

HORIZON ACADEMY[®]

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Medical | IIT-JEE | Foundations

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Name.:

Date :

Test No.:

Subject Code.:

Time : 3 Hrs.

M.M. : 720

HORIZON TEST SERIES

for
**Medical
Entrance Exam.
2016**

[SET - B]

INSTRUCTIONS FOR STUDENTS

1. Read each question carefully.
2. It is mandatory to use Blue/Black Ball Point Pen to darken the appropriate circle in the answer sheet.
3. Mark should be dark and should complete fill the circle.
4. Rough work must be done on the Question Paper, no additional sheet will be provided for this purpose.
5. Do not use white-fluid or any other rubbing material on answer sheet. No change in the answer once marked.
6. Student cannot use log tables and calculators or any other material in the examination hall.
7. Before attempting the question paper, student should ensure that the test paper contains all pages and no page is missing.
8. Each correct answer carries four marks. One mark will be deducted for each incorrect answer from the total score.
9. Before handing over the answer sheet to the invigilator, candidate should check the particulars have been filled and marked correctly.
10. Immediately after the prescribed examination time is over, the answer sheet to be returned to the invigilator.
11. Use of Calculator and other Electronic device is not permitted.

Test No. 28

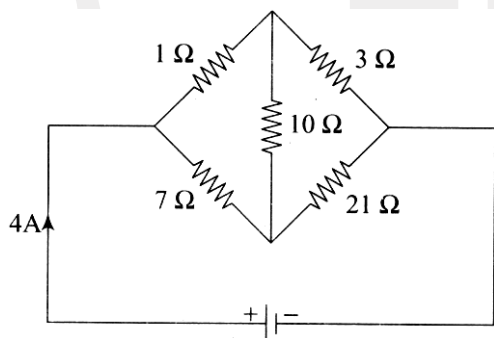
Topics of The Test

Physics	Current Electricity
Chemistry	Biomolecules
Biology	Zoology : Porifera, Coelenterata, Platyhelminthes, Ctenophora, Aschehelminthes, Annelida, Arthropoda Botany : Morphology & Anatomy of Flowering Plants, Plants, Biological Classification, Plant Kingdom, Biomolecules.

Test No. 28

[PHYSICS]

- A voltmeter has a range $0 - V$ with a resistance R . With a series resistance $2R$, the range is $0 - V'$. The correct relation between V and V' is
 (A) $V' = 2V$ (B) $V' > 2V$
 (C) $V' \gg 2V$ (D) $V' < 2V$
- A steady current flows in a metallic conductor of non-uniform cross-section. The quantity/quantities constant along the length of the conductor is/are
 (A) Current, electric field and drift speed
 (B) Drift speed only
 (C) Current and drift speed
 (D) Current only
- In the circuit shown in the figure, the current drawn from the battery is 4A. If 10Ω resistor is replaced by 20Ω resistor, then current drawn from the circuit will be



- (A) 1 A (B) 2 A
 (C) 3 A (D) 0 A

- The potential difference in open circuit for a cell is 2.2 volts. When a 4 ohm resistor is connected between its two electrodes the potential difference becomes 2 volts. The internal resistance of the cell will be
 (A) 1 ohm (B) 0.2 ohm
 (C) 2.5 ohm (D) 0.4 ohm
- Masses of 3 wires of same metal are in the ratio 1:2:3 and their lengths are in the ratio 3:2:1. The electrical resistances are in the ratio
 (A) 1 : 4 : 9 (B) 9 : 4 : 1
 (C) 1 : 2 : 3 (D) 27 : 6 : 1
- To convert a 800 mV range *milli voltmeter* of resistance 40Ω into a galvanometer of 100 mA range, the resistance to be connected as shunt is
 (A) 10Ω (B) 20Ω
 (C) 30Ω (D) 40Ω
- When a 10Ω resistor is connected with a moving coil galvanometer, then its deflection reduces from 50 divisions to 10 divisions. The resistance of the galvanometer is
 (A) 24Ω (B) 36Ω
 (C) 48Ω (D) 60Ω
- We have two wires A and B of the same mass and the same material. The diameter of the wire A is half of that B. If the resistance of wire A is 24 ohm then the resistance of wire B will be
 (A) 12 ohm (B) 3.0 ohm
 (C) 1.5 ohm (D) None of the above

Space for Rough Work

9. In a Wheatstone's bridge all the four arms have equal resistance R . If the resistance of the galvanometer arm is also R , the equivalent resistance of the combination as seen by the battery is

(A) $\frac{R}{2}$ (B) R

(C) $2R$ (D) $\frac{R}{4}$

10. The electric resistance of a certain wire of iron is R . If its length and radius are both doubled, then

(A) the resistance will be doubled and the specific resistance will be halved

(B) the resistance will be halved and the specific resistance will remain unchanged

(C) the resistance will be halved and the specific resistance will be doubled

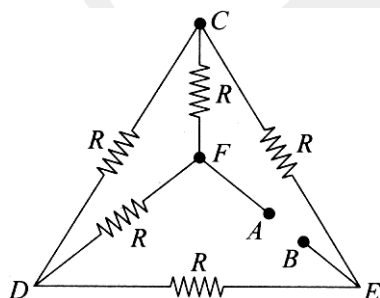
(D) the resistance and the specific resistance, will both remain unchanged

11. Resistance n , each of r ohm, when connected in parallel give an equivalent resistance of R ohm. If these resistances were connected in series, the combination would have a resistance in ohms, equal to

(A) $n^2 R$ (B) R/n^2

(C) R/n (D) nR

12. Five equal resistance each of resistance R are connected as shown in the figure. A battery of V volts is connected between A and B . The current flowing in $AFCEB$ will be



(A) $\frac{3V}{R}$

(B) $\frac{V}{R}$

(C) $\frac{V}{2R}$

(D) $\frac{2V}{R}$

13. A 6 V battery is connected to the terminals of a three metre long wire of uniform thickness and resistance of 100Ω . The difference of potential, between two points on the wire separated by a distance of 50 cm, will be

