed is
 - a) 20 m/s
 - b) 30 m/s
 - c) 40 m/s
 - d) 50 m/s
2. In the following diagram, point B has
 - a) Maximum kinetic energy (K.E) minimum potential energy (P.E) and zero acceleration
 - b) Minimum K.E. Maximum P.E zero acceleration
 - c) Maximum K.E maximum P.E maximum acceleration
 - d) minimum K.E minimum P.E maximum acceleration



3. The position of Halley's comet after particular time can be predicted by applying to properties of
 - a) Circular motion
 - b) Simple harmonic motion
 - c) rotation
 - d) Wave motion

4. The wavelength of transverse wave is 20cm. and its velocity is 10 m/s The frequency of the wave is
- a) 150 Hz b) 20Hz c) 50Hz d) 100 Hz

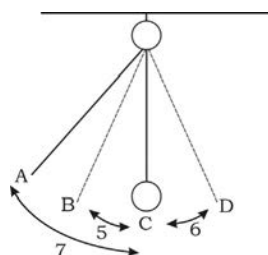
5. The velocity of a wave whose time period is 2s and wave length 5 m is
- a) 1 m/s b) 1.5 m/s c) 10m/s d) 2.5 m/s

- II 1. Imagine that you are on the moon. If any body challenges you to send sound from one place to another place on moon, how do you do it?

BY creating vibrations of the surface of the moon

2. Given here a diagram representing simple harmonic motion.

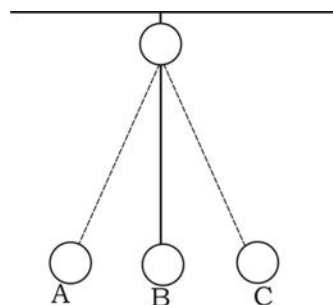
- (i) At which point, the K.E is minimum at A.
- (ii) At which point, the K.E is maximum at C.
- (ii) At which point, the Acceleration is A+C minimum
- (iv) At which point, the P.E is maximum at A



3. At any point in the path of the simple pendulum the sum of K.E and P.E remains same. Justify In case of a simple pendulum.

As K.E increases from A to C

but potential energy decreases, becomes minimum at c. hence the sum of P.E and K.E is always a constant



Card No. 3
Heat engines

Chapter -9

1. The heat engine which converts latest heat into mechanical energy is
 - a) Petrol engines
 - b) Diesel engine
 - c) Steam engine
 - d) All the above
2. The type of heat engine used in a bike would be
 - a) Steam engine
 - b) petrol engine
 - c) Disel engine
 - d) Any of the above
3. Petrol and air mixture is compresed in a petrol engine.
 - a) To get more mechanical energy
 - b) To increase the temperature
 - c) To mix fuel and air properly
 - d) To ignite the fuel
4. A heat engine is 20% efficient If 200 KJ is supplied the height to which it can lift an object of mass 2kg is near the surface of the earth is
 - a) 1.04 m
 - b) 2.04 m
 - c) 3.04 m
 - d) 4.04 m
5. If a heat engine whose efficiemey is 50 % is supplied with a heat of 5000KJ the work done is
 - a) 2500KJ
 - b) 1250KJ
 - c) 10000KJ
 - d) 2000KJ

Diffcult

1. A heat engine has a efficiency of 50%. How high it can lift a object of mass 7kgs when it is supplied with a heat energy of

$$550\text{KJ (g-9.8ms}^{-2}\text{)}$$

2. An engine lifts an object of mass 5kg to a height of 100m If its efficiency is 30% calculate the heat energy to be supplied? (g=10ms⁻¹)
3. Why diesel engine is more efficient than petrol engine?

Answer

$$1. E = 50\%$$

$$m = 7\text{kg}$$

$$H = 550 \text{ KJ}$$

$$g = 9.8 \text{ ms}^{-2}$$

$$h = ?$$

$$E = \frac{mgh}{H} \times 100$$

$$50 = \frac{7 \times 9.8 \times h \times 100}{550} = 550$$

$$h = \frac{50 \times 55}{7 \times 98}$$

$$h = 4.0087\text{m}$$

$$2. m = 5\text{kg}$$

$$h = 100 \text{ m}$$

$$E = 30\%$$

$$H = ?$$

$$E = \frac{mgh}{H} \times 100$$

$$30 = \frac{5 \times 10 \times 100}{H} \times 100$$

$$H = \frac{5 \times 10 \times 100}{30} \times 100$$

$$= \frac{5000}{3}$$

$$H = 16666.66\text{J}$$

3. Diesel engine has more compression ratio than petrol engine and also the amount of heat liberated by the combustion of diesel is more hence, diesel engine has more efficiency.

Card No. 3

Sound

Chapter -14

1. A traffic police has to detect the vehicle crossing the speed limit which of the following units is related to the characteristics of the wave used
 - a) hertz
 - b) parsec
 - c) angstrom
 - d) newton
2. Kiran who is reading in the classroom finds out whether a teacher is coming near the classroom or not even if she cannot see the teacher it is because she.
 - a) Knows about sonar
 - b) knows about ultrasonics
 - c) Is aware of doppler effect
 - d) know about frequency and wave length
3. Doppler effect of light can be applied in the study of the following.
 - a) The velocity of submarines
 - b) Speed of galaxies
 - c) Pollutants in the atmosphere
 - d) crystal structure
4. The ultrasound signal sent in water by sonar takes 3s to return. If the velocity of sound in water is 1.5km/s the distance travelled by the signal is
 - a) 2.25kms
 - b) 4.5kms
 - c) 6kms
 - d) 9kms
5. The technique used in the study of heart diseases is
 - a) Radar Ranging
 - b) Radio graphy
 - c) Radar gun
 - d) Echocardiography

II.1. Can we use ultrasound waves to send messages to satellites?

Give reasons.

A No, we cannot send ultrasound waves to send messages to satellites. because ultrasound waves need material medium to travel.

2. What property of ultrasound enables it to drill holes through the hard materials?

A high frequency and energy

3. Why echoes can't be heard in a small room

A For hearing echo, there should be at least a distance of 17m between the source of sound and the body from which sound is reflected. In small rooms this is not the case, hence echoes are not heard.

4. Two astronauts cannot hear each other on the moon . why?

Material medium is necessary for the propagation of sound. on the moon there is vaccum i.e. no air therefore, sound cannot propagate on the moon.

5. Bats have no eyes still they can as certain distances directions, nature and size of the objects. Explain why?

A Bats, have special types of wings, why they fly they produce ultrasonic waves. These waves are received by the ears of bat after they have been reflected by the object. The ears of the bat are so sensitive and trained that they not only get information of distance of the obstacle but also nature of reflecting surface.

6. Sound is produced due to a vibratory motion. There why a vibrating pendulum does not produce sound ?

A The frequency of the vibrating pendulum does not lie within the audible range (20Hz to 20000Hz) and hence it does not produce audible sound.

7. Why A radar is able to detect the reflected waves from an enemy aeroplane, after a time interval of 0.02 milliseconds. If the velocity of the waves is $3 \times 10^8 \text{ ms}^{-1}$, Calculate the distance of the plane from the radar.

Given : $t = 0.02 \text{ millisecond} = 0.02 \times 10^{-3} \text{ s}$

$$c = 3 \times 10^8 \text{ ms}^{-1}$$

$$d = ?$$

$$d = \frac{vt}{2} = \frac{3 \times 10^8 \times 0.02 \times 10^{-3}}{2} = \frac{6000}{2} = 3000 \text{ m}$$

$$= 3 \text{ km}$$

8. If the sound takes two seconds to reach the boatman, approximately how much time does it take to reach the diver at the same depth? ($V = 1450 \text{ ms}^{-1}$ $t = 2 \text{ s}$)

Distance travelled by sound in air is $= 330 \times 2 = 660 \text{ m}$

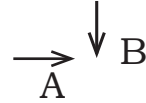
If the diver is at the same depth, then the time taken by him will

$$\text{be } t = \frac{d}{v} = \frac{660}{1450} = 0.45 \text{ s}$$

Card No. 3
Electrcily difficult

Chapter -16

1. Given below direction of magnetic field (line A) and the direction of an electron entering the magnetic field (line B)



In Which direction the electron deflected?

- a) Out of the paper you are reading
 - b) In wards the paper you are reading
 - c) Towards your right hand
 - d) Towards your left hand
2. Which one the following in not a method of obtaining maximum from your cycle dynamo?
- a) Riding the bicycle upwards the hill
 - b) Pedalling the bicycle with more frequency
 - c) Moving downhill on a bicycle.
 - d) Applying break on the bicycle oftenly
3. A DC dynamo can be easily used as DC motor only change we should make in doing so is
- a) Replacing load with battery
 - b) Replacing battery with load
 - c) By connecting additional pair of commutators
 - d) Any of the above

4. The maximum mechanical energy obtained in a motor is where
- a) more turns in armature is used
 - b) Magnets of more strength are used
 - c) Using the armature of lesser area and making it rotate faster
 - d) All the above
5. If a current of 4A is given to a transformer of turns 50 turns in its primary coil and 20 turns in the secondary coil, the current across the secondary coil is
- a) 5A
 - b) 10A
 - c) 1A
 - d) 20A

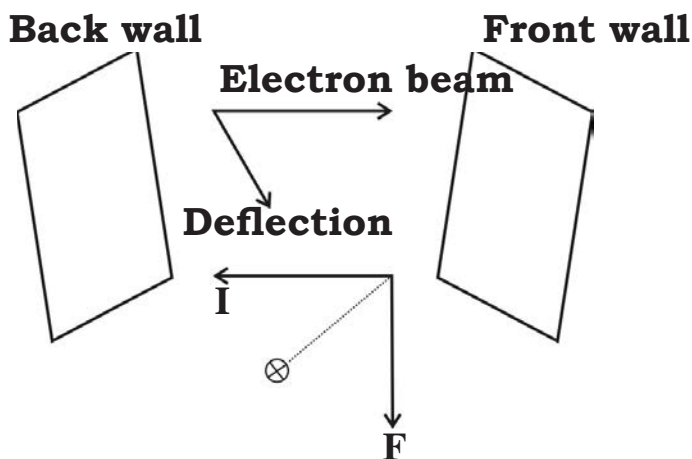
Card No. 3
Electromagnetic Induction

Chapter -16

1. A nature of a dynamo rotates 20 times per minute what is the frequency of the current obtained.

20Hz

2. Think you are sitting in a chamber with your back to one wall . An electron beam moving horizontally from back wall towards the front wall, is deflected by a strong magnetic field to your right side what is the direction of magnetic field?
- A Movement of from electron beam from back wall to the front wall is equivalent to the flow of electric current from front wall to the back wall. The deflection of the beam means, the force is acting towards our right side according to Flemings left hand rule, the direction of magnetic field is vertically downward. That is, the magnetic field is perpendicular, to the plane of paper and directed inward. Such magnetic field is shown by .



3. Why does a current carrying conductor kept in a magnetic field experience force? What is the direction of force acting on the conductor?

A Current carrying conductor contains moving negatively charged particles. Each electron experiences a force. The total force experienced by electrons is equal to the force experienced by the conductor. This force acts perpendicular to both the magnetic field and the direction of current in the conductor.

4. What is the frequency of DC?

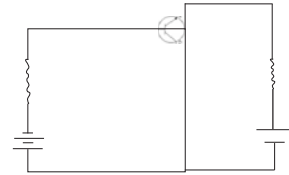
Zero

Card No. 3 Electronics

Chapter -17

1. The following in diagram of a biased transistor. Identify the mistake in the connection.

- a) Emitter junction is wrongly biased
b) Collector junction is wrongly biased



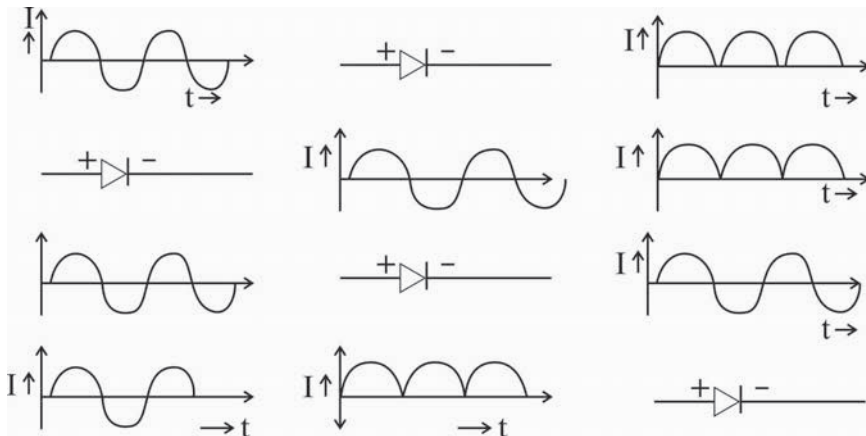
- c) Both emitter region and collector region are wrongly connected

- d) The transistor itself is wrongly connected

2. The property of the base in a transistor is

- a) Less thickness - highly doped
b) more thickness - highly doped
c) Less thickness - highly doped
d) More thickness - lightly doped

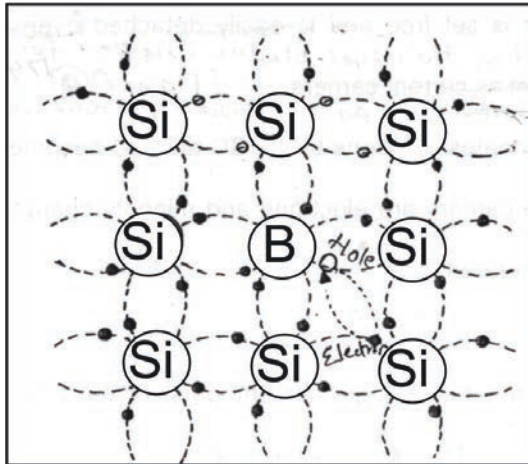
3. Which of the following denotes the link among Ac, diode and DC. in its proper order.



4. When the thickness of the potential barrier is increased the resistance for the flow of current in the diode decreased. This happens in
- a) Reverse biasing
 - b) Forward biasing
 - c) Doping
 - d) Amplification
5. In the input region of a transistor a variation of 10mV is observed as a variation of 25 mV in the out put region. For this to happen in a transistor.
- a) Emitter region is forward biased
 - b) Collector region is reverse biased
 - c) Emitter region is forward biased and collector region is reverse biased
 - d) Emitter region is reverse biased and collector region is forward biased.

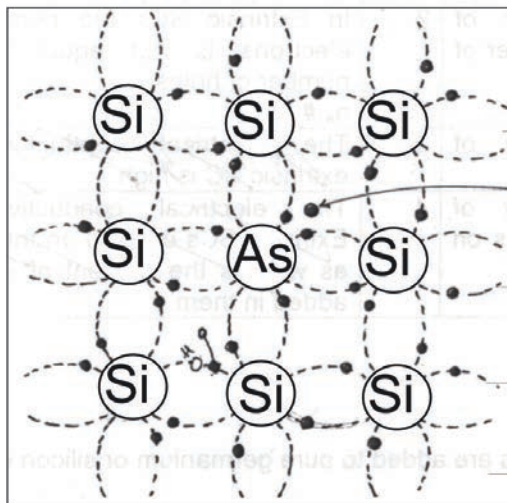
II. 1. How is a P-type semiconductor formed?

If a trivalent impurities like boron, indium, gallium, aluminium is introduced in the germanium crystal, each impurity atom takes away one electron from the neighbouring germanium atoms to form covalent bonds. This results in the creation of holes. Electrons from neighbouring atoms can fill up holes and their will be apparent motion of holes. Thus holes act as current carriers. The added trivalent impurity accepts electrons from the semiconductor and the semiconductor behaves like P-type semiconductor.



2. How is an N-type semiconductor formed?

If a very small amount of pentavalent impurity for ex . Antimony or arsenic or phosphorous, is introduced into the crystal of germanium, four out of five electrons of each impurity atom enter in to bonds with the nearest germanium atoms, to form covalent bonds. The fifth electron is set free these free electrons act as current carriers. The added pentavalent impurity donates electrons to the semiconductor and the semiconductor becomes N-type semiconductor.



Card No. 3
Behaviour of Gases

Chapter -18

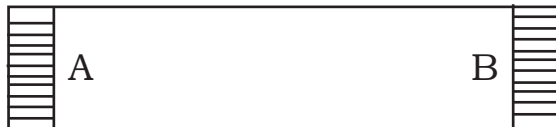
1. A tightly closed tin, half filled with water heated to boiling and suddenly immersed in ice water. The result may be
 - a) It squeezes
 - b) It explodes
 - c) It remains unchanged
 - d) water becomes ice
2. In the above example the squeezing is explained using
 - a) Avagadro law
 - b) Charle's law
 - c) Boyle's law
 - d) Graham's law
3. A candle burning donot produce any smell. A typical smell is observed for a short period when it goes off. This can be explained by using.
 - a) A Gay lusaac law
 - b) Graham's law
 - c) Charle's law
 - d) Boyle's law
4. The value that can fit into the gap in the table is

	Pressure Pascods	Volume
Gas A	$1.5 \times 10^5 \text{ pa}$	1.2 l
Gas B	- pa	2l

- a) 5×10^5
 - b) 2×10^5
 - c) 0.9×10^5
 - d) 0.8×10^5
5. A balloon filled with air is kept inside refrigerator becomes small in size. This is because.
 - a) As the temperature decreases, the surface area of the balloon decreases.

- b) As the temperature decreases, the volume of the gas decreases.
- c) Refrigerator can't fit large balloons, so it shrinks the balloon
- d) All the above

- II. 1. Two gases A and B which can react among themselves are kept at two ends of a glass tube as shown. A is denser than B. Towards which end the rate of reaction is more? Why?



The rate of reaction is more towards A because B diffuses more than A as it is less dense.

2. A container of gas has a volume of 10 liters and contains gas at a pressure of 120Pa . what will be the pressure of the gas if it is allowed to escape from the container into a space of volume 3000 lt ?

$$V_1 = 10\text{cl}$$

$$P_1 V_1 = P_2 V_2$$

$$P_1 = 120 \text{ Pa}$$

$$120 \times 10 = P_2 \times 3000$$

$$P_2 = ?$$

$$P_2 = \frac{120 \cancel{\times} 10}{3000} = 0.4 \text{ pa}$$

$$V_2 = 3000\text{l}$$

The pressure of gas reduces to 0.4 Pa

3. A fixed mass of gas initially at a pressure 2Pa is allowed to expand so that its volume increases to three times its original volume what is the new pressure of the gas.

$$P_1 = 2\text{Pa}$$

$$P_2 = ?$$

$$P_1 V_1 = P_2 V_2$$

$$V_1 = V_1$$

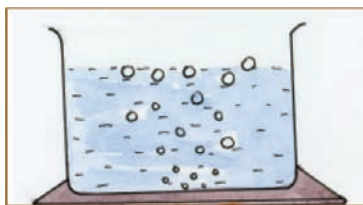
$$2 \cancel{V_1} = 3 \cancel{V_1} \times P_2$$

$$V_2 = 3V_1$$

$$P_2 = \frac{2}{3} = 0.66 \text{ pa}$$

4. The diagram shows some bubbles rising in a glass of fizzy drink. why the bubbles get larger as they rise to the surface?

As the bubbles rise, the pressure decreases hence volume increases.



5. A blown balloon is kept inside a jar which is connected to vacuum pump. what happens to the size of balloon, if air is sucked out of the bell jar.

balloon swells in its size due to decrease in pressure.



6. A balloon is filled with 25l of air at 1 pa pressure. If the pressure is changed to 1.5 pa, what is the new volume.

$$V_1 = 25\text{l}$$

$$P_1 = 1\text{Pa}$$

$$P_2 = 1.5\text{ Pa}$$

$$V_2 = ?$$

$$P_1 V_1 = P_2 V_2$$

$$1 \times 25 = 1.5 \times V_2$$

$$V_2 = \frac{25}{1.5} = \frac{250}{15}$$

$$V_2 = 16.66\text{ l}$$

Card No. 3

Above Average (A Stars and Galaxies)

- Which is the fundamental force led to the birth of star.
a) Electrostatic force b) Nuclear force
c) Gravitational force d) Magnetic force
- The event that occurs when iron forms in the core of a star is.
a) Big bang b) Supernover explosion
c) Neutron star d) Pulsar
- Heavy mass, small volume, intense gravition field are the features of
a) Quabars b) Pulsar
c) Whitedwarf d) Blackhole
- A and B are two galaxies. If A is showing red shift and "B" is showing blue shift, how do you interprete their motion related with earth?
- Comment on the existance of life on earth, when sun reaches red gaint stage.
- You are an astronomer. How do you find the existance of the black hole in the universe.
- Why a star becomes red in red-gaint stage.

B. Rockets and Satellies

- With respect to the momentum of a system which among the following equations is wrong.
a) $\frac{V}{v} = \frac{-m}{M}$ b) $\frac{M}{V} = \frac{-m}{v}$ c) $\frac{-m}{V} = \frac{M}{v}$ d) $V = \frac{-mv}{M}$
- As the height of the satellite from the earth surface increases,

the orbital velocity of the satellite

- a) Decreases
- b) Increases
- c) Remains same
- d) Varies with time.

3. What are missiles?
4. If the radius of the earth is $6.37 \times 10^6 \text{m}$. and the escape velocity is 11.2 km/s , calculate acceleration due to gravity.
5. A vehicle thief was caught by the police using GPS technology which kind of satellite helps in catching thief.
6. Rocket launching pads are located at the seashore or coastal region, why?

