## PHYSICS

1. Force F acts on a body such that force F makes an angle $\theta$ with the horizontal direction and the body is also displaced through a distance S in the horizontal direction, then the work done by force is :
A) FS
B) $\mathrm{FS} \cos \theta$
C) $\mathrm{FS} \sin \theta$
D) zero
2. Work done by the force of gravity, when a body is lifted to height ' $h$ ' above the ground is :
A) zero
B) positive
C) negative
D) none of these
3. The work done in holding 15 Kg suitcase while waiting for a bus for 15 minutes is:
A) 225 J
B) 13500 J
C) 1500 J
D) zero
4. If a body is moving on a circular path then work done by the centripetal force will be :
A) zero
B) positive
C) negative
D) none of the above
5. Work done by conservative force in moving a complete round is :
A) $\mathrm{W}_{1}$
B) $\mathrm{W}_{2}$
C) O
D) None of these
6. If 784 J of work was done for lifting 20 kg mass, then calculate the height through which it was lifted (take $\mathrm{g}=9.8 \mathrm{~ms}^{-2}$ )
A) 2 m
B) 4 m
C) 5 m
D) 6 m
7. Find out the equation of relationship between force and energy :
A) $\frac{\frac{1}{2} \mathrm{mv}^{2}}{\mathrm{~S}}$
B) $\frac{\frac{1}{2} \mathrm{mu}^{2}}{\mathrm{~S}}$
C) $\frac{\frac{1}{2} m v^{2}-\frac{1}{2} m u^{2}}{S}$
D) $\frac{\frac{1}{2} \mathrm{mv}^{2}+\frac{1}{2} m u^{2}}{\mathrm{~S}}$
8. If a stone of mass ' $m$ ' falls a vertical distance ' $d$ ' the decrease in gravitational potential energy is :
A) mgd
B) $\frac{\mathrm{Mg}}{\mathrm{d}}$
C) $\frac{\mathrm{Mg}^{2}}{2}$
D) $\frac{\mathrm{Mg}}{\mathrm{d}^{2}}$
9. The potential energy of a freely falling object decreases continuously. What happens to the loss of potential energy?
A) It is continuously converted into sound energy
B) It is continuously converted into kinetic energy
C) It is continuously destroyed
D) None of these
10. The value of g on moon is $1 / 6$ th of the value of g on the earth. A man can jump 1.5 m high on the earth. On moon he can jump up to a height of :
A) 9 m
B) 7.5 m
C) 6 m
D) 4.5 m
11. The kinetic energy of an object is $k$. If its velocity is doubled then its kinetic energy will be :
A) $k$
B) 2 k
C) $\frac{\mathrm{k}}{2}$
D) 4 k
12. Two bodies of mass 1 kg and 4 kg possess equal momentum. The ratio of their K.E
A) $4: 1$
B) $1: 4$
C) $2: 1$
D) $1: 2$
13. Two bodies of masses $m_{1}$ and $m_{2}$ have equal momenta. Their kinetic energies are in the ratio of :
A) $\sqrt{\mathrm{m}_{1}}: \sqrt{\mathrm{m}_{2}}$
B) $m_{1}: m_{2}$
C) $m_{2}: m_{1}$
D) $\mathrm{m}_{1}^{2}: \mathrm{m}_{2}^{2}$
14. What horse power engine is required to lift 18.24 quintals of coal per minute from a mine 50 m deep? (Take $\mathrm{g}=10 \mathrm{~ms}^{-1}$ )
A) 20 hp
B) 20.6 hp
C) 20.5 hp
D) 20.4 hp
15. The heart does 2.5 J of work in each heart beat. How many times per minute does it beat, if its power is 4 watt.
A) 96 times
B) 60 times
C) 120 times
D) 70 times