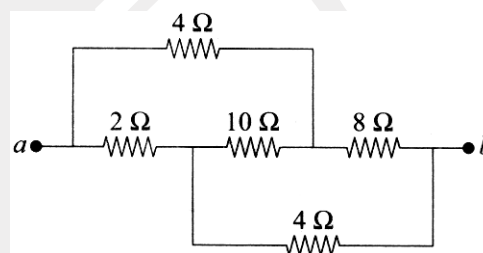
(A) 2 V

(B) 3 V

(C) 1 V

(D) 1.5 V

14. Find the equivalent resistance between the points a and b



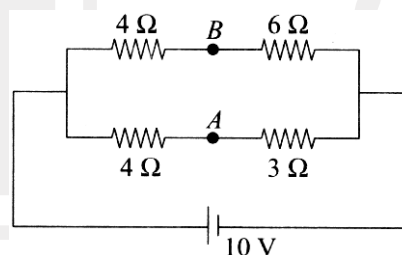
(A) 2Ω

(B) 4Ω

(C) 8Ω

(D) 16Ω

15. The potential difference between points A and B is



(A) $\frac{20}{7}$ V

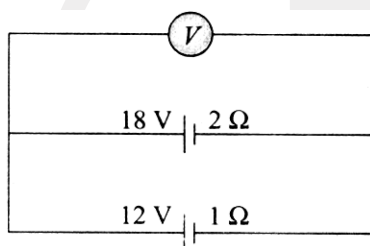
(B) $\frac{40}{7}$ V

(C) $\frac{10}{7}$ V

(D) 0

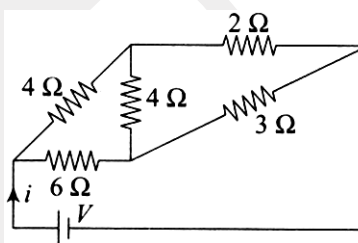
Space for Rough Work

16. A battery is charged at a potential of 15 V for 8 hours when the current flowing is 10 A. The battery on discharge supplies a current of 5 A for 15 hours. The mean terminal voltage during discharge is 14 V. The Watt-hour efficiency of the battery is
(A) 82.5% (B) 80%
(C) 90% (D) 87.5%
17. A capacitor is connected to a cell of emf E having some internal resistance r . The potential difference across the
(A) Cell is $< E$ (B) Cell is E
(C) Capacitor is $> E$ (D) Capacitor is $< E$
18. Two batteries, one of emf 18 volts and internal resistance 2Ω and the other of emf 12 volts and internal resistance 1Ω , are connected as shown. The voltmeter V will record a reading of

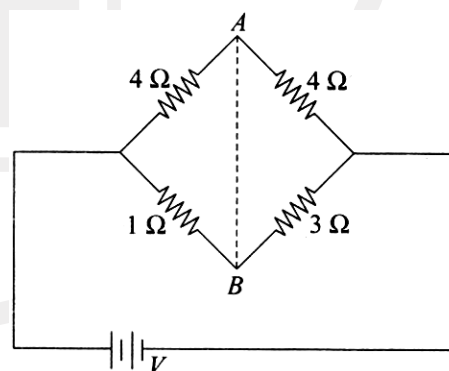


- (A) 15 volt (B) 30 volt
(C) 14 volt (D) 18 volt
19. A galvanometer can be used as a voltmeter by connecting a
(A) high resistance in series
(B) low resistance in series
(C) high resistance in parallel
(D) low resistance in parallel
20. A galvanometer of 50 ohm resistance has 25 divisions. A current of 4×10^{-4} ampere gives a deflection of one division. To convert this galvanometer into a voltmeter having a range of 25 volts, it should be connected with a resistance of
(A) 2500Ω as a shunt
(B) 2450Ω as a shunt

- (C) 2550Ω in series
(D) 2450Ω in series
21. When a wire of uniform cross-section a , length l and resistance R is bent into a complete circle, resistance between two of diametrically opposite points will be
(A) $\frac{R}{4}$ (B) $\frac{R}{8}$
(C) $4R$ (D) $\frac{R}{2}$
22. For the network shown in the figure, the value of the current i is



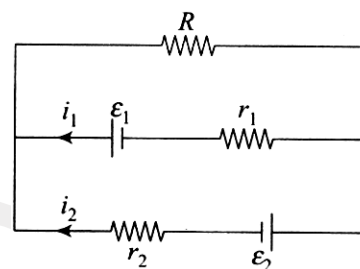
- (A) $\frac{9V}{35}$ (B) $\frac{5V}{18}$
(C) $\frac{5V}{9}$ (D) $\frac{18V}{5}$
23. In the circuit shown, if a conducting wire is connected between points A and B, the current in this wire will



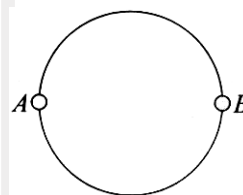
Space for Rough Work

- (A) flow from A to B
 (B) flow in the direction which will be decided by the value of V
 (C) be zero
 (D) flow from B to A
24. Kirchhoff's first and second laws for electrical circuits are consequences of
 (A) conservation of energy
 (B) conservation of electric charge and energy respectively
 (C) conservation of electric charge
 (D) conservation of energy and electric charge respectively
25. Two cells, having the same emf, are connected in series through an external resistance R . Cells have internal resistances r_1 and r_2 ($r_1 > r_2$) respectively. When the circuit is closed, the potential difference across the first cell is zero, the value of R is
 (A) $r_1 - r_2$ (B) $\frac{r_1 + r_2}{2}$
 (C) $\frac{r_1 - r_2}{2}$ (D) $r_1 + r_2$
26. Three resistances P, Q, R each of 2Ω and an unknown resistance S form the four arms of a Wheatstone's bridge circuit. When a resistance of 6Ω is connected in parallel to S the bridge gets balanced. What is the value of S ?
 (A) 2Ω (B) 3Ω
 (C) 6Ω (D) 1Ω
27. A wire of a certain material is stretched slowly by ten per cent. Its new resistance and specific resistance become respectively
 (A) 1.2 times, 1.1 times
 (B) 1.21 times, same
 (C) both remain the same
 (D) 1.1 times, 1.1 times