Answer

A . Stars and Galaxies

1. c) Gravitational force
2. b) Supernover explosion
3. d) Black hole
4. Star A is moving away from the earth and star B is moving towards the earth.
5. The tempeature on the earth surface increases. The atmosphere may, blown off. The oceans may go dry. Due to higher temperature the life on the earth may be destroyed (vanished)
6. Black hole cannot be detected by the properties like pressure or temperature. It could be detected only by its high gravitation force. It does not allow even the light to come out of it. It can grab or swallow the near by objects.
7. In the red gaint stage the star begins to swell and the surface area of the star increases.As a result temperature of

the star decreases. and hence it emits light of lower frequency. There fore star appears to be Red in clour.

B. Rockets and Satellites

$$1. \quad b) \frac{M}{V} = \frac{-m}{v}$$

2 a) Decreases

3. Rockets which carry explosives as pay load are called mis-siles.

$$4. \quad Ve = \sqrt{2 \times R \times g}$$

$$11.2 = \sqrt{2 \times 6.37 \times 10^6 \times g}$$

$$(11.2)^2 = 2 \times 6.37 \times 10^6 \times g$$

$$\frac{(11.2)^2}{12.7 \times 10^6} = g$$

$$9.85 \text{ m/s} = g$$

5. Geo stationary satellite.

6. Because as the rocket is launched, the burnt part of the rockets are made to fall into the sea or oceans.

Chemistry

Card I, II, III English

Prepares by.

1. M. Somashekarappa
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S/No	Chapter Name	Chapter No
1	Periodiv Classification of Element	3
2.	Silicon	4
3.	Nuclear Enrgy	10
4.	Industrial Inorganic Chemistry	11
5.	Carbon & its Compounds	12
6.	Industrial Organic Chemistry	13
7.	Metals	15
8.	Ionic Conduction	22

Chemistry Card No. 1
Periodic Classification of Elements

Chapter -3

- I.**
1. State law of Modern Periodic Table.
 2. Give an example for Dobereiner's Triad
 3. Why 18th group elements are called noble gases?
 4. What are periods & groups in the Mendeleev periodic table?
 5. Name the four blocks of modern periodic table.
 6. Write the electronic configuration of sodium atom.
 7. What are metalloids? Give an example.
 8. What are transitional elements? Give an example.
 9. Write three advantages of modern periodic table.
 10. What are isotopes? Write four isotopes of carbon.
 11. The better semiconductor in 14th group element is :-
a) Carbon b) Germanium c) Lead d) Silicon
 12. In the periodic law the following repeats at regular intervals
a) Atomic Number b) General Properties
c) Atomic Mass d) Isotopes.
 13. The group number of the element of Neon is .
a) 1 b) 8 c) 9 d) 18

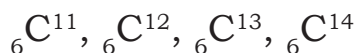
Answers

1. The properties of elements are periodic functions of their atomic numbers.
2.

Element	Atomic mass
Chlorine	35.5
Bromine	80
Iodine	127
3. Octet structure or O (zero) valency)
4. Rows in the periodic table are called as periods & Columns as groups.
5. S. block
P. block
d. block
f. block
6. Atomic No. Na, is 11
 $1S^2, 2S^2, 2P^6, 3S^1$
7. The element which shows both metallic & non metallic property is a metalloid.
Ex Germanium.
8. Elements where electrons of their atoms occupy ultimate shells leaving penultimate shell partially vacant are called transitional elements or d- block element.
9. 1) easy to access data of the element.
2) based on modern electronic configuration & nature of chemical bonds.

3) Predict the properties of the elements by considering the position of elements in periodic table.

10. Elements having same atomic number with different Atomic mass are called Isotopes



11. (b) Germanium

12. (b) General properties

13. (d) 18

Chemistry Card No. 1

Silicon

Chapter -4

- I. 1. Write the Atomic Number & Atomic mass of silicon.
2. Write the electronic configuration of silicon.
3. Name the two allotropes of silicon.
4. Mention any two difference of crystalline and amorphous silicon
5. Define exothermic reaction & write balanced equation for silicon reacting with steam.
6. $\text{Si} + \text{C} \rightarrow \text{SiC}$ this reaction is endothermic. Explain.
7. How crystalline silicon is obtained from silica?
8. Mention any two uses of silicon compounds.
9. State the biological significance & hazards of silicon.
10. Gel is used in
 - a) Modern clock
 - b) Chromatography
 - c) Preparation of glass
 - d) Grinding tools
11. The scientist who proved that sand is a compound
 - a) Robert Koch
 - b) Berzelius
 - c) Madame Curie
 - d) Faraday

Answer

1. Silicon Atomic No 14

Atomic mass 28

2. $1S^2, 2S^2, 2P^6, 3S^2, 3P^2$

3. Amorphous silicon

Crystalline silicon

4. Amorphous silicon

Crystalline silicon

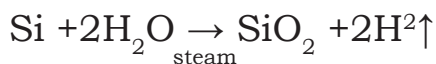
1. It is a brown powder

1. It is a dark grey crystalline solid.

2. It does not conduct electricity at low temperature

2. Slightly conducts electricity

5. Chemical reactions which liberates heat energy are called exothermic reaction.



6. In this reaction heat is observed or used for chemical reaction so it is an endothermic.

7. Crystalline silicon is obtained by reducing silica with coke. When excess of silica is heated with coke in electric furnace in the absence of air crystalline silicon is obtained.



8. Two uses of silicon compounds :-

a) Zeolite is used in removal of hardness of water.

b) silicon carbide is used in cutting and grinding tools.

9. Diatoms, radiolaria and siliceous sponges use biogenic silica as structural material to construct skeleton.

Miners and stone breakers, in asbestos factory, glass factory, cement factory some times suffer from a professional hazards called-silicosis.

10. silica gel is used in chromatography

11. Berzelius

Card No. 1
Industrial Organic Chemistry

1. The vegetable contains more sucrose is
a) Radish b) Beetroot c) Potato d) Green leaves
2. The fermented matter of molasses is called.
a) Raw material b) Wort
c) Bagasse d) Precipitate
3. Molecular formula of methanol is
a) CH_3OH b) $\text{C}_2\text{H}_4(\text{OH})_2$
c) $\text{C}_2\text{H}_5\text{OH}$ d) HCHO
4. Write the molecular formula of sucrose
5. Name the preservative to prepare fruit jams?
6. Give an example for natural polymer.
7. Write the classification of carbohydrates
8. What is bagasse? Mention its uses.
9. How ethyl alcohol is manufactured from sugar?
10. Mention any two example of fermentation?

Answer

1. b) Beetroot
2. b) wort
3. a) CH_3OH
4. $\text{C}_{12}\text{H}_{22}\text{O}_{11}$
5. Sugar
6. Starch
7. Carbohydrates are classified as
 - 1) Monosaccharides
 - 2) disaccharide
 - 3) Poly saccharides
8. The Cellulose material of the sugar cane residue is called bagasse.
It is used as a fuel or as raw material to prepare cardboard.
9. Molasses is diluted with water and acidified by adding dilute sulfuric acid yeast is added to the solution and the container is closed. The temperature is maintained around 308k. Fermentation takes place in about a week. The fermented matter is called 'wort' and it contains about 6 to 10 percent alcohol. It is fractionally distilled to obtain 95% alcohol.
$$\text{C}_{12}\text{H}_{22}\text{O}_{11} + \text{H}_2\text{O} \xrightarrow{\text{Enzyme - Invertase}} \text{C}_6\text{H}_{12}\text{O}_6 + \text{C}_6\text{H}_{12}\text{O}_6$$
$$\text{C}_6\text{H}_{12}\text{O}_6 \xrightarrow{\text{Enzyme - Invertase}} 2\text{C}_2\text{H}_5\text{OH} + 2\text{CO}_2 \uparrow$$
Glucose or Fructose \rightarrow Ethanol + Carbon dioxide.
10. - Milk turning into curd
 - The batter of idli and dosa rising up
 - The spoilage of cooked wet food items

Card No. 1
Nuclear Energy

Chapter -10

1. Fuel used in Nuclear reactor is
a) Carbon b) Uranium c) Cadmium d) Graphete.
2. Which are of the following materials is commonly used as moderation in a nuclear reactor
a) Cadmium b) Boran c) Graphete d) Liquid Sodium
3. Heavy water is used in a nuclear reactor to :
a) Produce the neutrons b) Slow down the neutrons
c) Accelerate the neutrons d) Absorb the neutrons
4. Define Nuclear fission
5. Which metal is used to make control rods?
6. Where do nuclear fusion occurs naturally?
7. Define Uranium Enrichment.
8. Write Einstiens Energy mass relation equation and name the components of relation.
9. Draw the schematic diagram of fission chain reaction of ${}_{92}\text{U}^{235}$ isotope.
10. Write two differences between nuclear fission and nuclear fusion.

Answer

1. b) Uranium
2. c) Graphite
3. b) Slow down the neutrons
4. The Process by which heavy nucleus. split into lighter 2 nuclei with liberation of large amount of energy is called 'Nuclear fission.'
5. Cadmium
6. Sun and stars
7. Naturally occurring uranium contains about 0.7% of ${}_{92}\text{U}^{235}$ isotope which is fissionable. Self sustained chain reactions are not possible in natural uranium which is mostly made up of istope ${}_{92}\text{U}^{238}$. To make it fissionable ${}_{92}\text{U}^{235}$ content of the ore is to be enriched, by seperating ${}_{92}\text{U}^{235}$ and ${}_{92}\text{-U}^{238}$ isotopes. This process is known as 'enrichment of uranium.'

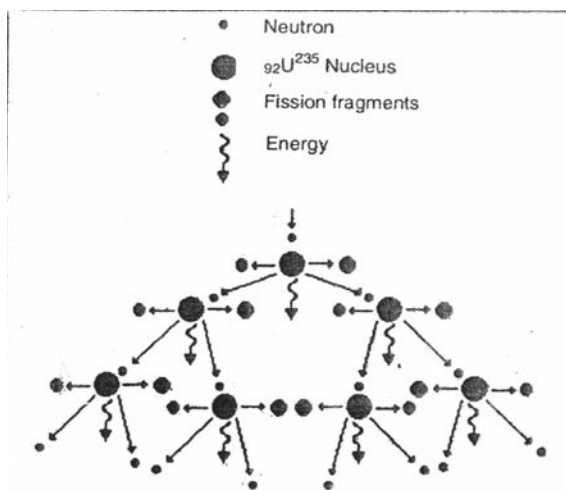
8. $E = mc^2$

E = Energy released in joules

m= mass transformed in kilograms

C = Velocity of light $3 \times 10^8 \text{ ms}^{-1}$

9.



10.

Nuclear fission	Nuclear fusion
1. A heavy nucleus is split into two lighter nuclei with liberation of energy	1. Two or more lighter nuclei fuse to form a heavy nucleus, with liberation of energy.
2. Can be controlled	2. no mechanism to controll
3. Not require high temperature	3. requires extremely high temperature.

Card No. 1
Industrial In Organic Chemistry

Chapter -11

1. Another name of flint glass is
 - a) Sodalime b) Potash lime
 - c) Lead glass d) Borosilicate glass
2. During manufacture of glass, which material is used to increase the fusibility.
 - a) Soda b) lime stone
 - c) Sand d) cullets
3. Which type of glass is used to prepare lenses?
 - a) Lead glass b) Borosilicate glass
 - c) Soda lime glass d) Safety glass
4. Write the raw materials used in manufacture of glass
5. What is annealing?
6. What is glazing?
7. Name the raw materials used in preparation of ceramics.
8. Write any two uses of ceramics.
9. Name the types of paper
10. Write two limitations of paper.

Answer

1. c) Lead glass
2. d) Cullets
3. a) Lead glass
4. a) Sodaash
b) Lime stone
c) Sand
d) Cullets
5. The process of gradual cooling of glass. articles to room temperature is called annealing.
6. The process of manufacturing the clay product into non porous shining material is called Glazing.
7. Clay like kaolinite and bentonite
 - Flint
 - White clay
 - Quartz
 - Feldspar
8. Ceramic insulators soon become an essential port of electrical gadgetry.
 - Ceramic balls can be used to replace steel in ball bearings.
 - _ Spare parts of gas turbine engines
 - _ Dental implants and synthetic bones.
9. 1) Filter paper
2) Tissue paper
3) Wax paper
4) Card board paper
10. 1) Unlike plastic, they are perfectly non porous.
2) Their tensile, strength, radically reduces on wetting.

Card No. 1

Carbon & Its Compounds

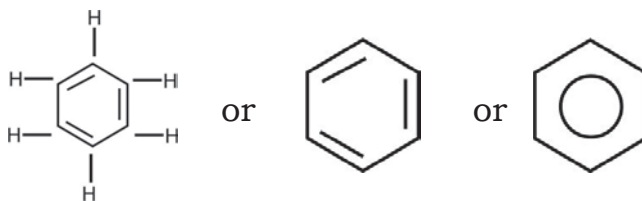
Chapter - 12

- Friedrich wohles prepared the organic compound
 - Vegetable Oil
 - Sucrose
 - Urea
 - Calcium phosphate
- Unique property of Carbon is
 - Forming covalent bond
 - Semiconductivlty
 - Catenation, tettraradency, Isomerism
 - forming ionic bond
- Hydrocarbons are the compounds of
 - C,H,O
 - C,H
 - H, CO₂
 - CO₂, H₂O
- The molecular formula in Alkanc containing 5 carbon atom is
 - C₅H₈
 - C₅H₁₀
 - C₅H₅
 - C₅H₁₂
- The functional group persent in benzal dehyde is
 - OH
 - COOH
 - CHO
 - NH₂
- Define & vital force theory who proved it false.
- What is catenation?
- Name the simplest Hydrocarbon.
- Mention the use of Toluene.
- Write the molecular & structural formula of benzene.
- What is functional group? Mention any two functional groups.
- Alcohols have covalent bond why?
- Write the molecular & structural formula of cyclohexane.
- What are fatty acids? Give an example.

Answer

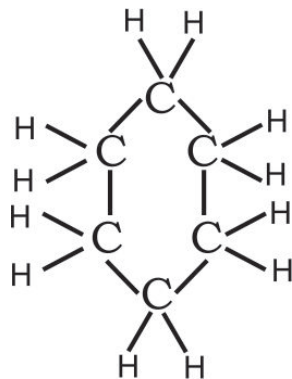
1. b) Urea
2. c) Catenation tetravalency Isomerism.
3. b) C_5H_{12}
4. d) C_5H_{12}
5. C) -CHO
6. Organic compounds were synthesized in living systems under the influence of vital force.
Friedrich Wohler proved it false.
7. Carbon has the unique ability to form bonds with other atoms of carbon giving rise to a large molecule. This property of interconnecting C-C bonds is called catenation.
8. Methane CH_4
9. 1) Solvent for oils & fats, Paints, lacquers, resin etc.
2) Manufacture of TNT (trinitrotoluene) explosive.

10. C_6H_6



11. Functional groups are the sites where reactions occur in organic molecules.
12. Unlike bases (-OH) functional group shares electron with carbon atom hence alcohols have covalent bond.

13. C_6H_{12}



14. Long chain alkanes or alkenes if contains a terminal carboxylic acid group $[-COOH]$ are called fatty acids.

Ex : Stearic acid $[C_{17}H_{35}COOH]$

Card No. 1

Metals

Chapter - 15

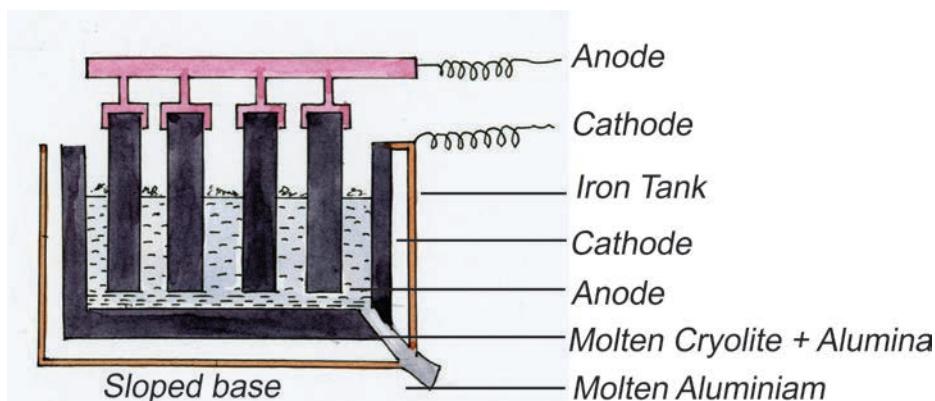
1. Electron donor among the following is :
 - a) Potassium
 - b) Phosphorous
 - b) Oxygen
 - d) Fluorine
2. The molecular formula of Hematite is :
 - a) Fe_2O_3 , H_2O
 - b) FeCO_3
 - b) Fe_3O_4
 - d) Fe_2O_3
3. Hydrogen gas is liberated under the following circumstance:
 - a) Iron kept in boiling water
 - b) water is poured on hot iron
 - c) Steam is passed over red hot iron
 - d) Iron is immersed in cold water.
4. The alloy which used to make Aeroplane and railway coaches is
 - a) Brass
 - b) Bronze
 - c) Duralumin
 - d) Alnico
5. Aluminium is extracted by
 - a) Froth Floatation by
 - b) Hydraulic process
 - c) Hall - Heroult method
 - d) Concentration of ore method.

6. Name the metals which does not reacts with water?
7. Define metallurgy?
8. What is flux?
9. Write the two important ores of iron?
10. What is hydraulic wash? Name the are which suits this processes.
11. Write the role of slag in extraction of Iron from the ore.
12. Draw neat labelled diagram of extraction of Aluminium.
13. Name the three methods involved in purification of Metals.
14. Write any three physical properties of metals?

Answer

1. a) Potassium
2. b) Fe_2O_3
3. c) Steam is passed over red hot iron.
4. c) Duralumin
5. c) Hall-Heroult method
6. Platinum and gold
7. The technology of extraction of metals from their ores and refining to the the required form is called metallurgy.
8. Flux is a substance that is added to the ores before heating with a purpose of removing certain unwanted impurities which are not removed during concentration of ore.
9. Hematite and magnetite
10. The crushed ore when washed with stream of water lighter impurities will be washed away and heavy iron ore particles settle down this process is called Hydrochloric wash hematite.
11. Slag prevents the oxidation of molten iron back into oxides of iron.

12.



13. 1) Liquation processes

2) Zone refining or fractional crystallisation

3) Electrolytic refining

14. Physical properties of metals

- Solids at room temperature

- Sonorous

_ Malleable and ductile

_ Conduct Electricity

_ Conduct heat

_ lustrous

Card No. 1

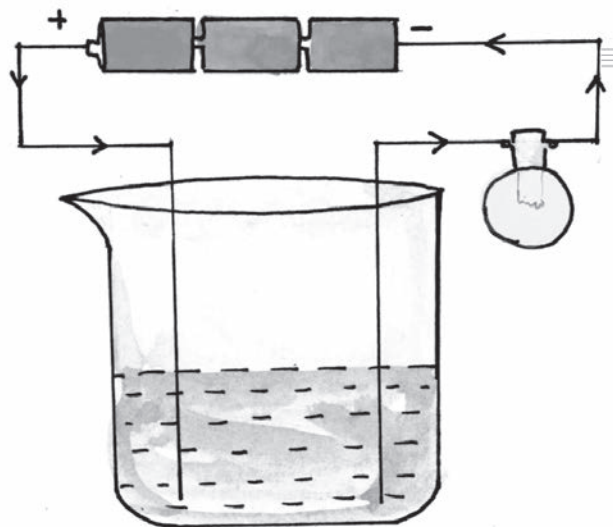
Ionic Conduction

Chapter - 22

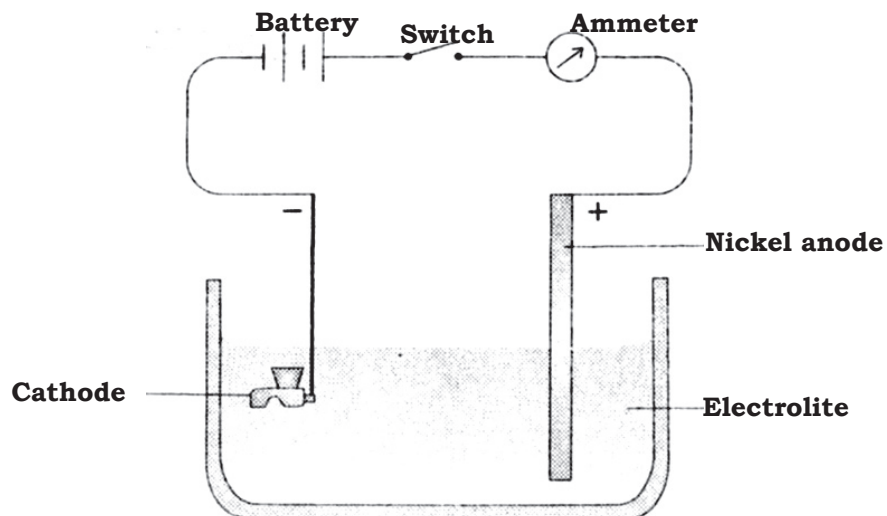
1. Write any two examples for metallic conductors.
2. Name the cation and Anion in Common salt .
3. What is an electrolyte?
4. Give two example for strong electrolyte.
5. Define electrolysis.
6. What is electroplating? Write any two uses.
7. Write any two electrolytic Conductors.
8. Chemical equivalent of substance is given by
 - a) Atomic mass \times Valency
 - b) Atomic mass $+$ Valency
 - c) Atomic mass \div Valency
 - d) Atomic mass $-$ Valency
9. Write a neat diagram of voltmeter and label the parts.
10. Write a neat diagram of electroplating and lable the parts.
11. What is the value of Faraday's Constant.