## CHEMISTRY

16. An isotone of ${ }_{32}^{76} \mathrm{Ge}$ is :
A) ${ }_{32}^{77} \mathrm{Ge}$
B) ${ }_{33}^{77} \mathrm{As}$
C) ${ }_{34}^{77} \mathrm{Se}$
D) ${ }_{36}^{81} \mathrm{Kr}$
17. Rutherfords alpha scattering experiment eventually lead to conclusion that:
A) Mass and energy are related
B) Electron occupy empty space around the nucleus
C) Neutrons are buried deep in the nucleus
D) All of these
18. In which of the following the number of proton is greater than the number of neutrons, but the number of proton is less than the number of electrons :
A) $\mathrm{D}_{3} \mathrm{O}^{+}$
B) $\mathrm{SO}_{2}$
C) $\mathrm{H}_{2} \mathrm{O}$
D) $\mathrm{OH}^{-}$
19. The total number of neutron present in ${ }_{12}^{24} \mathrm{Mg}$ is :
A) 12
B) 13
C) 14
D) 10
20. Bohr orbits are called stationary state because :
A) Electrons in them are stationary
B) Their orbits have fixed radii
C) The electrons in them have fixed energy
D) All are correct
21. Atomic number of an element is equal to the number of:
A) electrons
B) protons
C) neutrons
D) either electrons or protons
22. Deflection back of $\alpha$ - particles on hitting thin foil of gold shows that:
A) Nucleus is heavy
B) Nucleus is small
C) Both A \& B
D) Electron create hinderance in the movement of $\alpha$ - particles
23. The atomic mass of an element is 19 . The second shell of its atom contain 7 electrons. The number of neutrons in its nucleus is :
A) 10
B) 9
C) 7
D) 12
24. The shape of ' $P$ ' orbital is :
A) Sphere
B) Dump bell
C) Oval
D) None
25. Which of the following shows radio activity:
A) Co
B) Fe
C) Cu
D) Zn
26. The valency of Na is :
A) 0
B) 1
C) 2
D) 3
27. The correct electronic configuration of $\mathrm{H}^{+}$is :
A) $1 \mathrm{~s}^{0}$
B) $1 \mathrm{~s}^{2}$
C) $1 \mathrm{~s}^{3}$
D) $1 \mathrm{~s}^{1}$
28. Maximum number of electron present in ' N ' shell is :
A) 18
B) 32
C) 2
D) 8
29. The valency of ammonium ion is:
A) 1
B) 3
C) 4
D) 5
30. The increasing order of mass is:
A) $p>e>n$
B) $e>p>n$
C) $n>p>e$
D) none

## BIOLOGY

31. Select which is not related to health
A) Hygeine
B) Colour
C) Food
D) Habit
32. The non-infections disease is
A) AIDS
B) Arthritis
C) T.B
D) Mumps
33. The congenital disease is
A) Cancer
B) Nephritis
C) Haemophilia
D) Malaria
34. An allergic disease is
A) Scurvey
B) Rickets
C) Hay fever
D) Ring worm
35. The 'mumps' is caused by
A) Bacteria
B) Fungi
C) Protozoa
D) Virus
36. The food poisoning is caused by
A) Anabaena
B) Filaria
C) Clostridium
D) Ascaris
37. The ringworm is a
A) Bacteria
B) Fungi
C) Virus
D) Rickettsia
38. The first antibiotic was
A) Penicillin
B) OPV
C) DTB
D) Hepatitis - B
39. HIV is not transfer through
A) Blood
B) Sexual contact
C) Water
D) By birth
40. The world health organisation is in
A) England
B) Ireland
C) Switzerland
D) Singapore
41. Cancer can be caused by
A) Pressure
B) U-V rays
C) HIV
D) Temperature
42. The autibody against virus formed in our body is
A) interferon
B) Intrones
C) melatonin
D) interleukin
43. The test for AIDS is
A) DTP
B) PCR
C) ELISA
D) BCG
44. The lymphocytes are produced in
A) liver
B) brain
C) bone marrow
D) kidney
45. In man, leprosy is caused by
A) mycoplasma
B) mycobacterium
C) Nesseria
D) Agrobacteria

## MATHEMATICS

46. When the diagonals of a parallelogram are perpendicular to each other, then it is called a :
A) Square
B) Rectangle
C) Rhombus
D) Parallelogram
47. In figure, if $\operatorname{ar}(\triangle \mathrm{ABC})=28 \mathrm{~cm}^{2}$ then $\operatorname{ar}(\mathrm{AEDF})=$

A) $21 \mathrm{~cm}^{2}$
B) $18 \mathrm{~cm}^{2}$
C) $16 \mathrm{~cm}^{2}$
D) $14 \mathrm{~cm}^{2}$
48. In $\triangle \mathrm{ABC}$, if AD divides BC in the ratio $\mathrm{m}: \mathrm{n}$, then the area of $(\triangle \mathrm{ABD})$ : area of $(\triangle \mathrm{ABC})$ :