28. See the electrical circuit shown in this figure. Which of the following equations is the correct equation for it?



- (A) $\varepsilon_1 - (i_1 + i_2)R - i_1 r_1 = 0$
 (B) $\varepsilon_2 - i_1 i_2 R - \varepsilon_1 - i_1 r_1 = 0$
 (C) $-\varepsilon_2 - (i_1 + i_2)R + i_2 r_2 = 0$
 (D) $\varepsilon_1 - (i_1 + i_2)R + i_1 r_1 = 0$
29. A wire of specific resistance of $12\Omega\text{m}^{-1}$ is bent to form a complete circle of radius 10 cm. The resistance between its two diametrically opposite points, A and B as shown in the figure, is



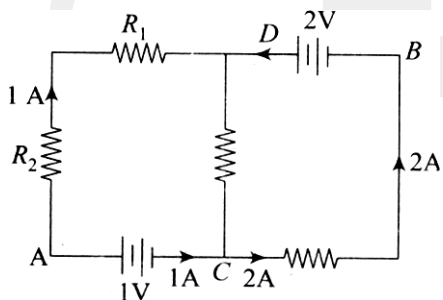
- (A) $0.6\pi\Omega$ (B) 3Ω
 (C) $6\pi\Omega$ (D) 6Ω
30. A student measures the terminal potential difference (V) of a cell (of emf ε and internal resistance r) as a function of the current (I) flowing through it. The slope and intercept of the graph between V and I , then respectively, equal
 (A) ε and $-r$ (B) $-r$ and ε
 (C) r and $-\varepsilon$ (D) $-\varepsilon$ and r

Space for Rough Work

31. Consider the following two statements.
 (a) Kirchhoff's junction law follows from the conservation of charge.
 (b) Kirchhoff's loop law follows from the conservation of energy.

Which of the following is correct ?

- (A) Both (a) and (b) are wrong
 (B) (a) is correct and (b) is wrong
 (C) (a) is wrong and (b) is correct
 (D) Both (a) and (b) are correct
32. A current of 2 A flows through a 2Ω resistor when connected across a battery. The same battery supplies a current of 0.5 A when connected across a 9Ω resistor. The internal resistance of the battery is
- (A) $1/3\Omega$ (B) $1/4\Omega$
 (C) 1Ω (D) 0.5Ω
33. In the circuit shown in the figure, if potential at point A is taken to be zero, the potential at point B is



- (A) -1 V (B) +2 V
 (C) -2 V (D) +1 V
34. A battery of e.m.f 10 V and internal resistance 0.5 ohm is connected across a variable resistance R . The value of R for which the power delivered in it is maximum is given by
- (A) 2.0 ohm (B) 0.25 ohm
 (C) 1.0 ohm (D) 0.5 ohm

35. Electric bulb 50 W-100 V glowing at full power is to be used in parallel with battery 120 V, 10Ω . Maximum number of bulbs that can be connected so that they glow in full power is

- (A) 2 (B) 8
 (C) 4 (D) 6

36. The material of fuse wire should have
- (A) A high specific resistance and high melting point
 (B) A low specific resistance and low melting point
 (C) A high specific resistance and low melting point
 (D) A low specific resistance and a high melting point

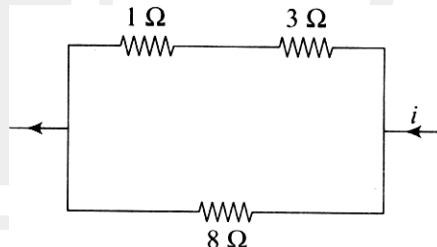
37. What is immaterial for an electric fuse wire ?

- (A) Its specific resistance
 (B) Its radius
 (C) Its length
 (D) Current flowing through it

38. When three identical bulbs of 60 W, 200 V rating are connected in series to a 200 V supply, the power drawn by them will be

- (A) 60 W (B) 180 W
 (C) 10 W (D) 20 W

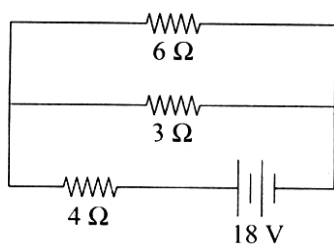
39. Power dissipated across the 8Ω resistor in the circuit shown here is 2 W. The power dissipated in watt units across the 3Ω resistor is



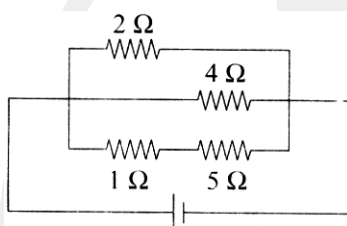
- (A) 2.0 (B) 1.0
 (C) 0.5 (D) 3.0

Space for Rough Work

40. The total power dissipated in watts in the circuit shown here is

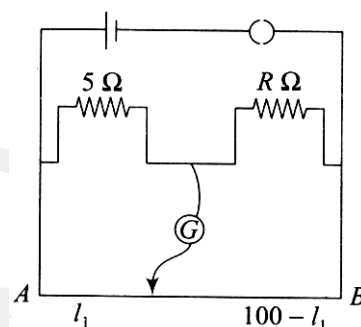


- (A) 16 W (B) 40 W
(C) 54 W (D) 4 W
41. A current of 3 A flows through the 2Ω resistor as shown in the circuit. The power dissipated in the 5Ω resistor is



- (A) 4 W (B) 2 W
(C) 1 W (D) 5 W
42. A galvanometer of resistance 50Ω is connected to a battery of 3 V along with a resistance of 2950Ω in series. A full-scale deflection of 30 divisions is obtained in the galvanometer. In order to reduce this deflection to 20 divisions, the resistance in series should be
- (A) 5050Ω (B) 5550Ω
(C) 6050Ω (D) 4450Ω

43. The resistances in the two arms of the meter bridge are 5Ω and $R\Omega$, respectively. When the resistance R is shunted with an equal resistance, the new balance point is at $1.6l_1$. The resistance R is