Answer

1. Iron, Aluminium
2. Cation = Na^+ Anion = Cl^-
3. The Chemical substances that conduct electricity in aqueous state are called Electrolytes.
4. Sodium chloride, Copper sulphate
5. The chemical reaction caused by electricity is called electrolysis.
6. The process of depositing a layer of any desired metal on another metallic object by means of electricity is called electroplating.
 - It improves the appearance
 - _ It Prevents the corrosion
7. Sodium hydroxide, Hydrochloric acid.
8. c) Atomic mass \div Valency
- 9.



10.



11. $F = 96,500$ Coulomb/ mole

Chemistry Card No. 2
Periodic Classification of Elements

Chapter -3

- I.1. State New land's Law of Octave.
2. How many periods & groups are there in modern periodic table.
3. Write one limitation of mendeleev periodic table
4. In a triad of A, B and C elements, If the atomic mass of B & C are 88 & 137, respectively find atomic mass of A.
5. Write the name and electronic configuration of element bearing the atomic number 26.
6. Why the size of the atoms tend to increase as we go down in a group in periodic table?
7. Give an example for each of the following :-
1)- S- block 2)-d- block
8. Give two example for 14th group elements.
9. Define the following
1) Atomic size
2) Ionisation energy.
10. List all the members of 18th group elements of periodic table.
11. An Example of transitional element is.
a) Li b) Al c) Ni d) Cl
12. The following is a metalloid
a) Uranium b) Sodium
c) Cadmium d) Germanium

Answer

1. “ The periodicty of repeatition of propertics of elements is eight” Hence newland law is given the name octave.x
2. There are 7 periodos and 18 groups in periodic table.
3. Mendeleev considered atomic mass for construction of periodic table, which does not give chances for Isotopes.

4) Solution

Given

$$B=88 \qquad B = \frac{A+C}{2}$$

$$C=137 \qquad 88 = \frac{A+137}{2}$$

$$A=? \qquad 88+2 = A+137$$

$$176 = A+137$$

$$A + 137 = 176$$

$$A=176-137$$

$$\boxed{A=39}$$

5. Atomic No 26 belongs to Iron (Fe)
 $1S^2, 2S^2, 2P^6, 3S^2, 3P^6, 3d^6, 4S^2$
6. Down the group new shell is added to the atom so as we go down in a group in periodic table the size of atom increases.
7. H = S- block
Cu = d- block
8. C & Si are the examples of 14th group elements.

9. 1) The distance between the centre of an atom and its outer most shell is taken as atomic size to imagine the three dimensional size of atom.
- 2) Ionisation energy is the energy required to remove the electron from outer most shell from the free and isolated atom of an element.
10. He Helium
Ne Neon
Ar Argon
Kr Krypton
xe xenon
Rn Radon
11. c) Ni
12. d) Germanium

Card No. 2

Silicon

Chapter -4

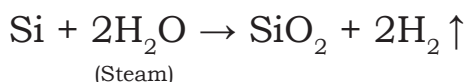
1. Name the different ores of Silicon.
2. What is the role of Hydrochloric acid & Hydrofluoric acid in extraction of amorphous silicon?
3. How the crystalline silicon is extracted from silica? What happens if excess silica is not provided in reaction?
4. Write any two differences between allotropes of silicon.
5. Name the compounds of silicon used in the following :
 - 1) Cutting tools,
 - 2) Ornaments
 - 3) Softening of water
 - 4) Manufacture of glass.
6. Define Exothermic and endothermic reactions with one example for each.
7. What are silicones? Mention its uses.
8. $1s^2, 2s^2, 2p^6, 3s^2, 3p^2$ is the electronic configurations of an element _____
 - a) Sodium
 - b) Potassium
 - c) Carbon
 - d) silicon
9. Granite is polished by
 - a) Zeolite
 - b) Silicon carbide
 - c) Zircon
 - d) Topaz

Answer

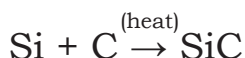
1. Silica or silicates, garnet, zircon, topaz.
2. Hydrochloric acid is used to dissolve magnesium oxide, a basic impurity, Hydrofluoric acid is used to remove unreacted silica, by washing.
3. Crystalline silicon is obtained by reducing silica with coke. When excess silica is not provided, it will form silicon carbide or carborundum.
4. The differences between allotrops of silicon are

Amorphous silicon	Crystalline silicon
1. It is more reactive than the crystalline variety	1. It is less reactive than amorphous variety
2. When heated in the air it oxidizes at the surface level & it catches fire	2. It does not burn in the air even when heated

5.
 - 1) Silicon Carbide
 - 2) Zircon
 - 3) Zeolite
 - 4) sand.
6. Exothermic : Chemical reactions which liberate heat energy are called exothermic reactions.



Endothermic : Chemical reaction which absorbs heat are called endothermic reaction



7. Silicones are polymers of silicon.

Silicones are used in water proofing treatments, moulding compounds, insulating material and other electrical appliances.

8. $1S^2, 2S^2, 2P^6, 3S^2, 3P^2$ is the electronic configuration of on element silicon.

9. Granite is Polished by.

b) Silicon carbide.

Card No. 2
Industrial organic chemistry

Chapter -13

1. Sucrose is a type of
 - a) Mondsaccharide
 - b) disaccharide
 - c) Polysaccharide
 - d) saccaride
2. Molases is acidified by adding.
 - a) Conc HNO_3
 - b) Dil H_2SO_4
 - c) Conc HCL
 - d) Conc H_2SO_4
3. The molecular formula of ethenol is
 - a) CH_3OH
 - b) $\text{C}_2\text{H}_4(\text{OH})_2$
 - c) $\text{C}_2\text{H}_5\text{OH}$
 - d) HCHO
4. How sucrose obtained?
5. What is caramel? where is it used
6. What is fermentation? Give example.
7. Use of sugar is recommended more than jaggery Why?
8. Mention the four steps involved in manufacture of sugar.
9. How alcohol is used in Ayurveda?
10. In which form do carbohydrates get assimilated in our body?
11. Why jaggery is preferred to sugar for daily use?

Answer

1. b) Disaccharide
2. b) dil. H_2SO_4
3. c) $\text{C}_2\text{H}_5\text{OH}$
4. Sugar cane or sugar beet is cut into pieces, crushed in a series of roller mills, maximum extraction of the juice is ensured. The juice is warmed and run into settling tanks. It is then decanted from the sediment and made alkaline with calcium hydroxide. The impurities get precipitated. The liquid is steamed to coagulate protein matter and allowed to settle. The clear juice is concentrated into a syrup by evaporation under reduced pressure. The syrup is cooled, to crystallise the sugar. The crystals are dissolved in hot water and decolourised with animal charcoal or with coconut shell and then filtered. The filtrate is concentrated and evaporated under reduced pressure to get a syrup which is crystallised to get white crystals of sugar (sucrose)
5. When sugar is heated to about 473K. It forms a sticky to chew substance called 'caramel.' caramel is used to make hard boiled sugar candy, and to coat the chocolates.
6. Fermentation is a chemical decomposition produced by micro organisms on certain organic matters.
Examples : Milk turning into curds, the batter of idli,
7. When compared to jaggery the shelf life of sugar is more. It can be stored easily in any climatic conditions.
8. i) Extraction of the juice from the source
ii) purification of the juice.

iii) concentration and crystallization

iv) Separation and drying of crystals.

9. In many ayurvedic tonics self generated alcohol is present to a small extent. It stimulates and improves appetite

10. Glucose

11. Jaggery is almost sucrose containing natural colouring matter and some minerals, so jaggery is preferred instead of sugar.

Card No. 2
Nuclear Energy

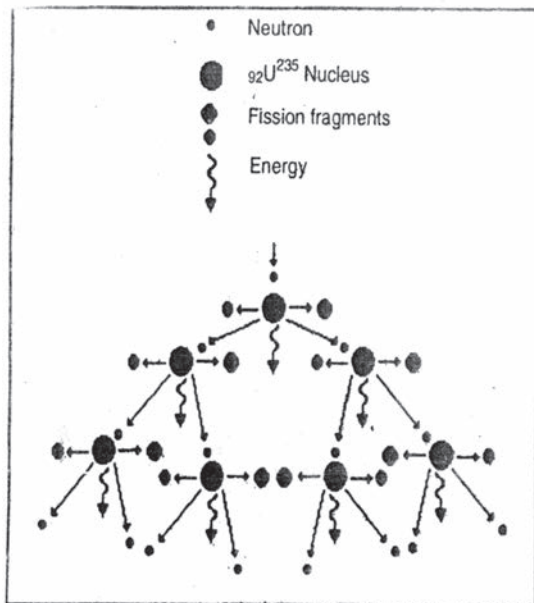
Chapter -10

1. The minimum size of the fissionable material required to sustain chain reaction is called.
 - a) Mass defect
 - b) Critical size
 - c) Optimal size
 - d) chain size
2. Transmutation means.
 - a) Conversion of atomic number of an atom.
 - b) Conversion of charge number of an atom.
 - c) Mass and energy are inter convertible
 - d) Creation of neutrons by fission.
3. Which one of the following material suited for fission?
 - a) Uranium 238
 - b) Naturally occurring uranium
 - c) Radium - 226
 - d) Enriched Uranium 235
4. What is meant by chain reaction?
5. Write the equation of nuclear fission on ${}_{92}\text{U}^{235}$ bombarded with neutrons.
6. Name the reactor which is used to prepare radio isotopes.
7. In Karnataka, where the nuclear power plant situated?
8. What is nuclear fusion? Give an Example.
9. Draw a neat diagram of nuclear reactor and label it.
10. Schematically represent chain reaction.

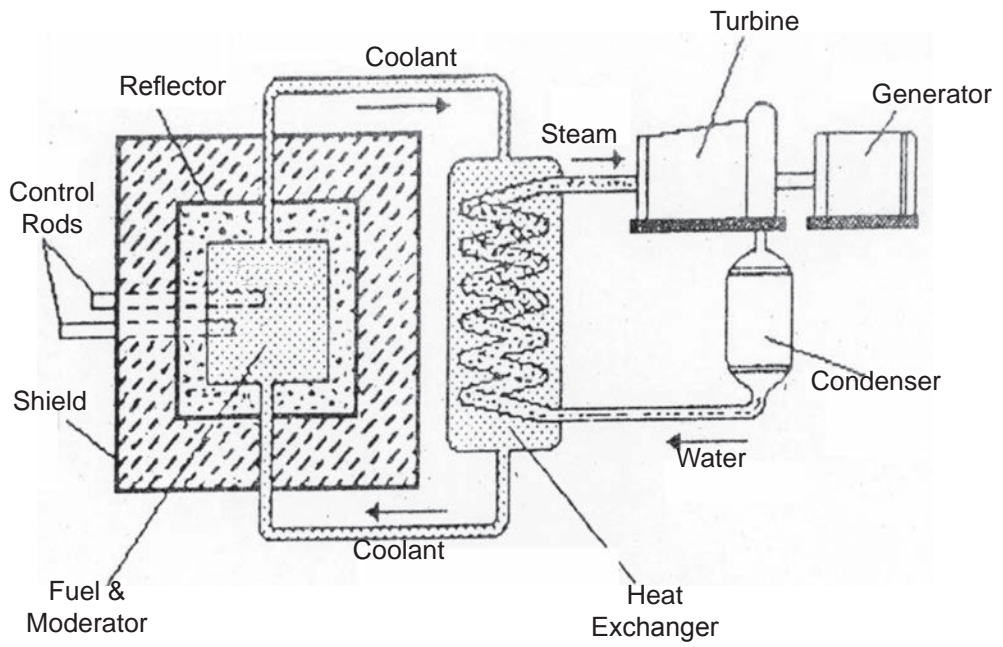
Answer

1. b) Critical size
2. a) Conversion of atomic number of an atom
3. d) Enriched Uranium 235
4. “ A chain reaction is that process in which number of neutrons keep on multiplying after each fission rapidly in geometric progression, till the whole of the fissionable material is disintegrated”
5. ${}_{92}\text{U}^{235} + {}_0\text{n}^1 \rightarrow {}_{56}\text{Ba}^{142} + {}_{36}\text{Kr}^{91} + 3{}_0\text{n}^1 + \text{energy}.$
6. Breeder Reactor
7. Kaiga.
8. Two or more lighter nuclei fuse to form a heavy nucleus with the liberation of energy is called Nuclear fusion.
Example = ${}_1\text{H}^2 + {}_1\text{H}^2 \rightarrow {}_2\text{He}^4 + \text{Energy}.$

9.



10.



Card No. 2
Industrial Inorganic Chemistry

Chapter -11

1. a) Bad conducting nature and high Co-efficient of expansion.
2. d) Burnt earth
3. C) Cellulose
4. Lead glass
5. Sodium carbonate [Na_2CO_3]
6. They are chemically resistant.
7. - electrical gadgets
- Spare parts for gas turbines
- Dental implants and synthetic bones.
8. a) Filter paper
b) Tissue paper
c) Wax paper
d) card board paper
9. Borosilicate glass is prepared by Adding born with a small amount of alumina and less alkaline oxides. It is used in supperior laboratory apparatus
10. Manufacture of paper
 - 1) Pulping
 - 2) Mixing additives
 - 3) Drying
 - 4) Finishing

Answer

1. Glass will crack if it is suddenly heated or cooled because of its.
 - a) Bad conducting nature & high coefficient of expansion.
 - b) transparency
 - c) elasticity
 - d) density
2. The word ceramics means :
 - a) Moist soil b) Brick c) Pot d) Burnt earth
3. A major component of paper is
 - a) Pectin b) Lignin c) Cellulose d) Hemi cellulose
4. Which type of glass is used to make optical instruments
5. What is the chemical name of soda ash?
6. Write one similar character between glass and ceramics.
7. Write any two uses of ceramics.
8. Name the paper used in the following
 - a) Dip tea Bag
 - b) Facial napkins
 - c) Food wrapping
 - d) Post card.
9. How borosilicate glass prepared? Write its uses?
10. Mention the steps involved in the manufacture of paper.

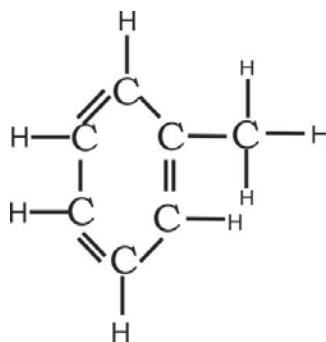
Card No. 2
Carbon & its Compounds

Chapter -12

1. C_3H_4 is the formula of
 - a) Propane b) Butane
 - c) Propene d) Propyne
2. In ethane, each carbon is bonded by,
 - a) Six atoms b) Three atoms
 - c) Eight Atoms d) One atom
3. The functional group os Acetic Acid is
 - a) - COOH b) -OH c) -CHO d) -NH₂
4. What does IUPAC represent?
5. Write the molecular formula & structural formula of toluene.
6. Methane is called marsh gas. Give reasons.
7. What are Hydrocarbons? Give its economic importance.
8. Define Isomerism with an example.
9. Draw a neat labelled diagram of preperation of methane gas.
10. Write a balanced equation for complet combustion of methane.
11. Define the following :
 - a) Catalyst
 - b) Organic chemistry
 - c) Homologus series.
12. Write any two uses of the following
 - a) Benzene b) Toluene c) Naphtha lene
13. How many hydroxyle groups present in glycerol.

Answer

1. Proyne
2. Three atoms
3. $[-\text{COOH}]$
4. International Union for pure Applied chemistry
5. $\text{C}_6\text{H}_5\text{OH}$

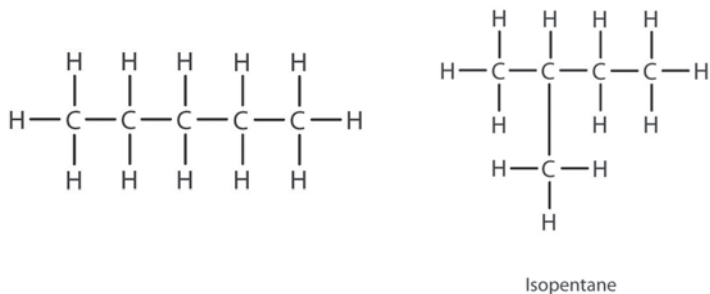


6. It is formed in the marshy places by the bacterial decomposition of vegetable matter called marshy gas.
7. Hydrocarbon are the compounds containing carbon and Hydrogen.

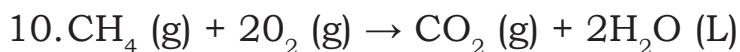
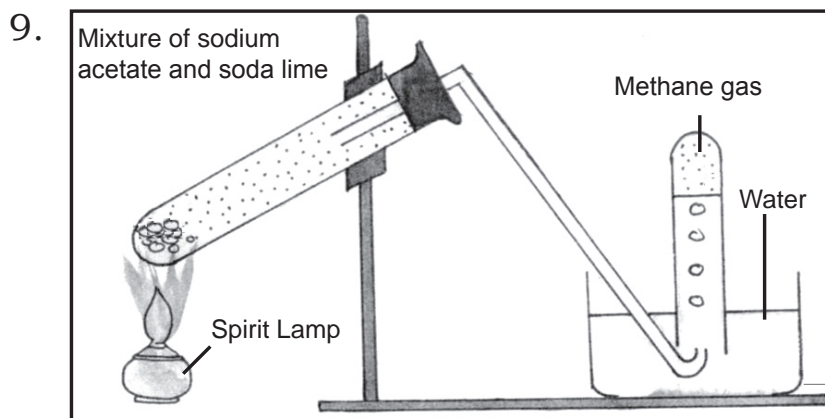
Hydrocarbons are economically important such as

- a) Fossil fuels
- b) Plastics
- c) Paraffin wax & solvents.
- d) Oils

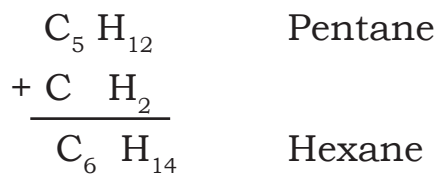
8. Organic compounds having same molecular formula with different structural arrangement of atoms in them is known as Isomerism



C_5H_{12} n- butane Iso Butane



11. a) The substance used to increase the rate of reaction is called catalyst.
 b) The branch of chemistry which deals with carbon & its compound.
 c) A homologous series are the organic compounds with same general formula, similar, chemical properties and successive members differs by $-CH_2$



12. **Benzene**

- a) used as solvent for oils fat
- b) Manufacture of dyes perfumes

Toluene

- a) Solvent for oils, fat, paints
- b) Manufacture of TNT

Napthalene

- a) As in insecticides in the form of moth balls
- b) in the synthesis of dyes.

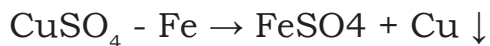
13. 3 Hydroxyle groups present in glycerol

Card No. 2

Metals

Chapter -15

1. The Metal that cannot liberate Hydrogen with dilute acid is.
a) Sodium b) Aluminium
c) Copper d) Potassium
2. Bauxite is ore of
a) Iron b) Aluminium
c) Copper d) Mercury
3. Calcium Silicate produced during the extraction of iron.
a) Is a slag
b) Is helpful in purifying iron
c) Makes coke active
d) Helps to solidify molten iron.
4. The components of Brass is.
a) Copper and Tin b) Copper and carbon
c) Copper and Zinc d) Copper and Nickel
5. The Oxide that can form salt and water with a base as well as with an acid is.
a) Carbon monoxide b) Sulphur dioxide
c) Sodium oxide d) Aluminium oxide
6. Name the reducing agent used in extraction of iron.
7. Which metal is called "Poorman's" silver?
8. Name the reactant and products in this reaction.



9. Write the reaction when magnesium heated in air.
10. Write any four chemical properties of metals and non metals.
11. Write four steps involved in metallurgy.
12. Write the uses of the following Alloys.
 - a) Stainless steel
 - b) Invar
 - c) Brass
13. Draw neat labelled diagram of Electrolytic refining of copper.
14. Write the components of the following.
 - a) Alnico
 - b) Nickel steel
 - c) Bronze.
15. Write any three contributions of indians to the metallurgy.

Answer

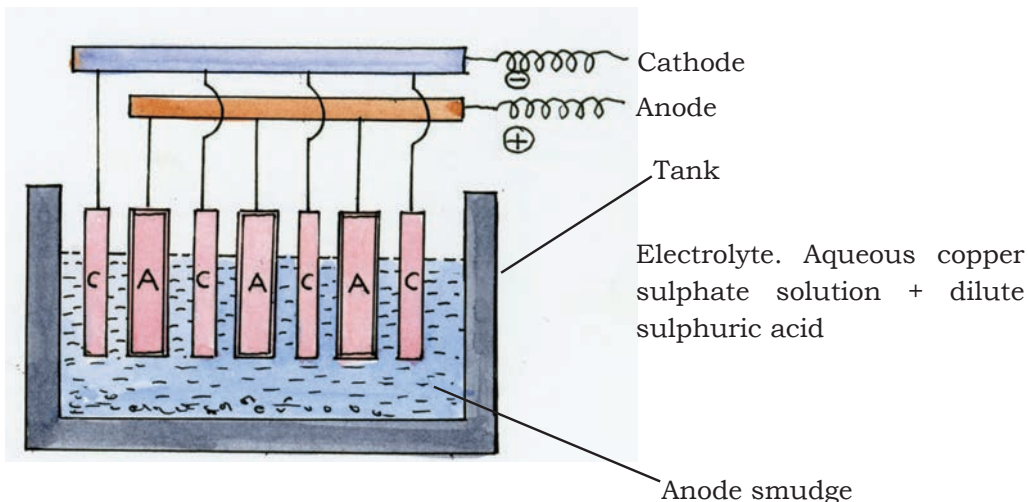
1. b) Aluminium
2. b) Aluminium
3. a) Is a slag
4. c) Copper and zinc
5. d) Aluminium oxide.
6. Coke
7. Aluminium
8. Reactants - CuSO_4 , Fe
Products - FeSO_4 , Cu ↓
9. $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
- 10.