A) $m: n$
B) $(\mathrm{m}+1): \mathrm{n}$
C) $m:(n+m)$
D) $n: m$
49. In the figure $A D \| B C, B D$ is a diagonal. Then area of quadrilateral $A B C D$ is :

A) $12 \mathrm{~cm}^{2}$
B) $24 \mathrm{~cm}^{2}$
C) $6 \mathrm{~cm}^{2}$
D) $30 \mathrm{~cm}^{2}$
50. In the figure P is a point on side BC of $\triangle \mathrm{ABC}$ such that $\mathrm{BP}: \mathrm{PC}=1: 2$ and Q is a point on AP such that $\mathrm{PQ}: \mathrm{QA}=2: 3$. Then $\operatorname{ar}(\triangle \mathrm{AQC}): \operatorname{ar}(\triangle \mathrm{ABC})$ is :

A) $2: 5$
B) $3: 5$
C) $2: 6$
D) $1: 2$
51. $A B C D$ is a trapezium with $A B \| D C$. A line parallel to $A C$ intersects $A B$ at $X$ and $B C$ at $Y$. Then $\operatorname{ar}(\triangle \mathrm{ADX})$ is equal to :

A) $\operatorname{ar}(\Delta A Y X)$
B) $\operatorname{ar}(\triangle \mathrm{ACY})$
C) $\operatorname{ar}(\triangle \mathrm{XCB})$
D) $\operatorname{ar} \triangle \mathrm{ABC}$
52. In the given figure $\mathrm{DE} \| \mathrm{BC}$ and $\mathrm{AD}: \mathrm{DB}=5: 4$. Then $\frac{\operatorname{area}(\Delta \mathrm{DFE})}{\operatorname{area}(\Delta \mathrm{CFB})}$ :

A) $5: 9$
B) $25: 16$
C) $25: 81$
D) None of these
53. Given two triangles, which are similar, of which has twice the perimeter of the other. By what factor is the area of the larger triangle bigger than the smaller.
A) 2
B) 4
C) $\sqrt{2}$
D) $2 \sqrt{2}$
54. D is the mid point of side BC of $\triangle \mathrm{ABC}$ and E is the midpoint of BD . If O is the midpoint of BD . If O is the midpoint of AE , then $\operatorname{ar}(\triangle \mathrm{BOE}): \operatorname{ar}(\triangle \mathrm{ABC})=$

A) $1: 4$
B) $2: 4$
C) $1: 8$
D) None
55. In a parallelogram $\mathrm{ABCD}, \mathrm{AB}=8 \mathrm{~cm}$. The altitudes to sides AB and AD are respectively 4 cm and 5 cm . Then $\mathrm{AD}=$

A) 6.8 cm
B) 6.4 cm
C) 4.6 cm
D) None of these
56. The sides BA and CD of a cyclic quadrilateral ABCD are produced to meet at P . The sides DA and CB are produced to meet at Q . If $\angle \mathrm{ADC}=85^{\circ}$ and $\angle \mathrm{BPC}=40^{\circ}$ then $\angle \mathrm{COD}$ equals :
A) $50^{\circ}$
B) $45^{\circ}$
C) $30^{\circ}$
D) $75^{\circ}$
57. In a circle of radius 10 cm , the length of chord whose distance is 6 cm from the centre is :
A) 4 cm
B) 5 cm
C) 8 cm
D) 16 cm
58. In the given figure, if C is the centre of the circle and $\angle \mathrm{PQC}=25^{\circ}$ and $\angle \mathrm{PRC}=15^{\circ}$, then $\angle \mathrm{QCR}$ is equal to :
A) $40^{\circ}$
B) $60^{\circ}$
C) $80^{\circ}$
D) $120^{\circ}$
59. In a cyclic quadrilateral, if $\angle \mathrm{A}-\angle \mathrm{C}=70^{\circ}$ then the greater of the angles A and C is equal to :
A) $95^{\circ}$
B) $105^{\circ}$
C) $125^{\circ}$
D) $115^{\circ}$
60. $O$ is the centre of the circle $B C$ is a chord of the circle and point Alies on the circle. If $\angle \mathrm{BAC}=\mathrm{x}, \angle \mathrm{OBC}=\mathrm{y}$ then $\mathrm{x}+\mathrm{y}=$

A) $>90^{\circ}$
B) $=90^{\circ}$
C) $<90^{\circ}$
D) $>180^{\circ}$

| PHYSICS |  |  |  |  |  |  |  |  |
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