- (A) 10Ω (B) 15Ω
(C) 20Ω (D) 25Ω
44. A potentiometer wire has length 4 m and resistance 8Ω . The resistance that must be connected in series with the wire and an accumulator of e.m.f. 2 V, so as to get a potential gradient 1 mV per cm on the wire is
- (A) 32Ω (B) 40Ω
(C) 44Ω (D) 48Ω
45. A potentiometer wire of length L and a resistance r are connected in series with a battery of e.m.f. E_0 and a resistance r_1 . An unknown e.m.f. E is balanced at a length l of the potentiometer wire. The e.m.f. E will be given by

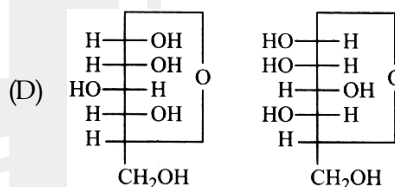
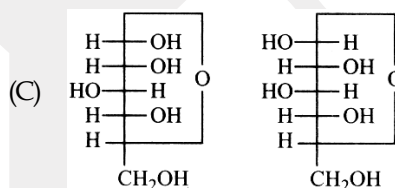
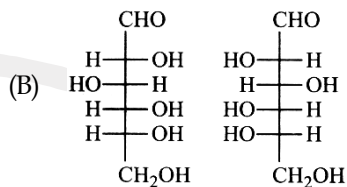
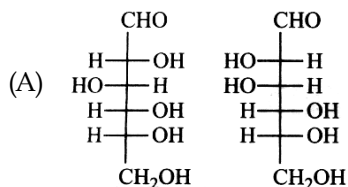
- (A) $\frac{LE_0r}{(r+r_1)l}$ (B) $\frac{LE_0r}{Ir_1}$
(C) $\frac{E_0r}{(r+r_1)} \cdot \frac{l}{L}$ (D) $\frac{E_0I}{L}$

Space for Rough Work

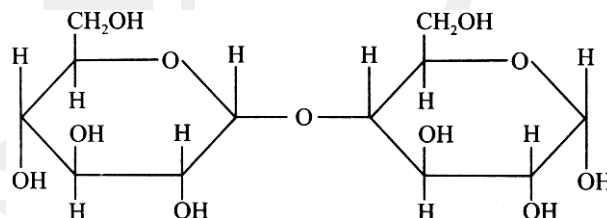
[CHEMISTRY]

46. Invert sugar is
 (A) a type of cane sugar
 (B) optically inactive form of sugar
 (C) mixture of glucose and galactose
 (D) mixture of glucose and fructose in equimolar quantities
47. Glycosidic linkage is an
 (A) amide linkage (B) ester linkage
 (C) ether linkage (D) acetyl linkage
48. Which reagent is used to convert glucose into saccharic acid?
 (A) $\text{Br}_2/\text{H}_2\text{O}$
 (B) Nitric acid
 (C) Alkaline solution of iodine
 (D) Ammonium hydroxide
49. Maltose is made up of
 (A) two α -D-glucose
 (B) normal β -D-glucose
 (C) α - and β -D-glucose
 (D) Fructose
50. Which of the following is an example of an aldopentose?
 (A) D-Ribose (B) Glyceraldehyde
 (C) Fructose (D) Erythrose
51. Vitamin A is present in
 (A) fish liver oil (B) milk
 (C) butter (D) all of these
52. Which of the following statements is not true?
 (A) Glucose and fructose both are monosaccharides
 (B) The natural glucose and fructose are D-forms.
 (C) The solution having equal molecules of D-glucose and D-fructose is termed as invert sugar.
 (D) Aldohexoses exist in 2^6 optical forms

53. Which of the following pair represents anomers?



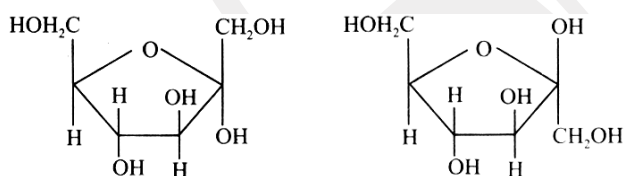
54. Study the structure of maltose and mark the incorrect statement.



- (A) Maltose is composed of two α -D-glucose units
 (B) C-1 of one glucose is linked to C-4 of other unit
 (C) It is a non-reducing sugar
 (D) It is a disaccharide

Space for Rough Work

55. What are the hydrolysis products of sucrose ?
 (A) Fructose + Fructose
 (B) Glucose + Glucose
 (C) Glucose + Galactose
 (D) Glucose + Fructose
56. Carbohydrates are stored in human body as the polysaccharide
 (A) starch (B) glycogen
 (C) cellulose (D) amylose
57. The glycosidic linkage involved in linking the glucose units in amylose part of starch is
 (A) C_1-C_4 β -linkage (B) C_1-C_6 β -linkage
 (C) C_1-C_6 α -linkage (D) C_1-C_4 α -linkage
58. Which of the following is a non-reducing sugar ?
 (A) Glucose (B) Sucrose
 (C) Maltose (D) Lactose
59. Phosphodiester linkage is present between which carbon atoms of pentose sugars of nucleotides ?
 (A) 5' and 3' (B) 1' and 5'
 (C) 5' and 5' (D) 3' and 3'
60. In cellulose, D-glucose units are joined by
 (A) α - 1,4 glycosidic linkage
 (B) β - 1,6 glycosidic linkage
 (C) β - 1,4 glycosidic linkage
 (D) Peptide linkage
61. Five-membered ring structures of fructose are given below. Mark the incorrect statement.



- (A) The five-membered ring structures are named as furanose structures.
 (B) The cyclic structures represent two anomers of fructose.