Metals	Non Metals
Electron donors Form ionic bond covalent Displace Hydrogen Turn red litmus to blue.	Electron acceptor Form both ionic and bond Don't displace Hydrogen Turn blue litmus to red

11. 1) Concentration of ore
- 2) Roasting
- 3) Calcination
- 4) Purification of metals

12. 1) Stainless steel → Surgical instruments, utensiles.
- 2) Invar → It is used in precision measuring tapes
- 3) Brass - Electrical contact parts, Utensils and decorative articals.

13.



14. a) Alnico → Nickel + Cobalt + Iron + Aluminium
 - b) Nickel steel → Iron + Carbon + Nickel
 - c) Bronze → Copper + Zinc + Tin.
15. - Nlagarjuna's book 'Rasa ratnakara' which explains the Preparation of various metallic compounds, the extraction and purification of metals.
- Kutubminar constrction is an excellent exampl of an alloy of iron.
 - The world famons bidri art is the skill of producing arte facts of ornamental value.

Card No. 2
Ionic Conduction

Chapter -22

1. What is an Ion? Name the two types
2. What is electrochemical equivalent?
3. Write the relation between ECE and mass of the substance
4. Differentiate metallic conduction and electrolytic conduction. Give examples.
5. Differentiate strong and weak electrolytes. Give examples.
6. Write Faraday's laws of electrolysis
7. Sea water is a good conductor of electricity than drinking water. Why?
8. Write four applications of electrolysis
9. During electrolysis of water, gas liberated at Anode is
 - a) Carbondioxide
 - b) Oxygen
 - c) Nitrogen
 - d) Hydrogen
10. Does pure water conduct electricity? If not why?

Answer

1. Charged atoms are called ions.

Cation and anion

2. Electrochemical Equivalent is defined as the mass in grams liberated by unit current in unit time.

3. $ECE = \frac{\text{Mass of Substance liberated}}{\text{Current} \times \text{Time}}$

4.

Metallic conduction	Electrolytic Conduction
1. Physical change	1. Chemical change
2. Only electrons conduct electricity	2. Positive as well as negative ions conduct electricity
3. All metals and metallic alloys show metallic conduction	3. Ionic compounds show electrolytic conduction in aqueous solution

5. **Strong electrolyte**

- Complete dissociation in aqueous solution

Ex : NaCl

Weak electrolyte

- Partial dissociation in aqueous solution

Ex : CH_3COOH

6. **First law** : The mass of substance deposited or collected at either electrodes during electrolysis is proportional to the current and to the time.

Second law : The mass of different substances liberated by the same quantity of electricity are proportional to their chemical equivalent

7. Sea water contains sodium, chloride it converts seawater into electrodes, that's why it conduct electricity.
8.
 - 1) Electroplating
 - 2) Electrotyping
 - 3) Purification of metal
 - 4) Electro polishing.
9. b) Oxygen
10. No. Pure water is non electrolyte.

Chemistry Card No. 3
Periodic Classification of Elements

Chapter -3

- I.**
- 1 Why block 'd' elements are called transitional elements?
 2. Why the atomic number is more useful than atomic mass to classify the elements?
 3. Give any reason for New land's law of octave's failure.
 4. Name the group which have the complete similarity?
 5. Atomic number of Aluminum is 13. find its position in periodic table with help of electronic configuration.
 6. Name any two 'f' block elements.
 7. Sodium is electropositive . Verify.
 8. "Atomic size decreases across the period" .Give reason.
 9. In the first period Hydrogen and helium are not placed adjacent to each other. Give reasons.
 10. State the " law of triade" verify the law of the trade using the following elements.

Element	Atomic mass
Chlorine	35.5
Bromine	80
Iodine	127

11. In a trial of "A" "B" and "C" elements, If the atomic mass of "A" "B" and "C" are 150 and 200 respectively, the atomic mass of "A" is

- a) 100 b) 125 c) 250 d) 300

12. In a periodic table of 18th group in general

- a) form Ionic bond b) form covalent bond
c) form hydrogen bond d) do not form bond.

Answer

1. Elements where electrons of their atoms occupy ultimate shells leaving penultimate shells partially vacant are called Transitional elements.
2. Atomic number gives the number of protons or electrons in an atom, which determine the physical and chemical properties, not atomic mass.
3. It was not possible to extend the law after seventeenth elements.
4. Group No 17
5. $1S^2$, $2S^2$, $2P^6$, $3S^2$, $3P^1$, 3rd period 13th group.
6. Uranium, Plutonium, Thorium or any two.
7. Atomic No of Sodium is 11, so No proton(+)11, No electrons (-)11, electronic configuration is $1S^2$, $2S^2$, $2P^6$, $3S^1$,
8. Along a period there will be not be any change in the number of shells , but more electrons are added to the same shell and the nucleus exerts greater inward pull on the electrons. hence the atomic size decreases.
9. Outer most shell of Helium Atom is filled with electrons to the maximum capacity , Hence it the valency of this element is zero. Hence it is place in Zero group.

10. Three elements having similar properties and arranged them in increasing order of atomic mass. Average mass of first and third element is almost similar to that of second elements.

11. Atomic mass of B = Average mass of A and C

$$(a) \quad 100 \quad 150 = \frac{A+200}{2}$$

$$\begin{aligned} A &= 300 - 200 \\ &= 100 \end{aligned}$$

a) Atomic mass of A

12. d) Do not form bond.

Card No. 3

Silicon

Chapter -4

1. Name the scientist who proved sand is compound.
 2. Balance the equations given below:-
 - 1) $\text{SiO}_2 + \text{Mg} \longrightarrow \text{Si} + \text{MgO}$
 - 2) $\text{Si} + \text{H}_2\text{O} \longrightarrow \text{SiO}_2 + \text{H}_2 \uparrow$
 3. Name the silicon compounds which is used in the following:
 - a) Removal of hardness of water
 - b) Construction of house.
 - c) Manufacture of glass.
 - d) Insulators.
 4. What is doping? Why it is carried out?
 5. How is silicon carbide obtained? Write the chemical equation.
 6. The acid used to remove unreacted silica in extraction of amorphous silicon.
 - a) Hydrochloric Acid.
 - b) Hydrofluoric acid
 - c) Nitric Acid
 - d) Sulphuric acid
 7. Which silicon compound is used as ornament.
 - a) silicons
 - b) Zeolite
 - c) Zircon
 - d) silicon carbide.
-

Answer

1. Berzelius.
2. 1) $\text{SiO}_2 + 2\text{Mg} \longrightarrow \text{Si} + 2\text{MgO}$
2) $\text{Si} + 2\text{H}_2\text{O} \longrightarrow \text{SiO}_2 + 2\text{H}_2 \uparrow$
3. a) Zeolite
b) Sand
c) Sand
d) Silicones.
4. Trivalent or pentavalent elements is added into pure crystal of silicon or Germanium to produce semiconductor. The process is called doping.
To enrich the conductivity.
5. When a mixture of silicon and coke is heated in electric furnace silicon carbide is formed.
 $\text{Si} + \text{C} \longrightarrow \text{SiC}$
6. b) Hydrofluoric acid
7. c) Zircon

Card No. 2
Nuclear Energy

Chapter -10

1. Fusion reaction takes place at high temperature because.
 - a) Atoms are ionized at high temperature.
 - b) Nuclei of atoms break at high temperature.
 - c) Nuclei of atoms break at high temperature
 - d) High temperature helps to overcome repulsion between nuclei.
2. Exposure to high frequency ultraviolet light may cause.
 - a) Premature cataract.
 - b) Skin cancer.
 - c) Skin burns
 - d) All of the above.
3. Nuclear power reactor works on the principle of?
 - a) Exothermic reaction b) endothermic reaction
 - c) Controlled nuclear fission d) Thermo nuclear fusion
4. Write Einstein's mass-energy relation equation.
5. What is nuclear reactor?
6. Where do nuclear fusion reactions occur naturally?
7. Write the functions of the following.
 - a) Uranium 235
 - b) Cadmium rods

8. Calculate the energy in Joules. When 1 amu of mass gets converted into energy.
9. Write any three difference between nuclear fission and nuclear fusion.
10. State the precautions to be taken while handling nuclear reaction materials?
11. Differentiate between chemical reaction and nuclear reactions.

Answer

1. d) High temperature helps to over come repulsion between nuclei.
2. d) All of the above
3. c) Controlled Nuclear fission
4. $E = mc^2$
5. The device used to carryout the fission under controlled condition is called a nuclear reactor.
6. Sun and stars
7. a) Uramium 235 \longrightarrow Nuclear fuel
b) Cadmium rod \longrightarrow absorb neutrons
8. $1 \text{ a.m.u} = 1.66 \times 10^{-27} \text{ Kg}$
 $E = mc^2$
 $E = 1.66 \times 10^{-27} \times 3 \times 10^8 \times 3 \times 10^8$
 $= 14.98 \times 10^{11} \text{ Joules}$
- 9.

Nuclear Fission	Nuclear Fision
A heavy nucleus is split into two lighter nuclei. Can be controlled Not require high temperature.	Two or more lighter nuclei fuse to form a heavy nucleus. No mechanism to control. Require high temperature.

10. a) The radioactive matter is impregnated in glass slab and disposed in the deep sea in strong steel, containers.
- b) Lead jackets are worn by the workers of nuclear power stations.
- c) Nuclear waste is buried very deep underground.

11.

Chemical reactions	Nuclear reactions
1. Valence electrons of the atoms participate in the reaction.	1. Electrons of an atom have no role to play in nuclear reactions.
2. Nuclear of an atom does not undergo any change	2. Nuclear of the atoms undergo a change.
3. Products are predictable	3. Products depend upon conditions
4. Mass is conserved	4. Mass is converted into energy.

Card No. 2
Carbon & its compounds

Chapter -12

1. The following is an organic compound
 - a) Calcium carbonate
 - b) Sodium bicarbonate
 - c) Carbondioxide
 - d) Cetric acid
2. The Organic solvent is.
 - a) Water
 - b) Hydrogen peroxide
 - c) Hydrochloric acid
 - d) Carbon tetra substituted by
3. When the three atoms of H in methane are substituted by three chlorine atoms, we get.
 - a) DDT
 - b) Choloroform
 - c) Methyle alcohol
 - d) CFC (chloroflouro carbon)
4. The number of hydrogen atoms to be added to benzene to make its cyclo hexane is
 - a) Two
 - b) Three
 - c) Four
 - d) Six
5. C_4H_{10} is the molecular formula of
 - a) Methane
 - b) Butene
 - c) Butane
 - d) Propane
6. Why alkanes are chemically stable?
7. Name the reaction that is commonly used in the conversion of vegetable oils to fats.

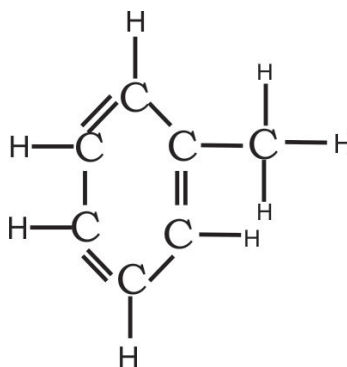
8. Write the molecular formula of Alkanes & Alkenes containing 4 carbon atoms.
9. Write the structural formula & molecular formula of Toluene?
10. State homologous series and confirm with an example.
11. Write the electronic configuration of carbon in excited state.
12. Differentiate between saturated and unsaturated hydrocarbons.
13. Write the significance of organic chemistry.
14. Name the simplest Amino acid present in proteins.
15. What are poly functional compounds?

Answer

1. d) Citric Acid
2. d) Carbon tetra chloride.
3. c) Chloroform
4. d) Six
5. c) butane
6. The alkanes are saturated compounds or single bond compounds.
7. Hydrogenation.
8. Alkanes Alkenes.



9. $\text{C}_6\text{H}_5\text{OH}$



10. Homologous series are the organic compounds with same general formula and successive members differs by $-\text{CH}_2$

Example C_5H_{12} Pentane



11. 1S^2 2S^1 2P^1 2P^1 2P_2^1



12.

Saturated Hydro carbons	Uncaturated Hydrocarbons
1. Single bond	1. Two or more bonds
2. $C_n H_{2n+2}$	2. $C_n H_{2n}$, $C_n H_{2n-2}$

13. Organic compounds used as Dyes Perfumes, Pharmaceutical etc.

14. Glycin

15. Organic compounds having more than one functional group is called poly functional group.

Card No. 3
Industrial Inorganic Chemistry

Chapter -11

1. The glass made by sandwiching then layer of synthetic vinyl plastic.
 - a) flint glass
 - b) safety glass
 - c) Lead glass
 - d) soda glass
2. leumics are used in electrical gadgetry because.
 - a) bad conductor of electricity
 - b) Good conductor of electricity
 - c) Semi conductor of electricity
 - d) All the above
3. $\text{CaCO}_3 + \text{SiO}_2 \longrightarrow$ _____
 - a) $\text{CaO} + \text{SiO}_3$
 - b) $\text{CaSiO}_3 + \text{SiO}_2$
 - c) $\text{CaSiO}_3 + \text{CaO}$
 - d) $\text{CaSiO}_3 + \text{CO}_2 \uparrow$
4. What is Ceramics?
5. What is the chemical composition of ordinary glass?
6. Paper absorbs water and oil. Why?
7. Write two merits of optical fibres?
8. Why the news paper turns yellow with age? Why is paper considered eco friendly?

9. Write any three properties of glass.

10. Write one use of the following glass :

- a) Soda glass
- b) Bohimaian glass
- c) Flint glass
- d) Boro silicate glass
- e) Safety glass.

Answer.

1. b) Safety glass
2. c) bad conductor of electricity
3. d) $\text{CaSiO}_3 + \text{CO}_2 \uparrow$
4. Materials prepared out of specific mud are called ceramics.
5. Soda ash, Limestone and sand.
6. Because it is porous in nature.
7. - It never corrodes.
- Can transmit more message at once.
8. In the presence of light and oxygen lignin reacts to give yellow material, that is why paper yellows with age because paper is biodegradable.
9. Properties of glass
 - Chemically resistant shiring
 - Can be coloured
 - Moulded into different shapes
 - transport
10. 1) Electric bulbs, jars preparation
 - 2) Lenses, neon sign tubings
 - 3) Laboratory apparatus
 - 4) In automobile and aeroplane as wind shield.

Card No.3
Industrial Organic Chemistry

Chapter - 13

1. The product formed when a pinch of sugar is strongly heated for fifteen minutes in a test tube.
 - a) Carbon and water
 - b) Carbon Hydroge and Oxygen
 - c) Carbondixced & water
 - d) Carbondioxede & Hydrogen vapour
2. The residue of sugar can from which the juice is extracted can be used to prepare.
 - a) Manace
 - b) Card borad
 - c) alchol
 - d) building material
3. During evapouration of cleaned sugar cane juice, pressure surrounding it is reduced to
 - a) increase the boiling point
 - b) maintain the boiling point to 373k
 - c) decrease the boiling point
 - d) increase the size of sugar crystal
4. What is celotex?
5. Sugar is used as preservative, Give reason.
6. What is molases? Mention its use in industry.
7. Write the balanced equation of molases fermentation.
8. Which gas is evolved during fermentation?
9. Write three steps involved in fermentation.
10. What is wort? How much Alchol is present in it? How it is enriched?

Answer

1. a) Carbon and water
2. b) Card board
3. d) Increase the size of sugar crystals
4. The cellulose materials of sugar cane residue is used as raw material to prepare card board is called as celotex.
5. Concentration of sugar doesnot undergoes fermentation so it is used as preservative.
6. During the extraction of sugar, the uncrystallied syrup is called molasis.
7.
$$\text{C}_6\text{H}_{12}\text{O}_6 \xrightarrow[\text{Zymase}]{\text{Enzyme}} 2\text{C}_2\text{H}_5\text{OH} + 2\text{CO}_2 \uparrow$$
8. Carbondioxide is evolved in fermentation
9.
 - a) Dilution of molasses by water
 - b) Addition of yeast
 - c) Distillation of fermented matter
10. The fermented matter is called wort.
It contains 6 to 10 percent Alcohol
By fractional distillation enrich the percentage of Alcohol.

Card-3

Metals

Chapter-15

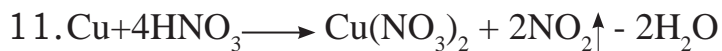
1. Lemon juice is normally served in ceramics or glass tumblers instead of metallic tumblers because.
 - a) Glass and ceramics are cheaper.
 - b) metallic containers react with the acids of lemon
 - c) Lemon juice produces combustible hydrogen gas with metallic tumbler.
 - d) Glass and ceramics keep the lemon juice cooler.
2. Four metals, P.Q.R.S react with water as given below.
 - i) P reacts with cold water
 - ii) Q reacts with hot water
 - iii) R reacts with steam
 - iv) Red hot S reacts with steam then highly reactive metal is
 - a) P b) Q
 - c) R c) S
3. Invar steel is used to make precision measuring tapes because.
 - a) Its coefficient of linear expansion is more
 - b) Its least coefficient of linear expansion
 - c) It is not affected by chemicals
 - d) Durability is more.
4. The following element forms cations.
 - a) Sulphur b) carbon c) Manganese d) Iodine

5. When a copper foil is heated in a flame, a black layer is seen on the copper foil. This is due to the formation of.
 - a) Soot on the surface of the foil.
 - b) Sulphide of copper on the foil.
 - c) An oxide of copper on the foil.
 - d) A carbonate of copper on the foil.
6. Name the chief ore of copper?
7. Write the chemical name of rust.
8. What is roasting?
9. Give reasons.
 - a) Sodium kept in kerosene.
 - b) Iron is called 'King of Metals'
10. What are alloys? Give two examples.
11. What is the reaction of copper with concentrated nitric acid?
12. Name the ore which occurs in Chitradurga district.
13. Write the balanced equation when aluminium reacts with chlorine gas.
14. Name the metals which occur free in state.
15. Draw a neat labelled diagram of a blast furnace.

Answer

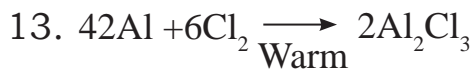
1. b) Metallic containers reacts with the acids of lemon
2. a) P
3. b) It's least co-efficient of linear expansion
4. c) manganese.
5. c) An oxide of copper on the foil.
6. Copper pyrites
7. Hydrated ferric oxide ($\text{Fe}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$)
8. Roasting is a process of heating the ore just below its melting point in the presence of air.
9. a) Sodium is highly reactive element it forms oxides, hydroxide and carbonate with oxygen, water vapour and carbon dioxide in air.
10. Alloy is a homogeneous mixture of two or more metals in suitable proportion.

Example: Steel, Brass



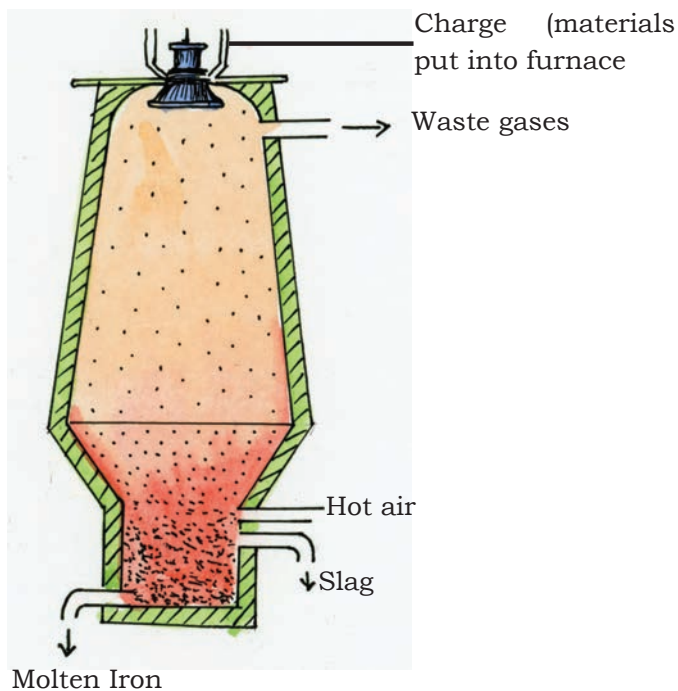
copper con nitric acid copperrnitrate + nitrogendioxide+water

12. Copper Pyrites



14. Gold and plantinum

15.



Card-3
Ionic Conduction

Chapter-22

1. Define electrolysis with an example.
2. Explain Arrhenius theory of Dissociation.
- 3) ECE of gold is 0.0006812. what do you mean by this?
4. How long should a current of 3 Ampere be applied through a solution of silver nitrate to coat a metal surface of 80cm^2 with 0.005cm thick layers? Density of silver is $10.59/\text{cm}^3$
5. What mass copper could be deposited from a copper II. Sulphate solution using a current of 0.50 A over 10 seconds?
6. How much time is required to deposit 1.10g of copper by passing 0.5 Ampere of current. (If ECE of Cu is 0.00033g/coulomb)
7. Sodium chloride conducts electricity in fused state why?
8. Compare the flow of electricity through copper metal and copper sulphate solution.
9. How do you account for loss of copper from solution during electroplating of copper?
10. Write chemical change occurred at Anode and Cathode during electrolysis of CuCl_2

Answer:

1. The chemical reaction caused by electricity is called electrolysis.

Ex. Dissociation of copper-sulphate.

2. Arrhenius proposed the theory of electrolyte dissociation. According to this theory the molecules of an electrolyte in aqueous solution break into ions and travel more about in the bulk of the solution.
3. It means 0.000681₂ of gold is deposited when 1 ampere current is made flow in a solution for 1 second.

4. Mass of silver to be deposited

$$= \text{Volume} \times \text{Density}$$

$$= \text{Area} \times \text{thickness} \times \text{Density}$$

Given : Area = 80cm², Thickness = 0.0005cm and
density = 10.5 g/cm³

$$\begin{aligned}\text{Mass of silver to be deposited} &= 80 \times 0.0005 \times 10.5 \\ &= 0.42\text{g}\end{aligned}$$

$$\text{Applying to silver } E = Z \times 96500$$

$$Z = \frac{108}{96500 \text{ g}}$$

Let the current be passed for t seconds We know that

$$\text{So } 0.42 = \frac{108}{96500 \times 3 \times t}$$

$$t = \frac{0.42 \times 96500}{(108 \times 3)} = 125.09 \text{ Seconds}$$

5. Calculate the quantity of electricity

$$Q = I \times t$$

$$I = 0.50\text{A}$$

$$T = 10 \text{ Seconds}$$

$$Q = 0.50 \times 10 = 5.0$$

6. $z = 0.00033$

$$T = ?$$

$$I = 0.5 \text{ ampere}$$

$$M = 1.10\text{g}$$

$$M = ZIT$$

$$t = \frac{M}{ZI} = \frac{1.10}{0.00033 \times 0.5}$$

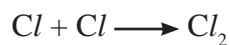
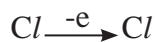
$$= 6666.66 \text{ Seconds.}$$

7. In fused state, the electrostatic forces between the sodium and chloride ions are weakened; such that ions can migrate towards oppositely- charged electrodes , and therefore fused sodium chloride conducts electric current.
8. A metal conducts electric current due to the migration of electrons where as electrolyte conducts electric current due to the migration and discharge of cations and atoms.
9. From the other plate an equal amount of copper gets discharged in the solution. Thus the loss of copper from the solution gets compensated and the process keeps going . this means that copper gets transferred from one plate to another.

10. On platinum cathode, a reddish layer of copper is deposited



On carbon anode, carbon dioxide gas is formed due to the discharge of OH^{-} ions.



Card I

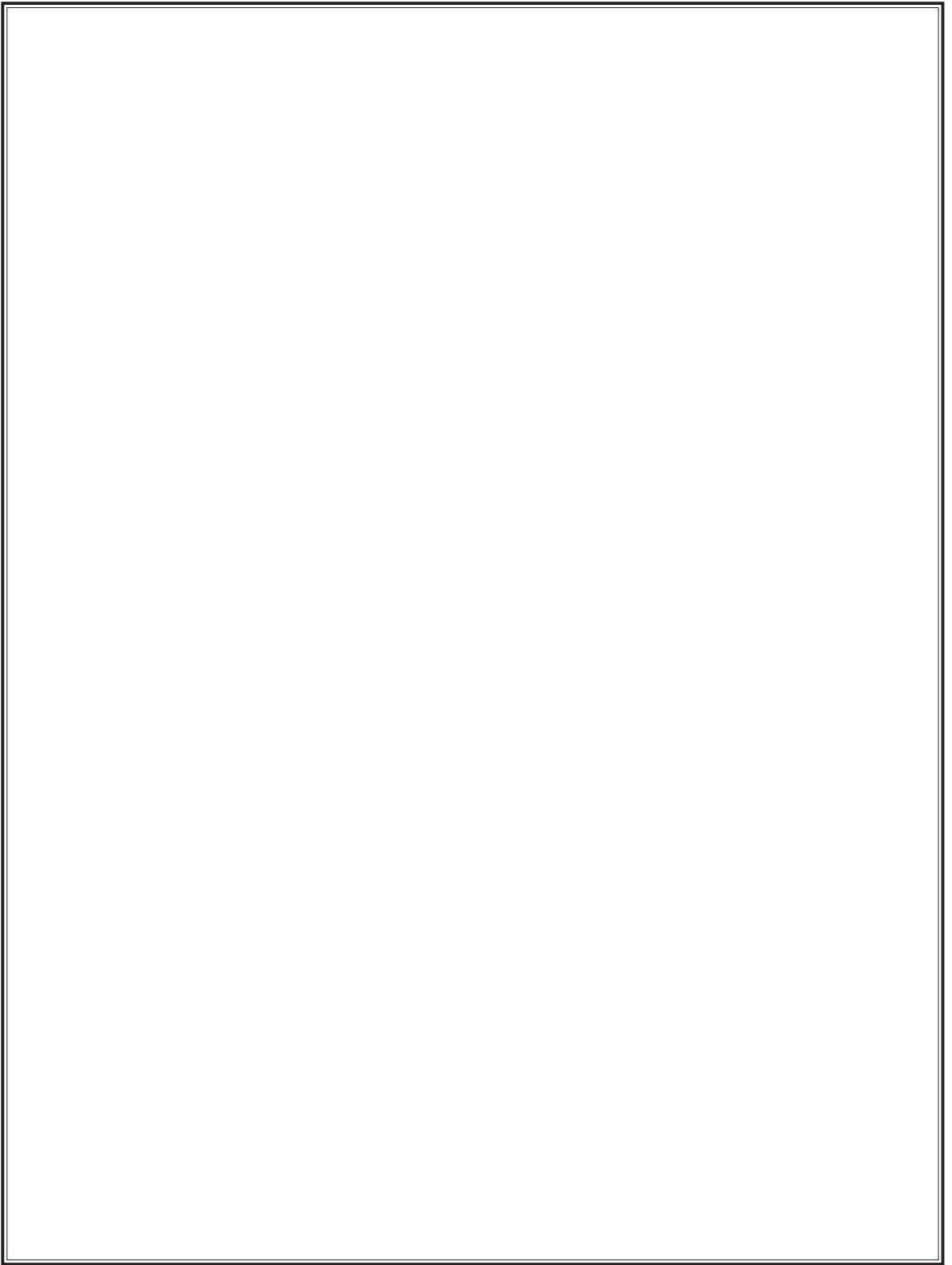
Biology

**Unit Wise Questions and
Answers Book Let**

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Chapter - 1
ENVIRONMENTAL ISSUES
(QUESTIONS)

Card I

I Choose the correct answer

1. Identify from the following a bio degradable pollutant
 - a) Oxides of Sulphur
 - b) Sewage water
 - c) Lead compounds
 - D) Pesticides.
2. Which of the following is the most hazardous air pollutant?
 - a) Oxides of Nitrogen
 - b) carbon dioxide
 - c) carbon monoxide
 - d) oxides of sulphur
3. Which of the following chemical element responsible for breaking down ozone in the atmosphere
 - a) mercury
 - b) carbon
 - c) lead
 - d) chlorine
4. Cigarette smoke has a high content of
 - a) carbon dioxide
 - b) hydrocarbons
 - c) sulphur dioxide
 - d) carbon monoxide.

II Answer the following questions

1. What are biodegradable pollutants? Give one example.
2. What are Non – biodegradable pollutants? Give one example.
3. What is air pollution?

4. What is sound pollution?
5. What is Radio active pollution?

III Answer the following questions

6. Mention any four reasons for air pollution.
7. Mention any two reasons for water pollution.
8. Write any two reasons for radioactive pollution.
9. Name the pollutants responsible for underground water pollution.
10. Mention any four sources of sound pollution.
11. Mention any two reasons for Soil pollution.

Chapter - 1

ENVIRONMENTAL ISSUES

(ANSWERS)

Card I

I Choose the correct Answer

1. b) Sewage water
2. c) carbon monoxide
3. d) chlorine
4. d) Carbon monoxide

II Answer the following questions.

1. Such pollutants that can be degraded by biological activity are called biodegradable pollutants. Eg : Sulphur Dioxide.
2. Such Pollutants which cannot be converted into harmless constituents are called non – biodegradable Pollutants. Eg : DDT
3. Any human activity that brings about significant changes in the atmosphere is called air pollution.
4. Any sound which causes unpleasant effects and discomfort to human ears is called sound pollution.
5. Emission of protons, Electrons and Gama rays due to disassociation of atomic nuclei of some elements. Such emissions also cause pollution called radioactive pollution.

III Answer the following questions.

6. Coal Combustion
Disel Combustion

Petrol Combustion

Smoking of Tobacco.

7. Industrial Effluents.

Sewage Water

8. Mining and refining of radio active substances like uranium and thorium.

Disposal of nuclear wastes.

9. Lead, Arsenic and fluoride

10. The gadgets used at home like mixer and grinder.

Transport vehicles especially aircraft

Commercial and industrial Activities.

Social and Public events.

11. Chemical fertilizers

Residues of pesticides.

Chapter - 2
GREEN PLANTS AND CHORDATES
(QUESTIONS)

Card I

I Choose the correct answer

1. Identify an example of red algae from the following
 - a) Polysiphonia
 - b) Spirogyra
 - c) sargassum
 - d) Ectocarpus
2. In Reptiles the heart is
 - a) Two chambered
 - b) incompletely four chambered
 - c) Three chambered
 - d) Four chambered
3. Identify the odd one.
 - a) Calotes
 - b) salamander
 - c) Chameleon
 - d) Varanus
4. Ulothrix is an example of
 - a) Red algae
 - b) brown algae
 - c) green algae
 - d) unicellular algae
5. Aortic arch in birds is
 - a) on the right side
 - b) on both the sides
 - c) on the left side
 - d) absent
6. A flightless bird among the following is
 - a) Swan
 - b) Flemingo
 - c) Hawk
 - d) Kiwi

II Answer the following questions

7. What are sea weeds?
8. What is Thallus?
9. Give two examples of Red algae.
10. Give two examples of Brown Algae.
11. Give two examples of Green Algae.
12. What are Rhizoids?
13. What is Chordata?
14. What is metamorphosis?
15. What are Pneumatic bones?
16. Name any two egg laying mammals.
17. What is inflorescence?
18. Name the amphibious plants of king dom Plantae.

III Answer the following questions

19. What is the difference between Gymnosperms and Angiosperms.
20. Mention the important differences between monocot and Dicot plants.
21. Mention any four characteristic features of Fishes.
22. Mention any four characteristic features of Amphibians.

Chapter - 2
GREEN PLANTS AND CHORDATES
(ANSWERS)

Card I

I Choose the correct Answer

1. a) Polysiphonia.
2. c) Three chambered
3. b) Salamander
4. c) green algae
5. a) on the right side
6. d) Kiwi

II Answer the following questions.

7. The largest and most complex forms of algae are marine and are commonly called sea weeds. Eg. Sargassum
8. The body of multicellular algae is flat and called thallus.
9. a) Batrachospermum b) Polysiphonia
10. a) Sargassum b) Ectocarpus.
11. A) Spirogyra b) ulothrix
12. The root like structures of Bryophytes are called Rhizoids.
13. Animals with notochord are called chordates.
14. In amphibians the changes that takes place from larva to an adult is called metamorphosis.
15. In birds many bones are filled with air called pneumatic bones.

16. Platypus and echidna.
17. A special branch bearing a cluster of flowers is called inflorescence.
18. Bryophytes

III Answer the following questions.

19. Gymnosperms: Seeds are not enclosed by a fruit like structure. Eg : cycas.

Angiosperms: Seeds are enclosed by a fruit like structure. Eg : Mango, Neem.

20. Monocot plants

Dicot plants

- | | |
|---|---|
| a) They have only one cotyledon | a) They have 2 cotyledons. |
| b) Fibrous root system is present | b) Tap root system is present. |
| c) Leaves have parallel venation. | c) Leaves have reticulate venation. |
| d) During germination the cotyledon remains below the soil. | d) During germination the cotyledons appear above the soil. |

21. * The streamlined body is divisible into head, trunk and short tail.

* Body has an exoskeleton composed of dermal scales.

* Respiratory organs are in the forms of gills.

* Heart is two chambered

22. * The body is divisible into head, trunk and tail.

* There is no exoskeleton. Skin is smooth and moist.

* Heart is three chambered.

Respiratory organs are gills in the lerva and a pair of lungs in the adult.

Chapter - 3

PLANTS AND ANIMAL TISSUES

(QUESTIONS)

Card I

- I Choose the correct answer**

6. What is Histology ?

7. Which is the growth tissue in plants ?
8. Which is the water conducting tissue in plants?
9. Which is the food conducting tissue in plants?
10. What is a neuron?

III Answer the following questions

11. Write the structure and function of parenchyma tissue .
12. Name the four types of cells of xylem
13. Name the four types of cells of phloem
14. Mention the four types of animal tissues.
15. Name the three types of connective tissue.
16. Mention the function of Adipose tissue.
17. Name the blood constituents and write their function.
18. Name the two types of white blood cells.

Chapter - 3
PLANTS AND ANIMAL TISSUES
(ANSWERS)

Card I

I Choose the correct Answer

1. b) chlorenchyma
2. a) Sieve tubes
3. d) Both water and minerals
4. e) Adipose tissue
5. b) Permal tissue

II Answer the following questions.

6. The branch of biology which deals with the study of tissues and their organization is called histology
7. Meristamatic tissue.
8. Xylem
9. Phloem
10. The structural and functional unit of nervous tissue.

III Answer the following questions.

11. Structure of parenchyma
 - a) Cells are thin walled any living.
 - b) Cells are capable of cell division
 - c) Cells are round, elongated, polygoral or shapeless.

Function : Helps in photosynthesis.

12. Xylem parenchyma

Xylem fibres

Xylem vessels

Tracheids.

13. Phloem parenchyma

Phloem fibres

Sieve tubes

Companion cells

14. Epithelial tissue

Muscular Tissue

Connective Tissue

Nerve Tissue

15. Loose connective Tissue

Dense Connective Tissue

Fluid Connective Tissue

16. This tissue provides insulation against cold and protects the body like a shock absorber.

17. Constituents of blood function

a) Plasma : Facilitates movement of the material across the cell

b) RBC : It helps in the trans port of oxygen to all cells. It brings back CO_2 from cells to lungs.

c) WBC : Destroys disease causing microbes.

d) Platelets: Helps in clotting of blood.

18. a) granular leuco cytes

b) a granular leuco cytes.

Chapter - 4

MICROBIAL DISEASES

(QUESTIONS)

Card I

I Choose the correct answer

1. Joint pain is one of the symptoms of the disease.
 - a) Bird flu
 - b) syphilis
 - b) Chickungunya
 - d) Hepatitis.
2. One of the following is a bacterial disease
 - a) Gonorrhoea
 - b) Genital Herpes
 - c) AIDS
 - d) Dengue.
3. The organ infected by Hepatitis 'B' Virus is
 - a) Heart
 - b) Kidney
 - c) stomach
 - d) liver

II Answer the following questions

- 1) Which disease is caused by the mosquitoes *Aedes aegypti*?
- 2) What does the person suffering from chikungunya complain of ?
- 3) Name the bacterium responsible for the disease syphilis.
- 4) Which bacterium causes Gonorrhoea?
- 5) Name the virus which causes genital warts.

III Answer the following questions

1. Classify the following diseases according to the infection caused by virus and bacteria respectively.

- a) Chickmungunya b) syphilis c) Avian flu d) gonorrhoea e) AIDS
f) Hepatitis –B
2. What does makonde mean? Name the virus which causes chickungunya
 3. What preventive methods do you follow for not spreading of chikungunya?
 4. Write the symptoms of Avian Flu. How does it spread?
 5. What measures do you take to prevent spreading of Avian flu?
 6. Expand AIDS which is the virus responsible for this infection?
 7. Write the modes of transmission of HIV
 8. Write the ways by which AIDS do not be spread.

Chapter - 4

MICROBIAL DISEASES

(ANSWERS)

Card I

I Choose the correct Answer

- 1) Chikungunya
- 2) Gonorrhea
- 3) Liver

II Answer the following questions.

- 1) Chikungunya
- 2) Complain of pain in joints for a long time
- 3) Bacterium – Treponema pallidum
- 4) Bacterium – Neisseria gonorrhoeae
- 5) Human papilloma virus – HPV

III Answer the following questions.

- | | |
|--------------------|---------------|
| 1. <u>Bacteria</u> | <u>Virus</u> |
| * Syphilis | * chikungunya |
| * Gonorrhea | * AIDS |
| | * Hepatitis |
| | Avial Flu |
-
2. Makonde Means “that which bends up” – CHICK –V (Alpha virus)
alpha (α) Virus.

3. - Avoid stagnation of water so that mosquitoes are avoided.
 - Spray insecticides to kill larvae of mosquitoes.
 - Wear long sleeved and full length garment
 - Use safe mosquito repellents and mosquito nets to prevent mosquito bite.
- 4) - Cough, diarrhoea, difficulty in breathing.
 - Fever more than 38°C, head ache, muscle pain.
 - Running nose and sore throat. The disease, spread simply by touching contaminated surfaces.
- 5) - Avoid visiting bird markets of infected areas.
 - People who work with birds should use protective clothing and breathing masks.

Avoid using partially cooked and uncooked meat.
- 6) -AIDS – Acquired Immuno Deficiency Syndromke
 - HIV – Immuno deficiency virus.
- 7) -Sexual contact with an infected blood.
 - Transfusion of infected blood.
 - Sharing of needles and syringes with an infected person.
 - From an infected mother to the embryo through placenta.
- 8) AIDS do not spread
 - By sharing food
 - By bed linen, telephones, combs or towels.
 - In swimming pools
 - Travelling or by shaking hands or working with infected persons.
 - By kissing or hugging infected persons
 - From toilet seat
 - By mosquitoes files and other insects.

Chapter - 5

PLANTS AND ANIMAL BREEDING (QUESTIONS)

Card I

- ## I Choose the correct answer

II Answer the following questions

4. What are kharif Corps ?
5. What are rabi Crops?
6. What is a plant variety?
7. Which chemical substance is used in polyploidy?
8. What is Animal husbandary?
9. Which technology is used in genetic modification?
10. Mention anyone disadvantage of hydroponics.

III Answer the following questions

11. What is Tissue culture? Mention its uses.
12. What is Genetic modification?
13. Give four examples for genetically modified plants.
14. What is hydroponics? Write its advantages.
15. Mention the uses of Roof Top gardening.
16. Name the three types of breeds of cow in our country. Give two examples for each.

Chapter - 5
PLANTS AND ANIMAL BREEDING
(ANSWERS)

Card I

I Choose the correct Answer

1. b) Karan Fires
2. d) Hydroponics
3. c) vitamin A

II Answer the following questions.

4. Crops that are raised in rainy seasons and harvested at the end of monsoon season.
5. Crops that are raised in winter season and harvested in the summer.
6. The term variety is used to describe a group of plants similar in their gene composition but differing in a few characteristics.
7. Colchicine.
8. The various aspects related to feeding, breeding, caring and sheltering of animals in the service of mankind together constitute animal husbandary.
9. Recombinant DNA Technology.
10. In Hydroponic plants fertility is lower and growth is very slow.

III Answer the following questions.

11. Tissue culture is the practice of growing plant cells and tissues in a suitable culture medium under controlled laboratory conditions.

Advantages of Tissue culture

- * Tissue culture is extensively used for large scale propagation of medicinal and ornamental plants.
 - * It is also used for propagating crop and forest plants.
 - * Tissue culture is also used for developing disease free plants.
 - * Cell culture is used particularly for the extraction of many useful metabolites.
12. Instead of randomly mixing genes as in conventional plant breeding, a specific gene responsible for a desired trait, is selected and introduced directly into the new plant variety. This is called genetic modification.
13. a) Bt. Cotton b) flavr savr Tomato
c) golden rice d) corn.
14. There is a practice of growing plants in mineral nutrient solutions in water without soil. It is called hydroponics.

Advantages: * Soil is not required

- * Yields are stable and high.
 - * Plants grow much healthier.
15. * It increases access to safe outdoor green space.
- * It improves air quality due to increased absorption of carbon dioxide.
 - * It provides habitat for butterflies and birds.
 - * It becomes a source of recreation.
 - * It encourages urban food production.

16. A) Indigenous breed: Sindhi, Sahiwal, Gir.
B) Exotic breeds: Jersey, Holstein, Brownswiss.
c) Cross breeds: Karan Swiss, Karan fries, Frieswal.

Chapter - 6
CONTROL AND CO-ORDINATION IN
PLANTS AND ANIMALS
(QUESTIONS)

Card I

I Choose the correct answer

1. Hormone that has iodine and Amino acids.
a) Pituitary hormone b) Thyroxin
c) Parathormone d) Cortisone
2. One of the following is a plant growth inhibiting hormone
a) Auxin b) Gibberellins
c) Ethylene d) Cytokinins.
3. Deficiency of Parathormone leads to
a) Myxedema b) Cretinism
c) Acromegaly d) Painful Muscle Cramps
4. A Thin, transparent layer that covers the front part of the eye ball is
a) Retina b) Sclera
c) Choroid d) Conjunctiva
5. The light sensitive layer of human eye is
a) Cornea b) Retina
c) Sclera d) choroid

II Answer the following questions

6. What is irritability?
7. Name the endocrine glands in the human body.
8. Name the hormones secreted by adrenal glands.
9. Write the function of cerebro spinal Fluid.
10. Name the two parts of Forebrain.
11. Name the two types of nerve fibres present in spinal cord.
12. Name the three parts of human eye
13. Name the two fluids present in the eye.
14. Name the two parts of outer ear.
15. Name the three small bones of the middle ear
16. What are the two parts of inner ear?