- (C) Five-membered ring structures are named as pyranose structures.
 (D) These are also called Haworth structures.
62. Amino acids generally exist in the form of Zwitter ions. This means they contain
 (A) basic $-NH_2$ group and acidic $-COOH$ group
 (B) the basic $-NH_3$ group and acidic $-COO^-$ group
 (C) basic $-NH_2$ and acidic $-H^+$ group
 (D) basic $-COO^-$ group and acidic $-\overset{+}{N}H_3$ group
63. Globular proteins are present in
 (A) blood (B) eggs
 (C) milk (D) all of these
64. Which one of the amino acids can be synthesised in the body ?
 (A) Alanine (B) Lysine
 (C) Valine (D) Histidine
65. Which of the following is not true about amino acids?
 (A) They are constituents of all proteins
 (B) Alanine having one amino and one carboxylic group
 (C) Most naturally occurring amino acids have D-configuration.
 (D) Glycine is the only naturally occurring amino acid which is optically inactive.
66. Denaturation of protein leads to loss of its biological activity by
 (A) formation of amino acids
 (B) loss of primary structure
 (C) loss of both primary and secondary structure
 (D) loss of both secondary and tertiary structure
67. Proteins are condensation polymers of
 (A) α -amino acids
 (B) β -amino acids
 (C) α -hydroxy acids
 (D) β -hydroxy acids

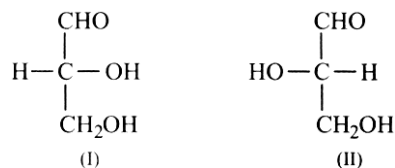
Space for Rough Work

68. In fibrous proteins, polypeptide chains are held together by
 (A) van der waals forces
 (B) electrostatic forces of attraction
 (C) hydrogen bonds
 (D) covalent bonds
69. Bases common to RNA and DNA are
 (A) adenine, guanine, cytosine
 (B) adenine, uracil, cytosine
 (C) adenine, guanine, thymine
 (D) guanine, uracil, thymine
70. If one strand of DNA has the sequence ATGCTTGA, the sequence in the complimentary strand would be
 (A) TCCGAAC (B) TACGTAGT
 (C) TACGAATC (D) TACGAACT
71. How many C-atoms are there in a pyranose ring?
 (A) 3 (B) 5
 (C) 6 (D) 7
72. Which of the following vitamins is water soluble?
 (A) Vitamin E (B) Vitamin D
 (C) Riboflavin (D) Ascorbic acid
73. Which of the following diseases is caused by deficiency of an enzyme?
 (A) Phenylketone urea
 (B) Cheilosis
 (C) Scurvy
 (D) Xerophthalmia
74. Which of the following represents a peptide chain?
 (A) $\text{—NH—}\overset{\text{O}}{\parallel}\text{C—NH—}\overset{\text{O}}{\parallel}\text{C—NH—}$
 (B) $\text{—NH—}\overset{\text{O}}{\parallel}\text{C—CH}_2\text{—CH}_2\text{CH}_2\text{—NH—CH}_2\text{CH}_2\text{—}\overset{\text{O}}{\parallel}\text{C—}$
 (C) $\text{—NH—CH}_2\text{—}\overset{\text{O}}{\parallel}\text{C—NH—CH}_2\text{—}\overset{\text{O}}{\parallel}\text{C—NH—CH}_2\text{—}$
 (D) $\text{—NH—CH}_2\text{CH}_2\text{—}\overset{\text{O}}{\parallel}\text{C—NH—NH—CH}_2\text{—}\overset{\text{O}}{\parallel}\text{C—CH}_2\text{—}$
75. Which of the following bases is not present in RNA?
 (A) Adenine (B) Guanine
 (C) Cytosine (D) Thymine
76. Which of the following statements is not correct?
 (A) Only α -amino acids are obtained on hydrolysis of proteins
 (B) The amino acids which are synthesized in the body are known as non-essential amino acids
 (C) There are 20 essential amino acids
 (D) L-amino acids are represented by writing the —NH_2 group on the left side.
77. Mark the incorrect example
 (A) Keratin and myosin - Fibrous proteins
 (B) Insulin and albumins - Globular proteins
 (C) Glycylalanine-Dipeptide
 (D) Enzymes and haemoglobin - Derived proteins
78. Hereditary characteristic are passed on from parents to children through
 (A) gametes (B) genes
 (C) mutants (D) enzymes
79. A unit in nucleic acid which contains 'base-sugar phosphate' unit is called
 (A) nucleotide (B) nucleoside
 (C) phosphotide (D) polypeptide
80. RNA is a
 (A) single helix strand
 (B) double helix strand
 (C) right hand twisted double helix strand
 (D) triple helix strand
81. Nucleic acids are
 (A) small molecules
 (B) dipeptides
 (C) long chain polymers of nucleotides
 (D) polypeptides
82. Which one of the following sets of monosaccharides forms sucrose?
 (A) α -D-galactopyranose and α -D-glucopyranose
 (B) α -D-galactopyranose and β -D-fructofuranose

Space for Rough Work

- (C) β -D-glucopyranose and α -D-fructofuranose
(D) α -D-glucopyranose and β -D-fructopyranose
83. Guanine is an example of
(A) a nitrogenous base
(B) a nucleoside
(C) a nucleotide
(D) phosphate
84. The letter 'D' in carbohydrates signifies
(A) dextrorotatory
(B) configuration
(C) diamagnetic nature
(D) mode of synthesis
85. Which of the following is basic amino acid ?
(A) Lysine (B) Proline
(C) Alanine (D) Aspartic acid
86. The number of amino acids found in proteins that a human body can synthesis is
(A) 20 (B) 25
(C) 10 (D) 100
87. The double strand helix structure of DNA was proposed by
(A) Har Gobind Khorana
(B) Watson and Crick
(C) A.R.Todd
(D) G.W.Kenner
88. Deficiency of vitamin E causes
(A) rickets
(B) scurvy
(C) muscular weakness
(D) beri beri
89. Which of the following is not produced by human body ?
(A) Enzymes (B) Vitamins
(C) Proteins (D) Nucleic acid

90. The given structure (I) and (II) represent configuration of the simplest sugar glyceraldehyde. Which of the following statements is not correct for the structures?