III Answer the following questions

17. What are phyto hormones? Name the two types of phyto hormones.
18. How are Dwarfism and Gigantism caused?
19. Name the hormone secreted by Thyroid gland. Write its function.
20. What is simple Goitre? What are its symptoms?
21. How is myxedema caused? Write its symptoms.
22. Name the hormone secreted by parathyroid glands. Write its function.
23. Name the hormones secreted by Islets of Langerhans. Write their function.
24. Mention any two importances of nervous system.
25. Name the three types of neurons and write their function.

26. What is meninges? Name the three layers of meninges.
27. For what activities does cerebrum is the centre?
28. Write the functions of the following parts of Hind brain. : a) Cerebellum
b) Pons c) Medulla oblongata.
29. What is reflex action? Give one example.
30. What is the difference between sympathetic and para sympathetic nervous system?
31. Mention the function of the following accessory parts of the eye a) Lachrymal glands b) conjunctive.
32. Write the function of the following parts of eye a) Cornea b) Iris
c) Lens.
33. What is the accommodation of the eye?
34. What are short sightedness and long sightedness? How can they be corrected?
35. What is Glaucoma? How can it be cured?
36. Mention the cares of the eye
37. Write the function of Eustachian canal.
38. Mention the cares of the ear.
39. What is the function of factory nerve?
40. Where are the taste buds of four tastes located in human tongue?
41. Mention the cares of the skin.

Chapter - 6
CONTROL AND CO-ORDINATION IN
PLANTS AND ANIMALS
(ANSWERS)

Card I

I Choose the correct Answer

- 1) b) Thyroxin
- 2) c) Ethylene
- 3) d) Painful muscle cramps
- 4) d) conjunctiva
- 5) b) Retina

II Answer the following questions.

6. All living things have a basic tendency of showing responses to changes in the environment. This is called irritability.
7. Pituitary gland, Thyroid gland, parathyroid glands, Adrenal glands, Islets of Langerhans and gonads.
8. Adrenal cortex secretes the hormone cortisone. Adrenal medulla secretes the hormones adrenalin, nor adrenaline and dopamine.
9. cerebro spinal fluid keeps flowing between brain and spinal cord and gives nourishment.
10. a) cerebrum
b) Diencephalon.

11. a) Sensory nerve fibres
b) motor nerve fibres.
12. Sclera, choroid and Reina.
13. Aqueous humour and vitreous humour.
14. ear lobe (Pinna) and auditory canal.
15. Malleus Incus and stapes.
16. Utriculus and sacculus.

III Answer the following questions

17. Plant hormones are also called phytohormones.

Types : a) Plant growth promoters. Eg : auxins.

b) Plant growth inhibitors eg : Ethylene.

18. Dwarfism is caused due to less secretion of growth hormone prior to sexual maturity.

Gigantism is caused due to excess secretion of growth hormone prior to sexual maturity.

19. Thyroxin is the hormone secreted by thyroid gland.

Thyroxin influences the rate of metabolism, increases the heat and promotes the mental and physical development of the body.

20. Simple Goitre is a disorder caused due to deficiency of iodine in the diet.

Symptoms : people with swollen neck.

21. myxedema is caused due to the underactivity of thyroid gland in adults.

Symptoms : loss of mental and physical vigour,

increase in the body weight,

Thickening of the skin and lower rate of heart beat.

22. Parathormone is the hormone secreted by parathyroid glands.
This hormone regulates the amount of calcium salts in blood and bones.
23. Insulin and glucagon are the hormones secreted by Islets of langerhans.
Insulin promotes the conversion of glucose into Glycogen which is stored in liver and muscles.
Glucagon promotes the conversion Glycogen into Glucose.
24. * Nervous system controls and coordinates various activities and functions of different organs and organ systems in the body.
* It regulates both voluntary and involuntary activities of the body.
25. Sensory neuron : It carries impulses from receptors to brain or spinal card.
Motor neuron : It carries impulses from brain or spinal card to effectors.
mixed neuron : It carries both stimulus and response impulses.
26. Both brain and spinal card aee surrounded by three membranes collectively called meninges. The three layers of meninges are outer duramater, middle arachnoid and inner piamater.
27. cerebrum is the centre for intelligence, imagination, emotions, reasoning and will power.
28. a) cerebellum is responsible for maintenance of the balance of the body.
b) pons regulaes mastication, facial expression and respiration.
c) medulla oblongata is concerned with involuntary activities like breathing, heart beat, movements of the digestive tract. It is also involved in the secretion of enzymes and maintaing blood pressure.
29. A kind of sudden and involuntary response of the body is called reflex action.
eg : when we touch a hot pan, we will scream and with draw our hands.

30. Sympathetic and para sympathetic nervous systems control opposite actions of parts or organs of the body. For example : When sympathetic nervous system stimulates the dialation of pupil of the eye parasymphathetic nervous system controls the contraction of the same.
31. a) Lacrymal glands secrete tear to wash dust and dirt.
b) conjunctiva protects the cornea of the eye.
32. a) cornea acts as outer lens of the eye.
b) Iris has pigment cells that are responsible for different colours of the eyes.
c) Lens focusses the image of the object on retina.
33. When we see a nearer object, the convexity of the lenses increases and the eye ball gets bulged when we see a distant object the convexity of the lens decreases and the eye ball becomes flat. This capacity of the lens to alter its focal length in order to focus the light rays in called accommodation of the eye.
34. Short sightedness is a condition where a person is able to see the nearer objects clearly but not the distant objects. This defect can be corrected by using a concave lens of suitable focal length.
- Farsightedness is a condition where a person is able to see the distant clearly but not the nearer objects. This defect can be corrected by using a convex lens.
35. Some people who are aged above 40-45 years may be suffering from a serious disease of the eye which would often lead to total blindness. This is called Glaucoma. This can be cured in early stages by medicines and in advanced stages, a surgery may be required.
36. * Do not strain eyes by reading books with very small letters in dim light for long time.

- * Avoid direct bright light.
 - * Eyes should be washed with clean and cold water at least twice a day
37. Eustachian canal helps in equalising the air pressure on either side of the ear drum.
38. *Wax produced in auditory canal must be regularly removed using safe ear buds. sometimes it becomes hard. It should not be removed using hard and sharp objects which may damage the eardrum. Consult the ear specialist.
- * Loud noise should be avoided as it may hamper hearing. Plug the ears with soft cotton or use ear plugs.
 - * Common cold or throat infection sometimes leads to the infection of the middle ear. Consult the ear specialist.
39. olfactory nerve carries the smell impulses to the olfactory centre of cerebrum.
40. Taste buds for sweet are located in front, those of salt at anterior edges, those for sour at sides and those for bitter are located in the posterior region of the tongue.
41. Avoid any injury or wound on the skin as it leads to infection. Treat the wound immediately with antiseptic lotions.
- * if you get skin disease like ring worm, consult the dermatologist.
 - * Cover the skin with warm clothing during winter.

Chapter - 7

HEREDITY (QUESTIONS)

Card I

I Choose the correct answer

1. The ratio of plants obtained in dihybrid cross experiment is
 - a) 3:1
 - b) 9:1:3:1
 - c) 3:1:9:1
 - d) 9:3:3:1
2. The Genetist who conducted hybridization experiments on Four "o" clock plant is.
 - a) Carlcarrens
 - b) Mendel
 - c) mendeleeve
 - d) Darwin
3. The Scientist who developed first cloned sheep is
 - a) Johnson
 - b) Carl Correns.
 - c) mendel
 - d) wilmut

II Answer the following questions

- 4, What is genetics?
5. who is the father of modern genetics?
6. What is monohybrid cross?
7. What is dihybrid cross?
8. What is DNA replication?
9. Define Biotechnology.
10. What is genetic engineering?
11. What is cloning?

III Answer the following questions

12. What is heredity?
- 13 Define a) Law of segregation
b) Law of independent assortment
14. What are genes? Who introduced this for the first time?

Chapter - 7

HEREDITY (ANSWERS)

Card I

I Choose the correct answer

1. d) 9:3:3:1
2. a) carlcorrens
3. d) wilmur

II Answer the following questions

4. Genetics is a branch of biology which deals with a systematic study of Heredity, variations and factors responsible for these.
5. Gregor Johann mendel.
6. A Cross between two pea plants which differ in one specific character is called monohybrid cross.
7. A cross between two pea plants which differ in two pairs of contrasting characters is called dihybrid cross.
8. During the interphase before the cell divides DNA found in every chromosome, replicates to ensure equal distribution of the genetic material to the future daughter cells. This process is called DNA replication.
9. The application of technological procedures on organisms or their process or their products to obtain new substances for human welfare is called Biotechnology.
10. Genetic engineering is the technique of inducing desirable changes in the gentic material such as DNA of an Organism

11. Cloning is the technique of developing genetically similar molecules, cells, tissues or organism from a common precursor in vitro laboratory condition.

III Answer the following questions

12. Heredity is the inheritance of parental characters by their off springs.
13. a) The Pair of factors for a given character separates in equal ratio at the time of gamete formation during meiosis. It means that a gamete can carry a factor responsible for only one form of a character
b) Factors controlling separate characters normally move independent of each other during gamete formation. So combinations. Of characters which are not present in the parental forms are produced in the next generation
14. A part of DNA which gives instructions for making a given kind of protein is called a gene genes help in the inheritance of characters from parents to children.

Johnson introduced the term genes for the first time.

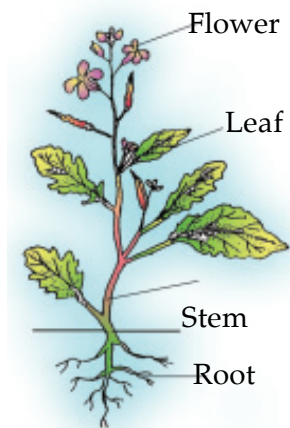
Figures to be Practiced

Compulsorily for card – 1

Card -2, and Card – 3

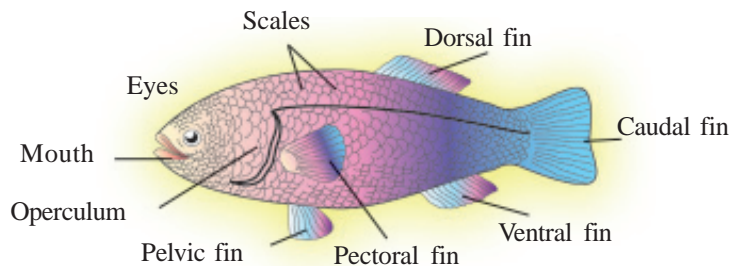
1. Dicot Plant

Ans.

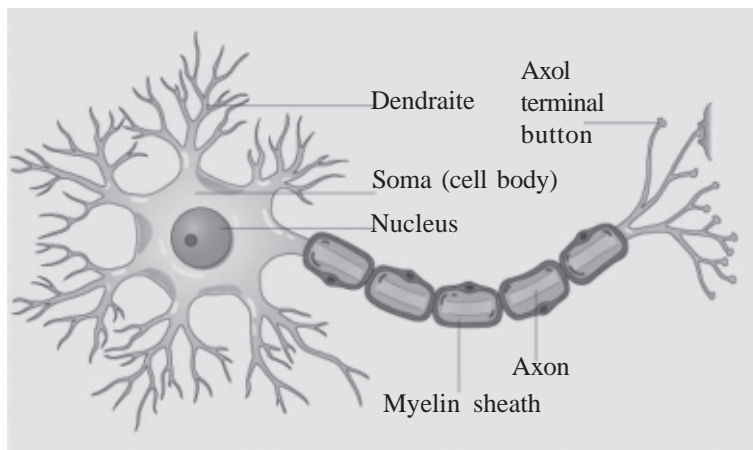


2. External Features for a Fish.

Ans.

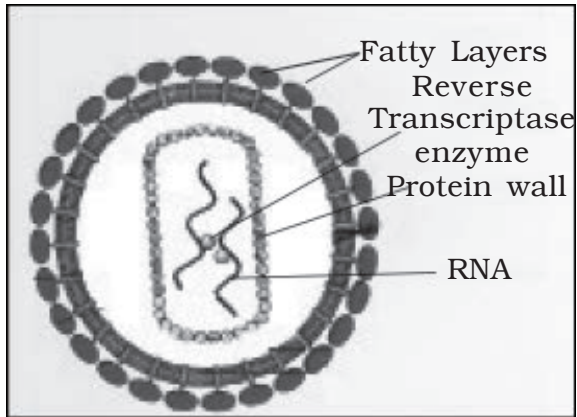


3. A Neuron



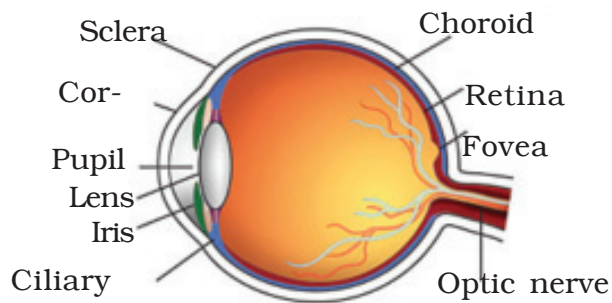
4. Structure of HIV

Ans.



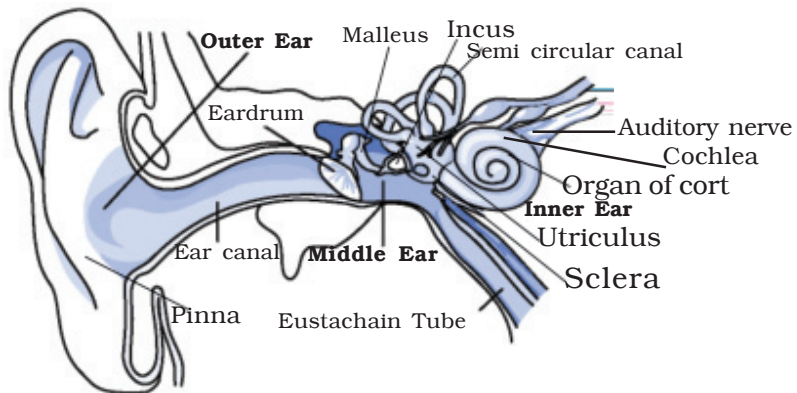
5. V.S. of Human Eye

Ans.



6. Internal Structure of Human Ear

Ans.



Chapter - 8

THE STORY OF HUMANS (QUESTIONS)

Card I

I Choose the appropriate one:

- 1) In the year 1859, Charles Darwin, a scientist published a book called.....
 - (a) Unto the last
 - (b) King Lear
 - (c) My experiments with truth
 - (d) The Descent of Man
- 2) The most reliable and direct evidence for evolution comes from the study of
 - (a) Monuments
 - (b) Coins
 - (c) Fossils
 - (d) Epics
- 3) Modern apes are presumed to have evolved from
 - (a) Dryopithecus
 - (b) Ramapithecus
 - (c) Zinzanthropus
 - (d) Australopithecus
- 4) Published the book 'theory of natural selection.'
 - (a) Sir Isac Newton
 - (b) Charles Darwin
 - (c) Alexander Fleming
 - (d) J. Gregor Mendal.
- 5) The most reliable and direct evidence for evolution comes from the study of.....
 - (a) Text books
 - (b) Biographies
 - (c) Fossils
 - (d) Epics
- 6) Eskimos are.....
 - (a) Caucasoids
 - (b) Australoids
 - (c) Capoids
 - (d) Mongaloids

II The story of Humans .

1. We are all observing a great diversity on the planet earth. What process is responsible for this Diversity?
2. Who gave the most accepted explanation about the mechanism of organic evolution?
3. What is the name of the book published by the scientist charles Darwin? And in which year?
4. Where do we get evidences of evolution of man
5. Write the name of the ancestor of apes.
6. Name the oldest known fossil skull of the genus Homo.
7. which are the two important forms of Homo erectus
8. To which species does modern man belong to?
9. What is the name of the earliest form of Home sapiens ?
10. Write the five races, identified among different groups of humans.
11. Where do capoids usually dwell?

III Give reason in only one sentence

- a) The earliest form of Homo sapiens is commonly known by the name Neanderthal man.

Chapter - 8

THE STORY OF HUMANS (ANSWERS)

Card I

I Choose the appropriate one:

- 1) The Descent of Man
- 2) Fossils
- 3) Austrlopithcus
- 4) Charles Darwin
- 5) Fossils
- 6) Mongaloids

II Answer the following questions

- 1) Organic evolution
- 2) Charles Darwin
- 3) The Descent of man
- 4) by studying fossils.
- 5) Dryopithecus
- 6) Homo habilis
- 7) Java man and
- 8) Homo sapiens
- 9) Neanderthal man
- 10) Caucasoids, Mongoloids, Congoids, capoids, and Australoids

III Give reason in only one sentence

The first fossil of Neanderthal man was discovered in the Neanderthal valley of Germany. That is why the name Neanderthal man.

Biology Card No. 2
Environmental Issues

Chapter -2

I. Choose the correct answer and write.

1. Agricultural wastes are causing.
a.) Water Pollution b) Soil Pollution
c) Air Pollution d) both water and soil pollution.
2. Global warming can be reduced by minimising the release of.
a) Chlorofluro carbons b) Sewage water
c) Green house gases d) agricultural wastes
3. Noise that hampers human hearing system is.
a) above 100 decibels c) 75 decibels
c) 50 decibels d) less than 25 decibels

II. Answer the following questions.

4. Expand CFC.
5. What is green house effect?
6. What Acid rain.
7. Name any two substances responsible for depletion of ozone layer.
8. Write any two effects of carbon monoxide on human health.
9. What are the effects of Global warming?
10. Write the effects of sound pollution.
11. What is the difference between biodegradable and Non bio degradable pollutants?
12. What are the steps followed in sewage water treatment?
13. The Government has prohibited selling of Gutka. Why?

Answers :

I. Choose the correct answer.

1. a) Both water and soil
2. b) Green house gases.
3. c) above 100 decibels.

II. Answer the following questions.

4. Chlorofluro carbons.
5. The infra red rays released due to the heating of the earth by solar radiation, are trapped by some gases in the atmosphere. This results in increase in the atmospheric temperature. This increase is called green house effect.
6. When oxides of sulphur and nitrogen in the atmosphere combine with water vapour and form sulphuric acid, nitric acid respectively. These precipitate as acid rain.
7. a) chlorofuro carbons.
b) insulating foams.
8. Asphyxia leasing to heart and nervous system damage, death.
9. Global warming has resulted in melting of the glaciers, causing an increase in the sea level. As a result flooding of sea water is increasing. This results in submerging of lands. Hence it affects both aquatic and land life.
- 10.* Noise Pollution directly affects the human nervous system causing deafness, headache, high blood pressure and heart disorders.
* Noise causes behavioural discomforts. Noise pollution seriously affects animals also.

11. Biodegradable Pollutions

Such Pollutants that can degraded by biological activity are called biodegradable pollutants

eg. Sulphur dioxide
dissolved in rain water
and become diluted
paper and other plant and
animal dead parts.

Non biodegradable Pollutants

Such pollutants which cannot be converted into harmless constituents are called non-biodegradable Pollutants.

eg: lead vapours released
from petrol combustion
insecticides like DDT.

12. Sewage water must be treated to remove suspended particles. It must be aerated and then chlorinated to purify water. This water can be reused.

13. Gutka has toxic chemicals that can affect the health seriously.

Card -2
Green plants and chorates

I. Choose the correct answer:-

1. The adult Plant body is a gameto phyte in
 - a) Angiosperm
 - b) Pteridophytes
 - c) Gymnosperms
 - d) Bryophytes.
2. Identify the feature exclusively to monocots.
 - a) tap root system
 - b) fibrous root system
 - b) reticulate venation
 - d) flowers with 4 or 5 petals.
3. Identify the pair of oviparous vertebrate group where fertilization and development are both external.
 - a. fishes and Amphiblans
 - b. Reptiles and Birds
 - c. Amphilzians & Reptiles
 - d. Birds & mammals
4. The skin in Amphibians has
 - a) an exoskeleton of scales
 - b) no exoskeleton
 - c) an exoskeleton of hairs
 - d) an exaskelton of featuers.
5. One of the following is not a dicot seed:
 - a) bean
 - b) ground nut
 - c) barley
 - d) pea
6. A homeothermic animal among the following is:
 - a)frog
 - b) snake
 - c) rat
 - d) fish

II. Answer the following question.

7. Which pigment gives red colour in red algae?
8. Name the pigment that gives brown colour in brown algae.
9. Mention any three characterstic features of multicellular algae.
10. Write any three characterstic features of bryophytes.
11. Write the economic importance of bryophytes.
12. Write the economic importance of pteridiphytes.
13. Mention any three important features of phylum chordata.
14. What are coldblooded and warm blooded animals?
Give example.
15. In mammals which muscular membrane separates the chest cavity from the abdomen?
16. Name the biggest lizard.
17. Mention any four characterstic features of reptiles.
18. Mention any four characterstic features of birds.
19. Give an example for limbless amphibian.
20. What are the adaptations found in birds for flying?

Answers

I. Choose the correct answer.

1. d) Bryophytes.
2. b) Fibrous root system
3. a) Fishes and Amphibians
4. b) no exoskeleton
5. c) Barley.
6. c) Rat.

II. Answer the following questions.

7. Phycoerithrin
8. Xanthophyll
9. * Cell wall is made up of cellulose and Pectin
* Plant body is flattened called 'Thallus'
* They reproduce both by asexual and sexual methods.
- 10.* Bryophytes are commonly called amphibians of the plant kingdom since they need water for completing the life cycle.
* Here too plant body is thallus with root like structures called rhizoids.
* They include two groups namely liver works and masses.
- 11.* masses are used in packing flowers.
* They are also used in pots for moisture retention.
* Since masses form a dense mat on the soil, they check erosion.
- 12.* Ferns are grown for their ornamental value,
* Leaves are used in making flower bouquet.
* Some ferns are of medicinal importance.

* Some ferns like horse tails and club masses are involved in the formation of fossil fuels like coal and petroleum.

13.* Presence of a solid supporting structure on the dorsal side of the body called notochord.

* Presence of a dorsal, hollow, tubular nerve cord.

* Presence of opening in the pharynx called gill slits at least in the embryonic stage.

14. Vertebrates that keep changing their body temperature according to the changes in the environment are called cold blooded animals.

eg: Fishes, Amphibians and reptiles.

Vertebrates that maintain a constant body temperature irrespective of changes in the environmental temperature are called warm blooded animals.

eg: Birds and mammals.

15. Diaphragm.

16. Varanus.

17.* Reptiles are cold blooded animals.

* The body is elongated, divisible into head, trunk and tail.

* Heart is three chambered.

* Brain has 12 pairs of cranial nerves.

18.* Birds are warmblooded animals.

* They respire through lungs.

* Heart is four chambered.

* Brain has 12 pairs of cranial nerves.

19. Ichthyophis.

20. * Streamlined body.

- * Forelimbs modified into wings.
- * Presence of flight muscles.
- * Reduced body weight.

Biology Card No. 2
Plant and Animal Tissues.

Chapter -6

I. Choose the correct answer:-

1. The name endothelium refers to:
a) columnar epithelium b) ciliated epithelium
c) cuboidal epithelium d) squamous epithelium
2. The structural and functional unit of nerve tissue is
a) neuron b) axon c) Dendrite d) myelin sheath.

II. Answer the following questions.

1. What is the function of chlorenchyma?
2. What is the function of Arenchyma?
3. Mention the function of collenchyma.
4. What are companion cells? Where do you find them?
5. What is epiderma tissue?
6. What is squamous epithelial tissue?
7. What are muscle fibres?
8. What is connective tissue?
9. Write the function of parenchyma tissue.
10. Why is meristamatic tissue called growth tissue?
11. Mention the types of simple permanent tissue
12. Write the structure and function of collenchyma tissue.
13. What is the feature and the use of fibre cells?
14. Write the structure and function of epidermis.
15. Mention the important functions of epithelial tissue.

16. What are voluntary and involuntary muscles?

Give example.

17. What are tendons and ligaments?

18. Define the following:

a. Dendrite b) Axon c) cyton d) myeline sheath.

19. How does lymph protect the body?

20. Write the function of reticular tissue.

21. Where are red blood cells developed? What is their life span?

22. A student while observing the stem section of a plant under microscope saw elongated cells but fails to identify them. What are these cells?

Answers

I. choose the correct answer:-

1. d) squamous epithelium
2. a) Neuron.

II. Answer the following question.

1. Chlorenchyma takes part in Photosynthesis.
2. Aerenchyma makes the leaves to float on water.
3. Collenchyma gives support to Parenchyma.
4. Cells closely associated with sieve tube are called companion cells. They regulate the passage of food through sieve tubes.
5. The outermost covering of all parts of a plant is formed by protective tissue epidermis.
6. When the cells are polygonal and flat, it is called squamous epithelium.
7. Muscular tissue is concerned with movements of the body. It is made up of elongated cells, hence they are called muscle fibres.
8. The tissues which connect various other tissues of the body and provide support are called connective tissues.
9. * It takes part in photosynthesis.
* It stores water and food.
10. Meristematic tissue is composed of cells which keep on dividing forming new cells. Hence it is called growth tissue.
11. * Parenchyma
* Collenchyma
* Sclerenchyma
12. * Collenchyma generally occur in Pedicel and petiole
* It contains living cells and are capable of cell division.

- 13.* Fibre cells have less lignin content
- * They are flexible and elastic
 - * Fibres are found in xylem cells.
 - * They are used in coir industries to make gunny bags and roper.
- 14.* The outermost covering of all parts of a plant is called epidermis
- * The upper layer of this tissue has cuticle made up of wax.
 - * The lower part of this tissue has bean shoped cells called 'Guard cells'
 - * It regulates the rate of transportation and prevents the decay of plants.
 - * Plants corth cuticle can controll the loss of water.
 - * Stomata help in exchange of carbon dioxide and oxygen necessary for respiration.
- 15.* A Epithelium forms a thick tough barrier and protects the underlying tissues in the skin. It also helps in main-
taining a constant body temperature.
- * Epithelium in sense orgains, contain receptor cells.
 - * The movement of materials is assisted by ciliated epi-
thelium.
 - * Epithelium also helps in absorption of nutrients and in
excretion.
- 16.The muscles that are under the control of the will are called
voluntary muscles. eg: muscles of the limbs.

The muscles that are not under the control of the will are called involuntary muscles. eg: muscles of stomach, intestine and oesophagus..

17. The tissue which connects the bones to the muscles are called tendons.

The tissue which connects one bone to another is called ligament.

18. a) The short projections arising from the cell body are called dendrites.

b) The long extension of the cell body is the 'axon'.

c) The part consisting of a prominent nucleus is called cyton.

d) The axon is covered by a fatty sheath called myelin sheath.

19. Lymph produces antibodies which form an essential part of immune system of the body. It contains a type of white blood cells or phagocytes which remove bacteria and foreign bodies from the tissues.

20. Reticular tissue provides frame work for important organs such as liver, spleen, bone marrow, tonsils and mucous membrane lining the respiratory tract.

21. Red blood cells are developed in the bone marrow. The life span of red blood cells 100 to 120 days.

22. They are vessels and tracheids.

Card No. 2

Microbial Diseases.

I. Choose the correct answer.

1. The enzyme that helps to convert RNA into DNA in HIV virus is.
 - a) Anylase
 - b)Pepsin
 - c)Reverse transcrip tase enzyme
 - d) invertase.
2. “Reduced platelet count in blood” is one of the symptoms of the disease.
 - a) chickun gunya
 - b) Dengue
 - c) Bird flu
 - c) syphilis.

II. Answer the following questions.

1. To which species of mosquitoes does the virus chick v responsible for chickungunya belong to?
2. What symptoms does the person suffering from chickungunya show?
3. How does chickungunya spread through aedes egyptii?
4. By what other familiar name is break bone fever called?
5. How to identify Aedes aggptii? The decoction prepared by which plant leaves is given to dengue patients to improve the number of platelets?
6. How is syphilis transmitted?
7. From what problems does the patient attacked by syphilis suffer?
8. What symptoms are usually seen in men suffering from gonorrhea?
9. What problems does the virus HPV cause?

10. Write the name of the virus by which Genital herpes is transmitted? write the symptoms of this disease.
11. How does Hepatitis B spread? Name the vaccine given to prevent this infection.
12. Write the structure of HIV.
13. How is HIV infected person described as?
14. While malaria is spread through mosquitoes, HIV does not spread by mosquito bites why?
15. What 3A's are to be practised to protect oneself from HIV infection?

Answer :

I.

(1) invertase

(2) Dengue

II.

- 1) It belongs to the species "Aedes aegypti"
- 2.) The person complains of pain in joints for a long time- a fever upto 40°C followed by rashes on the trunk region, head-ache, conjunctives and slight photophobia.
3. Chickingunya spread through the mosquitoes which bneed in stageout water and when they bite in the morning and the late afternoon.
4. Dengue
5. Aedes aegyptii are active active during day time & bite during day. They have white spots on the body and the leg region. The mosquits rests indoors in dark places & when it is outside, it vest in cool and shaded places
Young leaves of papaya are used to prepare the decoction.
6. Syphilis is transmitted through sexual contanct, from mother to foetus through placeuta or direct contact with infeeted blood.
7. Suffers from ulcers which appear on the nose, palate and lower ley. Damage is caused to organs like the brain, nerves, eyes, heart, blood vessels, liver, bones and joints. Difficulty inco-ordinatingmuscularmovements,paralysis,numbness, gradual blindness and dementia.
8. Symptoms in men are:- burning sensation with urination

and discharge from genitals. Women show vaginal discharge and pelvic pain.

9. HPV cause genital warts, cervical cancer or anal Cancer.
10. Herpes simplex viruses type-1 (HSV-1) and (HSV-2) transmit genital herpes.

Symptoms: The appearance of one or more blisters on or around the genitals or rectum.

11. Hepatitis-B is spread through sexual contact and drug abuse.

Temporarily prevented by giving a vaccine called hepatitis B immune Globulin (HBIG)

12. Structure labelled diagram.
13. HIV infected person is described as HIV⁺
14. Malarial parasites require certain species of mosquitoes to complete their life cycle (i.e. a host) But HIV multiplies only in lymphocytes and infection is acquired through contact with body fluids like semen, blood, vaginal fluids.
15.
 1. Avoiding sex with multiple partners.
 2. Abstaining from drug use and avoid using of other skin piercing instruments.
 3. Avoiding contact with body fluids

Card No. 2
Plant and Animal Breeding

I. Choose the correct answer:-

1. Saccharine is a _____
 - a) Natural additives
 - b) Man made additives
 - c) Artificial additives
 - d) Antioxidants.
2. Sometimes a crop species is mated with a different but related species. This is called:
 - a) inter specific hybridization
 - b) inter varietal hybridization
 - c) inter generic hybridization
 - d) polyploidy.

II. Answer the following questions.

1. Define selection method.
2. What is hybridization? Name the types.
3. What is inter specific hybridization
4. Explain poly ploidy.
5. What is the basic principle of tissue culture?
6. Which bacteria is used to cultivate B.T. -cotton?
7. What is Aeroponics? Name any two plants cultivated by this method?
8. Mention the aims of animal breeding.
9. What are additives? Name the three types of additives.

10. Define the following:

- a) Natural additives
- b) Man made additives
- c) Artificial additives.

11. A farmer gets less yield due to the effect of cotton boll worms.
What suggestion would you give him to improve the yield?

12. Write the difference between antioxidants and colourants.

13. Name the mediums for genetic changes.

Answers:

I. Choose the correct Answer:

1. b) man made additive.
2. a) interspecific hybridization

II. Answer the following questions.

1. It is a process where a breeder selects from a population of plants having desirable characteristics only the seeds from selected plants are used to raise the next generation.
2. It is the technique of bringing together desired traits through cross pollination.

Types:a) intervarietal hybridization

b) interspecific hybridization

c) intergeneric hybridization.

3. Sometimes a crop species is mated with a different but related species. It is called interspecific hybridization.
4. Plants with multiple sets of chromosomes are called polyploids. Increase in the chromosome sets per cell can be artificially achieved by a chemical called Colchicine.
5. The basic principle of tissue culture is totipotery.
6. *Bacillus thuringiensis*.
7. It is a form of hydroponics where the roots of a plant are either continuously or discontinuously kept in an environment saturated with fine drops of mineral nutrients eg: potato, tomato.
8. * Improving the growth rate.
* Increasing the production of milk, egg, wool and other products.

- * Improving the quality of products.
- * Improving the resistance to diseases.
- * Increasing the span of productivity
- * Increasing the rate of reproduction.

9. Substances that increase the shelf life and nature of food are collectively known as additives.

Types: a) Natural additives

b) Man made additives

c) Artificial additives.

10. a) Extracts from saffron, beet root plant used as a colouring agent.

b) They are synthetic copies of naturally occurring substances like saccharine.

c) They are produced synthetically and not found in nature.

11. I would like to give him the suggestion of cultivating BT cotton that has the capacity of getting rid of cotton bollworm.

12. Antioxidants are substances which prevent food containing fat or oil from developing a foul smell. Colourants are substances which restore colour lost during processing of food.

13. Mutagens (Chemicals or Radiations)

Card No. 2

Control and Co-ordination in plants and animals

I. Choose the correct answer.

1. The hormone that stimulates the secretion of sex hormones by the gonads:
a) Leutininising hormone b) oxytocin
c) Vasopression d) melanocyte.
2. The part of the brain which controls facial expression and respiration.
a) cerebellum b) Pons
c) cerebrum d) medulla oblongata.
3. The middle bone of the middle ear is:
a) stapes b) Incus
b) malleus c) cochlea

II. Answer the following questions;

1. Give two examples for growth promoting and growth inhibiting hormones.
2. Mention any four functions of plant hormones.
3. What is acromegaly? write its symptoms.
4. Why is simple goitre called an endemic disease?
5. What is diabetes mellitus? mention its symptoms.
6. Write the functions of the following hormones.
a) Testosterone b) Estrogen
c) progesterone.
7. Mention any four functions of hypothalamus.
8. What is reflex arc? Name the parts of reflex arc.
9. What does peripheral nervous system consist of ?

10. Name the structure that joins right cerebral hemisphere and left cerebral hemisphere.
11. A drunkard stumbles give scientific reason.
12. What is the difference between blind spot and yellow spot?
13. There is no image formation at blind spot why?
14. What is the reason for Diabetic retinopathy? How can it be cured?
15. How is Astigmatism caused? What type of lens is used to correct this?
16. What is the difference between endolymph and perilymph?
17. Name the two parts of the ear responsible for balance of the human body.
18. Write the function of taste buds of the tongue.
19. Describe the structure of inner ear.
20. Two wheel riders should wear helmets compulsorily why?

Answers:

I. Choose the correct Answers.

- 1) a) Leutinising hormone.
- 2) b) Pons.
- 3) b) Incus.

II. Answer the following questions.

1. a) Growth promoting hormones: Auxins, Gibberellins.
b) Growth inhibiting hormones: Absciscic acid, ethylene.
2. * Promote cell division, cell enlargement/elongation and cell differentiation.
* Delay ageing of leaves.
* Initiate the development of roots, flowers and fruits.
* Control the premature of withering of flowers and fruits.
3. When pituitary growth hormones are secreted in excess after maturity, it leads to a disorder called acromegaly.
Symptoms: Protrusion of jaws and nose and inappropriate growth of bones in hands and legs.
4. It is restricted to a specific region.
5. Under secretion of insulin leads to increased level of glucose in the blood that is excreted through urine. This condition is called diabetes mellitus.
Symptoms: increased glucose level in the blood, excretion of glucose through urine, frequent urination, thirst, fatigue and sweating.
6. a) Testosterone: This hormone is responsible for the appearance of masculine characters in males.

b) Estrogen: This hormone is responsible for the appearance of feminine characters in females after puberty.

c) Progesterone: This hormone stimulates the changes in the uterus during menstrual cycle and pregnancy.

7. * Hypothalamus regulates body temperature.

* It regulates water balance.

* It regulates appetite and sleep

* It controls autonomic nervous system and pituitary gland.

8. The pathway of nerve impulses involved in the reflex action is called the reflex arc. The parts of reflex are: a) Receptor
b) sensory neuron, c) Association neuron.

d) Motor neuron d) Effector.

9. Peripheral nervous system consists of 12 pairs of cranial nerves and 31 pairs of spinal nerves.

10. Corpus callosum.

11. Alcohol has affected the function of cerebellum temporarily. Hence a drunkard stumbles.

12. Blind spot

a) There are no sensory cells in the spot

b) No image is formed at this spot

Yellow spot

a) A large number of cones are located opposite to the pupil at a depressed point on retina called Yellow spot.

b) A distinct and clear image is formed at this spot.

13. Blind spot has no sensory cells. Hence no image is formed at this spot.

14. A long term diabetes may make a person lose eyesight. This condition is called diabetic retinopathy. This disorder can be cured by laser treatment or a surgery called vitrectomy.
15. Astigmatism is caused due to unevenness of the refractive surfaces of the eye such as lens or cornea.
This can be corrected by using suitable cylindrical lenses.
16. Endolymph surrounds the entire ear while perilymph surrounds the endolymph.
17. Utriculus and semicircular canals.
18. Taste buds of the tongue consist of a group of sensory cells connected to the sensory nerve which carries the taste impulses to the cerebrum which interprets the impulses as taste.
19. The inner ear is a delicate part enclosed in a bony cavity of the skull. The entire inner ear is filled with fluids called perilymph and endolymph.
The inner ear has two main parts namely upper utricle and lower sacculus. The utricle has semicircular canals and cochlea. Cochlea occupies a large space in the inner ear and encloses organ of Corti. It has sound receptor cells. All these cells connect to form the sensory nerve of the ear called auditory nerve which carries the sound impulses to the auditory centre of the cerebrum.
20. In order to give protection to the brain and spinal cord two wheel riders should wear helmet compulsorily.

Card No. 2

Heredity

I. choose the correct answer.

1. In DNA molecule adenine combines with the nitrogen base called.
a) cytosine b) Thymine c) Guanine d) Glucagon.
2. The technology used to transfer nitrogen fixing gene from bacteria into plants is called.
a) Genetic engineering
b) DNA recombinant technology.
c) DNA finger print technology
d) Tissue culture.

II. Answer the following questions:-

1. What is Heredity?
2. What are the reasons for mendel to select pea plant for his experiments?
3. With the help of a checker board write the ratio of monohybrid cross.
4. Name the two types of mendel's laws of heredity.
5. What is incomplete dominance? Explain this with illustration.
6. What is the difference between DNA and RNA?
7. What is complementary base pairing?
8. Mention the importances of DNA.
9. What is DNA recombinant technology? What are its advantages?
10. What is DNA finger print technology? Name the field in which this technology is used.
11. Mention the applications of biotechnology.
12. What are the limitations of biotechnology.

Answers:

I. Choose the correct answer.

1. b) Thymine
b) DNA recombinant technology.

II. Answer the following question.

1. The inheritance of parental characters by their off springs is called Heredity.
2. * They can be grown easily in open ground or even in pots.
* They have a short growth period and life cycle.
* They give self pollinating flowers and also it is easy to conduct cross pollination artificially.
* They produce large number of seeds.
* They show contrasting heritable characters.

3. F1 : Tall (TT) Dwarf (tt)

Tt Tall

F2

Gametes	T	t
T	TT tall	Tt tall
t	Tt tall	dwarf

phenotypic ratio: 3 :1

Genotypic ration: 1:2

4. * law of segregation.
* law of independent assortment.
5. In a few plants the results of monohybrid and dihybrid crosses could not be interpreted in terms of Mendel's principles. They showed many deviations from Mendelian inheritance. This is called "Incomplete dominance"
eg: Hybridization experiment on 'Four O'clock plant'. In these plants when pure red flower plants are cross-bred with pure white flower plants in the F₁ generation pink flowers are formed.
6. DNA has deoxy ribose sugar whereas RNA has only ribose sugar.
7. Adenine pairs with Thymine and Guanine pairs with cytosine. This is called complementary base pairing.
8. * A DNA has the coded information for controlling all the metabolic activities of the cell both directly and indirectly.
* By its special property of self replication, it ensures the equal distribution of similar genetic material to offsprings and thus is responsible for heredity.
* DNA synthesises RNA which codes for the synthesis of specific proteins. So DNA indirectly helps in protein synthesis.
* DNA sometimes undergoes mutation and recombination which bring about variations in the characters of the offspring.

9. It is the technique of manipulating genes in the laboratory.

It is possible now with this technique to separate the desirable or useful gene from a cell and introduce it into another cell where it is made to express.

10. The technique involving the breaking down the DNA of an individual into short segments using specific enzymes, then separating the same using a process called gel electrophoresis is called DNA Finger print technology.

This technology is used in field of Forensic science.

11.* Large scale synthesis of life saving drugs like antibiotics, vaccines, artificial hormones etc.,

- * Improvement of plant and animal breeds, pest and pathogen control in agriculture.

- * Synthesis of acceptable additives in food processing and management industries.

- * Synthesis of biocatalysts and biopolymers.

- * Pollution control: Sewage treatment or water recycling.

12.* Seed sterility in plants.

- * cloning would pose very serious social, ethical moral and cultural problem.

- * Genetically modified foods have started threatening the human and animal health.

- * It would upset the delicate balance of the nature.

Card No. 2
The story of Humans

I. Choose the appropriate one:-

1. The great diversity on the planet earth is due to
a. Social revolution b. dense population
c. organic evolution d. atmospheric pollution
2. Recent studies have indicated that the blood pigment haemoglobin of man and gorilla differ in amino acid.
a. three c. one d. two d. four
3. In the word Ramapithecus, pithecus means
a. ape b. horse c. elephant d. dog
4. Australopithecus means
a. Southern apes b. Western apes
c. Eastern apes d. Northern apes
5. Javana man and peking man are the two groups belonging to.....
a. Dryopithecus b. Homoerectus
c. Australopithecus d. Zinzanthropus.

II. Answer the following question.

1. What has been suggested in the book "The Descent of Man" written by Charles Darwin?
A. In the book "The Descent of Man, Charles Darwin has suggested that human beings evolved from monkeys.
2. Write the important characteristics of primates?
A. * primates have a distinct face.
* Most of the skull is posterior to the eyes.
* Capable of binocular vision.
* Free movement of the digits is possible and the thumb can oppose other digits.
* Claws are modified into nails, and there is enlarged brain.

* Generally only one offspring in each pregnancy and only two mammary glands to nourish offsprings

3. How is binocular vision possible in primates?

A. Binocular vision is possible because the eyes are directed forwards.

4. Write the abilities of Zinzanthropes form of pre-humans?

A. Zinnanthropus type of humans had stronger and straighter legs and upright posture was possible. This form could focus its eyes on objects which it could hold, it was also able to manipulate objects with the help of flexible hands.