- (A) (I) represents D-form while (II) represents L-form of glyceraldehyde
(B) The sugars having same configuration as D-glyceraldehyde are designated as D-sugars
(C) Natural glucose and fructose are D-forms
(D) D is dextrorotatory while L is laevorotatory enantiomer.

[ZOOLOGY]

91. Radial symmetry occurs in
(A) fishes (B) molluscus
(C) coelenterata (D) sponges
92. Level of organisation in sponges is
(A) cellular level (B) acellular level
(C) tissue level (D) organ-system level
93. Sponges and coelenterates resemble each other in being
(A) monoblastic and acoelomate
(B) diploblastic and acoelomate
(C) triploblastic and acoelomate
(D) triploblastic and pseudocoelomate
94. Evolution of porifera from protozoan is evidenced by the animals like
(A) *Euglena* (B) *Chlamydomonas*
(C) *Volvox* (D) *Paramecium*
95. In sponges, free swimming larva is called as
(A) veliger (B) trochophore
(C) parenchymula (D) bipinnaria
96. Water currents in *Leucosolenia* are produced by
(A) choanocytes (B) pinacocytes
(C) archaeocytes (D) thesocytes

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97. The common bath sponge belongs to the genus
 (A) *Sycon* (B) *Leucosolenia*
 (C) *Euspongia* (D) *Spongilla*
98. Path of water in a sponge is
 (A) Dermal ostia → Gastral ostia → Osculum
 (B) Dermalostia → Gastral ostia → Spongocoel → Osculum
 (C) Osculum → Spongocoel → Choanocytes → Ostia
 (D) Pinacocytes → Choanocytes → Enteron → Osculum
99. Choanocytes in ascon-type of canal system form lining of
 (A) spongocoel (B) porocyte
 (C) apopyle (D) incurrent canal
100. Which of the following are 'multicellular grade' organisms?
 (A) Sponges (B) Coelenterates
 (C) Prokaryotes (D) Vertebrates
101. *Sycon* belongs to a group of animals which are best described as
 (A) Unicellular or acellular
 (B) Multicellular without any tissue organisation
 (C) Multicellular with a gastrovascular cavity
 (D) Multicellular having tissue organisation, but no body cavity
102. Which is not applicable to coelenterata?
 (A) Coelenteron (B) Choanocytes
 (C) Nematocyst (D) Radial symmetry
103. Budding is a normal mode of asexual reproduction in
 (A) starfish and *Hydra*
 (B) *Hydra* and sponges
 (C) tapeworm and *Hydra*
 (D) sponges and starfish
104. Nematocysts take part in
 (A) locomotion (B) offence and defence
 (C) food capture (D) all of the above
105. *Hydra* is
 (A) triploblastic, radial symmetry and acoelomate
 (B) triploblastic, radial symmetry and coelomate
 (C) diploblastic, radial symmetry and acoelomate
 (D) diploblastic, radial symmetry and coelomate
106. Which one of the following is an example of platyhelminthes?
 (A) *Trypanosoma* (B) *Schistosoma*
 (C) *Plasmodium* (D) *Wuchereria*
107. The excretory organs of flatworms are
 (A) flame cells
 (B) nephridia
 (C) malpighian tubules
 (D) rennate glands
108. What is correct about *Taenia*?
 (A) Male organs occur in posterior proglottides
 (B) Male organs occur in anterior proglottides
 (C) Female organs occur in anterior proglottides
 (D) Mature proglottides contain both male and female organs
109. Secondary host of *Taenia solium* is
 (A) cow (B) sheep
 (C) pig (D) man
110. *Fasciola hepatica* lives in
 (A) liver of sheep (B) blood of sheep
 (C) intestine of sheep (D) spleen of sheep
111. Bilaterally symmetrical but acoelomate animals is
 (A) liver fluke (B) jelly fish
 (C) round worms (D) crab
112. "Triploblastic, unsegmented, acoelomate exhibiting bilateral symmetry and reproducing both asexually and sexually with parasitic forms." The above description is the characteristic of phylum
 (A) platyhelminthes (B) annelida
 (C) ctenophora (D) cnidaria
113. Which of the following groups have one or more animals which are not pseudocoelomate?
 (A) *Bipalium*, *Taenia*
 (B) *Enterobius*, *Wuchereria*
 (C) *Ancylostoma*, *Dracunculus*
 (D) *Ascaris*, *Ancylostoma*

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114. The adult *Wuchereria bancrofti* lives in
 (A) human sub dermal spaces
 (B) muscles of *Culex*
 (C) salivary glands of *Culex*
 (D) human lymph glands
115. Coelom in *Ascaris lumbricoides* is called as
 (A) pseudocoelom (B) true coelom
 (C) schizocoelom (D) none of these
116. In humans, elephantiasis is caused by
 (A) *Ascaris lumbricoides*
 (B) *Dracunculus medinensis*
 (C) *Wuchereria bancrofti*
 (D) *Ancylostoma duodenale*
117. Differentiating trait of *Ascaris* is
 (A) sexual dimorphism and rhabditi form larva
 (B) unisexual and digenetic parasite
 (C) pseudocoelom and metameric segmentation
 (D) hermaphrodite and pseudocoelom
118. Pseudocoelom develop from
 (A) blastospore lip
 (B) archenteron
 (C) embryonic mesoderm
 (D) blastocoel
119. In nemathelminthes which coelom is not lined by peritoneum?
 (A) Acoelom (B) Pseudocoelom
 (C) Enterocoelom (D) Haemocoel
120. Choose the correct statement with reference to *Ascaris*?
 (A) Hatching of embryos takes place in the stomach due to lytic enzyme
 (B) Adulthood is reached inside the body of the host in ten days time
 (C) Development and moulting takes place in the alveoli of lungs
 (D) Hatching of embryo takes places within ten hours
121. Annelids are
 (A) radially symmetrical
 (B) externally segmented
 (C) triploblastic
 (D) pseudocoelomate
122. Body is segmented in
 (A) coelenterate (B) annelida
 (C) porifera (D) mollusca
123. In which of the following, clitellum is absent?
 (A) Polychaeta (B) Oligochaeta
 (C) Hirudinea (D) All of these
124. In *Pheretima*, there are red coloured round bodies, in 4th, 5th and 6th segments above the alimentary canal. They are believed to be involved in
 (A) excretion (B) digestion
 (C) reproduction (D) leucocyte production
125. The colour of the body in earthworm is brown due to the presence of
 (A) porphyrin (B) haemoglobin
 (C) blood (D) haemocyanin
126. Region of earthworm which is forest of nephridia is called
 (A) clitellar region
 (B) pharyngeal region
 (C) typhlosolar region
 (D) intestinal region
127. Hearts of *Pheretima* are situated in the segments
 (A) 10, 13, 16 and 17 (B) 7, 9, 12 and 13
 (C) 4, 5, 10 and 13 (D) 11, 14, 17 and 18
128. *Pheretima posthuma* is highly useful as
 (A) their burrows make the soil loose
 (B) they make the soil porous, leave their castings and take organic debris in the soil
 (C) they are used as fish meal
 (D) they kill the birds due to biomagnification of chlorinated hydrocarbons
129. Blood of *Pheretima* is
 (A) blue with haemocyanin in corpuscles
 (B) blue with haemocyanin in plasma
 (C) red with haemoglobin in corpuscles
 (D) red with haemoglobin in plasma