5. Write the differences between cromagnon man and modern man.

A. Cromagnon man had a large stature. He was active and intelligent. He used finely chipped stone arrows and spear points and was able to tame animals.

But modern man is culturally very much advanced. He is capable of thinking ,memorizing, speaking, reading and writing. Also he has developed science and technology using his intelligence.

6. How are Mongoloids different from caucasoids?

A, **cancasoids**

* light skin, blue or dark brown eyes
* high ridged nose
nose
with narrow nostrils
* hair is straight or wavy

* live in Europe, India & & America

Mongolioids

* yellowish or reddish skin

* fairly thick lips and wider

* hair is straight.
* live in China, Japan, Mongolia, Malaysia
also includes, Eskimos & American Indians

Card -3

Blology

Unit wish Questions and Answer Booklet

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Biology Card No. 3

Environmental issues

I. Chose the correct answer :

1. Acid rain refers to precipitation with Ph of
 - a) less than 5.6
 - b) about 7.0
 - c) above 6.0
 - d) above 7.0
2. A worker working in copper smelters has lung cancer. The pollutant responsible for this is
 - a) Carbon monoxide
 - b) Arsenic
 - c) Allergens
 - d) Sulphur oxides
3. The rays that penetrate through the skin and destroy cells are .
 - a) Beta rays
 - b) gama rays
 - c) alpha rays
 - d) radio waves

II Answer the following questions

1. What is thermal Pollution?
 - A. Many industries use high temperature furnaces and boilers in their manufacturing processes. The resulting hot effluents are directly released into a nearby water sources. This is

called thermal pollution.

2. What is marine pollution?

A. Many of the pollutants reaching the atmosphere, condense and fall into oceans and seas cause marine pollution.

3. What is the effect of the air pollutant Asbestos on human health?

A Asbestos affects human beings causing Asbestosis.

4. Suggest measures to control air pollution .

A * Industries to be established away from towns and cities.

* Emissions from industries to be checked and controlled.

* Automobiles to be periodically checked to improve the efficiency of engines to minimise the emission.

* Use of unleaded fuel and biofuels must be encouraged.

* Educating the public to use public transport.

5. Suggest measure to control water pollution?

A. * Industrial effluents must be suitably treated to remove the pollutants. Toxic chemical substances must be eliminated Acids and alkalies must be neutralised.

* Effluents coming from furnaces must be cooled to room temperature and treated before being released.

6. What are the effects of mutation?

* In human beings, the inheritance of skin cancer and cataract increases.

* In plants and animals, it can affect growth and physiological functions.

* It affects the population ratio of phytoplanktons causing

serious imbalance in the ecosystem.

7. How can Industrial waste be treated?

A Industrial effluents must be suitably treated to remove the pollutants Toxic chemical substances must be eliminated. Acides and Alkalies must be neutralised, Metallic compounds must be precipitated.

8. Give suggestions to control acid rain.

A. * Industrial fuels must be without pollutants.

* Use of automobiles be reduced.

9. The length of the smoke pipe in industries should be increased. Why?

A. Increase in the length of smoke pipe in industries control ground level air pollution.

10. Ramesh Rao has decided to shift their house from the heart of the city to outskirts of the city. Give scientific reason.

A In the heart of the city due to increased automobile air pollution is high with CO_2 , whereas at the outskirts of the city air pollution is less.

11. The seedling of vegetable plants are grown inside a greenhouse. Why?

A Inside the glass house plants get suitable environment on account of high temperature.

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Biology Card No. 3
Green Plants and Chorgates

I. Chose the correct answer

1. Among vertebrates Notochord is
 - a) found only in the anterior half
 - b) found only in the larval stage.
 - c) found though out the body
 - d) replaced by a vertebral column.
2. Identify the charater not found in mammals.
 - a) Enucleate RBC
 - b) all similar teeth.
 - c) viviparous condtion
 - d) presence of mammary glands.
3. Balanoglassus belongs to
 - a) cephalochordata .
 - b) urochordata .
 - c) Hemichordata
 - d) vertebrata.

I. Answer in a sentence :

1. What are tracheophytes?
 - A. Plants with vascular tissues are collectively called as tracheophytes.
2. What is prothallus?
 - A. In pteridiophytes the gametophyte is a haploid structure called prothallus.

3. With reference to bryophytes write the difference between sporophytes and gametophytes?

A Sprophyte

- a. Saprophyte is diploid
- b. It reproduces by sexual method

Gamatophyte

- a. Gametophyte is haploid.
- b. It reproduces by asexual method.

4. Name the four subphyla of chordata.

- A
- * Sub phylum Hemichordata
 - * Sub phylum Urochordata
 - * Sub phylum cephalochordata
 - * Sub phylum vertebrata.

5. Name the reproductive structures of Gymnophytes.

A male and Female cones.

6. Mention any four characteristics of mammals.

- A
- * Mammals are warmblooded animals.
 - * The body is divisible into head, trunk and tail.
 - * They are generally viviparous.
 - * Heart is 4 chambered. Aortic arch is on the left side.
 - * The exoskeleton is represented by epidermal outgrowths called hairs.

7. What difference do you find between a maize seed and a bean seed as they start germinating?

A During germination in bean seed the cotyledons appear above the soil and in maize seed the cotyledon remains below the soil.

8. A gardener uses moss plants in flower pots. Why?

A Moss plants help in water holding capacity of the soil.

9. What is the difference between cartilaginous fish and bony fish?

A Cartilaginous fishes have only cartilages in the endoskeleton.

Ex: shark.

Bony fishes have endoskeleton composed of bones.

Ex: Labeo, carp etc.

10. How is frog more evolved than fish?

A * Fishes respire only through gills. Where as Frogs respire through Gills, skin lungs and buccal cavity.

* The heart of fish is two chambered where as the heart of frog is three chambered.

11. Why does a fish die when it is removed out of water?

A Fish breathes through gills by taking dissolved oxygen in water. It cannot use atmospheric oxygen.

12. The heart of man is 4 chambered and the heart of Chameleon is 3 chambered. What difference do you find with reference to their blood circulation?

A The heart of man is four chambered by which oxygenated and deoxygenated blood are not mixed. Where as in Chameleon the heart is 3 chambered so that both oxygenated and deoxygenated blood mix together and circulate throughout the body.

Card No. 3
Plant and Animal tissues

I. Choose the correct answer :

1. The cells of Areolar tissue that inset micro organisms are called
 - a) Fibro blasts
 - b) Plasma cells
 - c) Macro phages
 - d) mast cells.
2. In bone tissue the lamellae are connected by fine canals called
 - a) Canaliculi
 - b) lacunae
 - c) ossein
 - d) Volkman's canal
3. A Student after obcerving a blood slide under a compound microscope identifies RBC and WBC based on the following observations.
 - a) RBC less in number and WBC non -nucleated
 - b) RBC nucleated , biconcaved WBC
 - c) RBC non-nucleated , larger and nucleated WBC
 - d) RBC non nucleated , non nucleated ameboid WBC.

II Answer the following in a sentence each :

1. Write the function of Sclerenchyma.
 - A. Sclernchyma provides mechanical strenth and support to the plant.
2. What are sclereids?
 - A. Sclereids are hard cells found in groups in sclerenchyma tissue.

3. What is columnar epithelium?

A Epithelium containing elongated cells is called columnar epithelium.

4. Write the structure and function of sclerenchyma tissue?

A * Sclerenchyma is found in the hard shell of coconut and on the seed coat.

* The living cells of this tissue get deposited by lignin and lose nucleus and cytoplasm at maturity.

* It gives mechanical support and strength.

5. Where do you find the following types of epithelial tissue? Write their function.

a) **Simple cuboidal epithelium** : They form the lining for many ducts such as pancreatic duct, salivary duct and sweat duct. In glands it helps in secretion.

b) **Simple squamous epithelium** : It is found in the structures related to respiration and blood circulation like alveoli of lungs, oesophagus, blood vessels and inside the chambers of heart. It permits materials to diffuse through it.

c) **Simple columnar epithelium** : It is found lining the alimentary canal and some glands. It permits materials to diffuse through.

6. Write the difference between striped and unstriped muscles.

Striped muscles	Unstriped muscles
a) They show characteristic striations or cross bands	b) They are without striations. They are also called smooth muscles.

b) They are responsible for locomotion.

b) They are responsible for the peristaltic movements of oesophagus, intestine and stomach.

7. Write the structure and function of cartilage.

- * Cartilage has translucent glassy matrix called chondrin. The matrix has cells called chondrocytes.
- * Cells may be present singly or in groups of two to three.
- * Chondrocytes secrete the matrix.
- * matrix has both white and yellow fibres.
- * cartilage is externally surrounded by a connective tissue layer called perichondrium.
- * It is vascular and provides nutrients and oxygen to chondrocytes.
- * It is also a source of new cartilage cells.

8. Write the structure and function of bone tissue.

- * Bone tissue consists of cells embedded in a firm calcified matrix.
- * The matrix chiefly consists of collagen fibres, protects and inorganic salts like calcium phosphate, chlorides of potassium, sodium and magnesium.
- * The structure of the bone is designed to withstand stress and strain.
- * The long strong bones of the limbs are filled with a fluid called bone marrow which consists of fat and blood vessels.

9. Name the four types of cells present in the matrix of areolas tissue and write their function.

* **Fibroblasts** : They are large , flat highly branched . They secrete and maintain fibers.

* **Plasma cells** : They are oval in shape and has small nucleus. They produce antibodies.

* **Macrophages**: They are amoeboid in the shape. They ingest the micro organism and hence are called phagocytes.

* **Mast cells** : They are large cells having spherical nucleus. They are associated with the secretion of substances like serotonin, heparin and histamine.

10. Why are sclerenchyma fibers used in the manufacture of gunny bags?

A Since the fibers are flexible and elastic, they are used in the manufacture of gunny bags.

11. A student after seeing the floating of lotus leaf on water gets confused . How do you help him to get rid of his confusion?

A The leaves of lotus plant have cells loosely arranged and air is present in intercellular spaces and called arechyma.

12. Diabetic people feel more chill than a normal healthy individual. Give scientific reason.

A Both fats and carbohydrates are discharged out through urine in diabetic people. This makes the adipose tissue to be dis appropriate in functioning.

13. Write the function of reticular tissue.

A Reticular tissue provides frame work for important organs such as liver, spleen, bone marrow, tonsils and mucus

membrane.

- It provides frame work to respiratory tract and alimentary canal.

MICROBIAL DISEASES

I. Answer the following questions.

1. Write the symptoms shown by the person suffering from arthralgia or arthritis.

A a fever up to 40^o C.

- rashes on the trunk region and limbs.
- severe pain in multiple joints.
- head ache , conjunctivitis and photophobia.

2. Name the species of mosquito which is responsible for Dengue fever. Write the symptoms of Dengue.

A • Aedes aegyptii

- Acute illness of sudden onset beginning with head ache, fever, exhaustion, severe muscle and joint pain, swollen glands, rashes, bleeding gums and redness in palms and soles.

3. Explain how Dengue fever infects humans?

1. Mosquito bites an infected man
2. Virus enters the mosquito body
3. Infected mosquito bites a healthy human
4. Human gets infected by Dengue
4. How does a papaya tree help Dengue patients?

A. A decoction prepared by using young leaves of papaya , noticeably increases the number of platelets.

5. Write the symptoms of syphilis. How do you prevent the transmission of this disease?

A • Ulcers on the nose, palate and lower leg.

- Damages the brain , nerves, eyes, heart, blood vessels, liver, bones and joints.
- Paralysis, numbness , gradual blindness and dementia.

6. What is the best way of preventing Gonorrhea?

A. The best way is abstaining from sexual inter cause with multiple partness.

7. The symptoms of AID take years to appear. Why?

A As and when a new DNA is formed by the HIV virus in the host cells , HIV gets adopted to the host body so well that the body cells fail to identify this virus as intruder. That is why the symptoms of AIDS take years to appear.

8. Is there medicine for AIDS ? If not how do you create awareness in the society to “ Beware of AIDS and be ware of AIDS” ?

A No medicine for AIDS.

Awareness is created in the society about AIDS by way of explaining the dangers to be faced. if one should avoid sex with multiple partners, drug abuse and contact with body fluids.

PLANT AND ANIMAL BREEDING

I. Answer the following questions:

1. What is inter generic hybridization?
A Very rarely, a mating can be conducted between members of two related genera to get a totally new kind of plant. This is called inter generic hybridization.
2. What is inter varietal hybridization?
A Most often different varieties of the same species are mated. This is called inter varietal hybridization.
3. What is induced mutation? Why is it not widely used?
A Genetic changes can be brought in a plant by using chemicals/ radiation. This is called induced mutation.
This method is not widely used , since the site of mutation cannot be controlled.
4. How is B.T. cotton different from normal cotton?
A B.T. cotton is a new variety of cotton in which a gene isolated from a bacterium called *Bacillus thuringiensis* has been newly introduced. This gene is responsible for producing a toxin which can kill the boll worm that attack the cotton plant. Thus the plant is free from worm infestation.
5. Hydroponics and Aeroponics are the major contributors of space food technology. How?
A Hydroponic and aeroponic methods are of significance for space research, organizations because a mist easier to handle in zero gravity situations , than a liquid.
6. Name the main approaches of animal breeding .

A In breeding

Out breeding

Hybridization.

7. What is the difference between in breeding and out breeding?

A **Inbreeding** : It is the crossing of the male and female individuals of the same species among the same breeds. Superior males and superior females in the breeds are identified for this purpose.

Out breeding : It involves crossing of superior males of one breed with superior females of another breed. It allows the desirable qualities of the two breeds to appear in the offspring.

8. Polyploidy plants have both benefits and limitations .Give reasons.

A Polyploidy plants are bigger in size and show greater variability. However, in such plants fertility is lower and growth is very low.

9. The use of artificial additives should be reduced . Give reason.

A Artificial additives are produced synthetically and not found in nature. They can affect the life of man badly.

CONTROL AND CO-ORDINATION

IN PPLANTS AND ANIMALS

I. Choose the correct answer.

1. Which highly developed part of the brain is responsible for human intelligence?
 - a) Thalamus
 - b) Pons
 - c) Cortex
 - d) medulla.
2. The part of the ear that equalizes air pressure on either side of the eardrum:
 - a) auditory canal
 - b) Semicircular canals
 - c) Eustachian canal
 - d) utricle.

II. Answer the following questions :

1. Mention the secretions of pituitary gland and write their functions.
 - **Growth hormone** : it regulates both physical and mental growth
 - **Thyroid stimulation hormone**: It stimulates the secretion of hormone from thyroid gland.
 - **Adreno corticotrophic hormone**: It regulates the secretion of hormone from thyroid gland.
 - **Prolaction** : It stimulates the secretion of milk from mammary glands.
 - **Follicle stimulating hormone** : It stimulates the production of gametes from gonads.
 - **Leutinising hormone** : It stimulates the secretion of sex hormones by the gonads.

- Vaso prexin: It controls the excretion of water from kidneys.

2. How is cretinism caused ? Write its symptoms.

A Cretinism is a condition seen in children without a properly functioning thyroid gland.

Symptoms : stunted growth , retarded mental development, bow legs, defective teeth, protrusion of the tongue and loose wrinkled skin with leathery tissue.

3. Why is Adrenaline called emergency hormone?

A In emergency situations like fear, anxiety, anger and emotional stress , it is secreted in excess and prepares the body to face the emergency situations, properly . Hence it is called emergency hormone.

4. What is the function of mid brain?

A Mid brain connects fore brain and hind brain through which impulses move from hind brain to fore brain. It is concerned with reflex movements of the head and neck in responses to visual and auditory stimuli.

5. What is the difference between sensory nerve cell and motor nerve cell?

A Sensory neuron conducts the stimulus impulse from the receptor to the spinal cord.

Motor nerve cell conducts response impulse from spinal cord to the effectors.

6. With reference to human brain write the difference between grey matter and white matter.

A Grey matter is made up of cytons of nerve cell. White matter is made up of Axon and dendrite,

7. What is autonomic nervous system? Name the two parts of autonomic nervous system.

A Some of the involuntary organs in the human body are connected and controlled by the set of peripheral nerves. This is called autonomous nervous system

Parts: a) Sympathetic system

b) Parasympathetic system.

8. Any injury to the left cerebral hemisphere paralyzes the function of right side organ. Why?

A The nerves arising from left cerebral hemisphere control the right side organ of the body.

9. What the difference between Rod cells and Cone cells?

A Rods are sensitive to dim light and cannot distinguish colours.

Cones are sensitive to bright light and can distinguish colours.

10 Explain the functioning of human eye.

A The reflected light rays from the object enter the eye ball through the conjunctiva, cornea, pupil and lens and get focussed on the fovea of retina to form a small, real and inverted image. The visual receptors get stimulated by photochemical reactions and convert these images into electrical impulses. These impulses are carried through the optic nerve to the visual centre where they get interpreted. It results in vision.

11. Explain the mechanism of ear.

A The sound waves from the source are directed by the ear pin to the eardrum through the auditory canal. The eardrum

vibrates and these vibrations are transmitted to the inner ear through the chain of bones of the middle ear. The vibrations are further transmitted to the organ of corti of the cochlea through both perilymphs and endolymph. The receptors present in the organ of corti absorb these sound impulses which are then carried by the auditory nerve to the auditory centre of the cerebrum. Here they are interpreted and sound is heard.

12. Explain the process of detection of taste.

A When food passes on the surface of the tongue, the sensory cells are chemically stimulated. The chemical impulses are converted into electrical impulses. They are carried by the sensory nerve to the cerebrum of the brain, where taste is interpreted.

13. A person having throat infection gets earache. Give reasons

A Middle ear is connected to the throat through Eustachian tube. Hence infection to the throat can result in ear ache.

14. A person entering into a cinema hall for a matinee show, can not see the seats for a few seconds Give reasons.

A Light enters into the eye ball through pupil which takes a little time to reflect the light rays. Therefore a person entering into a cinema hall for a matinee show cannot see the seats for a few seconds.

15. A child has accidentally inserted a button into its nose. What first aid should be given to the child to remove the object.

A The foreign body can be removed by causing violent sneezing using a pinch of snuff.

16. After going several rounds in a merry go round , we feel imbalanced for a while . Give scientific reason.

A While going several rounds in a merry go round peripheral and endolymph are displaced. They take a little time to come back to their original position. Therefore we feel imbalanced.

17. Define :

- a) **Receptors** : The organs that receive stimuli.
- b) **Effectors** : The organs which show visible response
- c) **Conductors** : The tissues which connect the receptors and effectors and help in the transmission of impulses.

Heredity

I Answer the following questions:

1. Make a list of any four observable traits in pea plants with their contrasting forms of characters.

A : Sl.no.	Character	Contrasting form	
1	Stem length.	Tall	Dwarf
2	Seed colour	Yellow	Green
3	Shape of the seed	Round	Wrinkled
4	Colour of the Pod	Green	Yellow.

2. State the principle of dominance with an illustration.

A When two factors are responsible for a pair of contrasting forms of a single character, come together, normally one expresses itself while the other does not. For any given character, there are two forms of factors. One factor is dominant and the other is recessive. This idea is known as the principal of dominance.

3. Which are the four types of pea plants did Mendel get in the dihybrid cross experiment?

With the help of a checker board write the ratio.

A Gamets	TR	Tr	tR	tr
TR	TTRR	TTRr	TtRR	TtRr
TTRr	Ttrr	ttRr	TtRr	Ttrr
tR	TtRR	TtRr	ttRR	ttRr
tr	TtRr	Ttrr	ttRr	ttrr

Dihybride ratio 9:3:3:1

4. What is the difference between phenotype and genotype?

A Phenotype is the ratio of number of plants obtained in F₁ generation.

Genotype is the ratio of number of pure plants and mixed plants, in F₂ generation.

5. Heredity variations are very important. Give reasons.

A Heredity variations are very important because they show the differences between father, mother and children. This is useful in inheritance of characteristic features in generation.

6. Explain the structure of DNA as per Watson and Krick.

A DNA is the genetic material which carries genetic information from one generation to the other.

The structure of DNA molecule resembles a spirally twisted ladder. It is called as double helix. The molecule of DNA has a pair of polynucleotide chains running antiparallel to each other. They are intertwined and each chain is helically coiled around the other. Each polynucleotide chain has a series of nucleotide units. Each nucleotide unit consists of three components namely 1) Deoxyribose Sugar

2) Phosphate and 3) Nitrogen base.

The nitrogen bases connect the two opposite strands like the rungs of a ladder. The nitrogen bases are adenine, Guanine, Thymine and cytosine.

7. Although biotechnology appears to be a boon for mankind., In future it may be the cause for serious Problem. Give reasons.

- It causes sterility of seeds in plants.

- Cloning would pose very serious social, ethical, moral and cultural problem.
- Possibilities of using this technique for illegal purpose and destructive activities.

THE STORY OF HUMANS

I. Answer the following

- 1) In the year 1859, Charles Darwin, a scientist published the book.....
 - a) Unto the last
 - b) King Lear
 - c) My experiments with truth
 - d) The descent of Man.
- 2) Homo habilis evolved into a more modern form of humans called.....
 - a) Dryopithecus
 - b) Homoerctus
 - c) Ramapithecus
 - d) Zinjanthropus.

II. Answer the following questions :

- 1) To which genus, family, order are the human beings belonging?

A Human beings are placed in the genus Homo, family Hominidae and order primates, among mammals.
- 2) What does Australopithecus mean? And write the salient features of these pre humans.

A Australopithecus means Southern apes. They were relatively short, with low forehead. Their brain capacity was equal to that of modern gorilla. They walked erect, hunted in groups and used pebbles and bones as tools.