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130. Chloragogen cells are involved in
(A) digestion (B) excretion of water
(C) respiration (D) fat storage
131. In *Pheretima* nephridia occur in
(A) All segments except 1-4 and 10-14
(B) 1-2, 4-6, 15 to last segments
(C) Meganephridia in pre-clitellar and micronephridia in post-clitellar segments
(D) Micronephridia in all segments and meganephridia from clitellar region to end
132. Which one of the following groups of structures/organs have similar function?
(A) Typhlosole in earthworm, intestinal villi in rat and contractile vacuole in *Amoeba*
(B) Nephridia in earthworm, Malpighian tubules in cockroach and urinary tubules in rat
(C) Antennae of cockroach, tympanum of frog and clitellum of earthworm
(D) Incisors of rat, gizzard (proventriculus) of cockroach and tube feet of starfish
133. Insects are
(A) Amminotelic (B) Ammonotelic
(C) Ureotelic (D) Uricotelic
134. The process of conversion of a small cockroach into an adult cockroach is called as
(A) moulting (B) metamorphosis
(C) ecdysis (D) transformation
135. Which one of the following belongs to phylum arthropoda?
(A) *Octopus* (B) *Termite*
(C) *Nereis* (D) *Leech*
- [BOTANY]**
136. Pullorum disease of poultry is caused by
(A) *Mycobacterium* (B) *Salmonella*
(C) *Clostridium* (D) *Hemophilus*
137. The bacteria *Pseudomonas* is useful because of its ability to
(A) transfer genes from one plant to another
(B) decompose a variety of organic compounds
(C) fix atmospheric nitrogen in the soil
(D) produce a wide variety of antibiotics
138. A tumour inducing plasmid widely used in the production of transgenic plant is that of
(A) *Escherichia coli*
(B) *Bacillus thuringiensis*
(C) *Staphylococcus aureus*]
(D) *Agrobacterium tumefaciens*
139. Among rust, smut and mushroom all the three
(A) are pathogens (B) are saprobes
(C) bear ascocarps (D) bear basidiocarps
140. Which form of reproduction is correctly matched?
(A) *Euglena*—transverse binary fission
(B) *Paramecium*—longitudinal binary fission
(C) *Amoeba*—multiple fission
(D) *Plasmodium*—binary fission
141. Which one of the following statements is correct?
(A) Prions are the smallest free-living cells
(B) The cell wall of mycoplasmas is made up of amino sugars
(C) Viroids consist of single-stranded RNA molecule
(D) Rickettsiae lack cell wall
142. Which pair of the following belongs to Basidiomycetes?
(A) Puffballs and *Claviceps*
(B) *Peziza* and *Alternaria*
(C) *Morchella* and mushrooms
(D) Bird's nest fungi and puffballs
143. *Funaria* gametophyte is
(A) dioecious
(B) heteroecious
(C) autoecious
(D) monoecious and autoecious

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144. Zygospor of Spirogyra at the time of meiosis is divided into 4 nuclei. How many nuclei degenerate out of these four?
 (A) One (B) Two
 (C) Three (D) Four
145. Cycas is
 (A) monoecious (B) bisexual
 (C) dioecious (D) hermaphrodite
146. Elaters help in dispersal of spores of
 (A) Riccia (B) Marchantia
 (C) Dryopteris (D) Funaria
147. Which of the following type of anther is found in Malvaceae?
 (A) Monothealous (B) Dithealous
 (C) Polythealous (D) Without theous
148. Coralloid roots of Cycas is distinguished from angiosperm roots by
 (A) absence of pith
 (B) having xylem tissue
 (C) absence of algal zone
 (D) presence of algal zone
149. Which of the following groups of algae produces algin?
 (A) Phaeophyceae and Chlorophyceae
 (B) Rhodophyceae and Phaeophyceae
 (C) Chlorophyceae and Rhodophyceae
 (D) Phaeophyceae only
150. Floral diagram fails to indicate
 (A) epiphyllly and epipetaly
 (B) aestivation and placentation
 (C) position of ovary on the thalamus
 (D) cohesion of carpels and stamens
151. Which of the following type of anther is found in Malvaceae?
 (A) Monothealous (B) Dithealous
 (C) Polythealous (D) Without theous
152. Parachute type dispersal occurs in
 (A) tomato (B) mustard
 (C) pea (D) cotton
153. Prickles of rose are
 (A) Modified leaves
 (B) Modified stipules
 (C) Exogenous in origin
 (D) Endogenous in origin
154. Which one of the following is correctly matched
 (A) Onion-Bulb
 (B) Ginger-Sucker
 (C) Chlamydomonas-Conidia
 (D) Yeast-Zoospores
155. Which of the following is a variety of *Brassica* resistance to white rust disease?
 (A) Himgiri
 (B) Pusa Kamal
 (C) Pusa Swarnim (Karan Rai)
 (D) Pusa Sadabahar
156. Read the following statements.
 (i) Gynoecium is situated in the centre and other parts of the flower are located on the rim of the thalamus almost at the same level.
 (ii) Ovary is half-inferior.
 (iii) Examples are plum, rose and peach.
 Which condition of flowers is being described by the above statements?
 (A) Hypogyny (B) Perigyny
 (C) Epigyny (D) None of these
157. Companion cells in plants are associated with
 (A) vessels (B) sperms
 (C) sieve elements (D) guard cells
158. Cork cambium results in the formation of cork which becomes impermeable to water due to the accumulation of
 (A) resins (B) suberin
 (C) lignins (D) tannins

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159. In which of the following would you expect to find glyoxysomes?
 (A) Endosperm of wheat
 (B) Endosperm of castor
 (C) Palisade cells in leaf
 (D) Root hairs
160. In a bisexual flower, if androecium and gynoecium mature at different times, the phenomenon is known as a
 (A) dichogamy (B) herkogamy
 (C) heterogamy (D) monogamy
161. If a stem is girdled
 (A) Root dies first
 (B) Shoot dies first
 (C) Both die together
 (D) None of the above would die
162. Sclerenchyma usually _____ and _____ protoplasts.
 (A) live, without (B) dead, with
 (C) live, with (D) dead, without
163. If the cells of root in wheat plant have 42 chromosomes, then the number of chromosomes in the cell of pollen grain is
 (A) 14 (B) 21
 (C) 28 (D) 42
164. Proteins are
 (A) polysaccharides (B) polyamides
 (C) polynucleotides (D) polyglycol
165. Which of the following gives Fehling's test?
 (A) Pectin (B) Sucrose
 (C) Cellulose (D) Glucose
166. An example of competitive inhibition of an enzyme is the inhibition of
 (A) succinic dehydrogenase by malonic acid
 (B) cytochrome oxidase by cyanide
 (C) hexokinase by glucose-6-phosphate
 (D) carbonic anhydrase by carbon dioxide
167. Which of the following set of three items are not true as each set belongs to the category mentioned against them
 (A) Lysine, glycine, thiamine—Amino acids
 (B) Myosin, oxytocin and gastrin—Hormones
 (C) Rennin, helicase and hyaluronidase—Enzyme
 (D) Optic nerve, oculomotor, vagus—Sensory nerves
168. Which of the following contain β -1,4 linkage?
 (A) Maltose (B) Sucrose
 (C) Lactose (D) Fructose
169. Which statement is true?
 (A) Adenine has 4 nitrogen atoms
 (B) Cytosine has 3 nitrogen atoms
 (C) Guanosine has 3 nitrogen atoms
 (D) Uracil has 5 nitrogen atoms
170. The total number of nitrogenous bases in human genome is estimated to be about
 (A) 3.5 million (B) 35 thousand
 (C) 35 million (D) 3.1 billion
171. Michaelis constant K_m is equal to
 (A) $\frac{K_1}{K_2 - K_3}$ (B) $\frac{K_1 + K_3}{K_1}$
 (C) $\frac{K_2 - K_3}{K_1}$ (D) $\frac{K_1 - K_2}{K_3}$
172. Alpha-keratin is a protein, present in
 (A) blood (B) skin
 (C) lymph (D) eggs
- ASSERTION AND REASON TYPE QUESTIONS (Q.173 TO Q.180)**
173. **Assertion :** Plasmids are extrachromosomal DNA.
Reason : Plasmids are found in bacteria and are useful in genetic engineering.
 (A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
 (B) If both assertion and reason are true but reason is not a correct explanation of the assertion.
 (C) If the assertion is true but reason is false.
 (D) If both the assertion and reason are false.

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174. **Assertion :** yeasts such as *Saccharomyces cerevisiae* are used in banking industry.

Reason : Carbon dioxide produced during fermentation causes bread dough to rise by thermal expansion.

- (A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- (B) If both assertion and reason are true but reason is not a correct explanation of the assertion.
- (C) If the assertion is true but reason is false.
- (D) If both the assertion and reason are false.

175. **Assertion :** Red algae contributes in producing coral reefs.

Reason : Some red algae secrete and deposit calcium carbonate over their walls.

- (A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- (B) If both assertion and reason are true but reason is not a correct explanation of the assertion.
- (C) If the assertion is true but reason is false.
- (D) If both the assertion and reason are false.

176. **Assertion :** Algae and fungi are classified as thallophytes.

Reason : They both are autotrophs.

- (A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- (B) If both assertion and reason are true but reason is not a correct explanation of the assertion.
- (C) If the assertion is true but reason is false.
- (D) If both the assertion and reason are false.

177. **Assertion :** Many plants are propagated vegetatively even though they bear seeds.

Reason : Potatoes multiply by tubers, apple by cutting etc.

- (A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- (B) If both assertion and reason are true but reason is not a correct explanation of the assertion.
- (C) If the assertion is true but reason is false.
- (D) If both the assertion and reason are false.

178. **Assertion :** In stem, pericycle take active part in secondary growth.

Reason : In dicots, pericycle has the capacity to produce lateral roots.

- (A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- (B) If both assertion and reason are true but reason is not a correct explanation of the assertion.
- (C) If the assertion is true but reason is false.
- (D) If both the assertion and reason are false.

179. **Assertion :** Long distance flow of photoassimilates in plants occurs through sieve tubes.

Reason : Mature sieve tubes have parietal cytoplasm and perforated sieve plates.

- (A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- (B) If both assertion and reason are true but reason is not a correct explanation of the assertion.
- (C) If the assertion is true but reason is false.
- (D) If both the assertion and reason are false.

180. **Assertion :** No secondary growth takes place in monocots.

Reason : Secondary growth is not related with cambium.

- (A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- (B) If both assertion and reason are true but reason is not a correct explanation of the assertion.
- (C) If the assertion is true but reason is false.
- (D) If both the assertion and reason are false.



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