Talent Search Exam. 2023

TEST CODE **1102**

for class XI (Medical)

BOOKLET **C**

Duration : 1.30 Hours **Max. Marks : 400**

Please read the instructions carefully. You are alloted 5 minutes specifically for this purpose.

INSTRUCTIONS

A. General :

1. This booklet is your Question Paper. DO NOT break seal of Booklet until the invigilator instructs to do so. Total Questions to be Attempted 100: **Physics : 25, Chemistry : 25, Biology : 50 Questions.**
2. The Answer Sheet is provided to you separately which is a machine readable Optical Response Sheet (ORS). You have to mark your answers in the ORS by darkening bubble, as per your answer choice, by using black & blue ball point pen.
3. Things NOT ALLOWED in EXAM HALL : Blank Paper, clipboard, log table, slide rule, calculator, camera, mobile and any electronic or electrical gadget. If you are carrying any of these then keep them at a place specified by invigilator at your own risk.
4. Do not use white-fluid or any other rubbing material on answer sheet. Before handing over the answer sheet to the invigilator, candidate should check that **Roll No, Test code and Book Code** have been filled and marked correctly. Immediately after the prescribed examination time is over, the **Answer sheet is to be returned to the invigilator.**

B. Filling the Answer Sheet :

5. On Side-1 of Answer Sheet write your Name and Roll Number in the respective boxes. Do not write anything on Side-2.
6. **Marking Scheme:**
   a. If darkened bubble is RIGHT answer : 4 Marks.
   b. If no bubble is darkened in any question: No Mark.
   c. If darkened bubble is WRONG answer: –1 Mark (Minus One Mark).
7. Think wisely before darkening bubble as there is negative marking for wrong answer.

PROCEDURE OF FILLING UP THE ANSWERS IN ANSWER SHEET

Avoid Improper Marking			Proper Marking
Partially Filled	Lightly Filled	Tick-Cross Marked	Fully darken

Name of the candidate (In Capital Letters)

Roll Number

I have read all the instruction and shall abide by them.

.....

(Signature of the candidate)

I have verified all the information filled in by the candidate.

.....

(Signature of the Invigilator)

The Only Person Responsible for Your Success is You.

[PHYSICS]

1. The equation of a wave is given by

$$y = a\sin\omega\left(\frac{x}{\upsilon} - k\right)$$

where, ω is angular velocity and υ is the linear velocity. The dimensions of k will be

(1) $[T^2]$

(2) $[T^{-1}]$

(3) $[T]$

(4) $[LT]$

2. If the energy (E), velocity (v) and force (F) be taken as fundamental quantities, then the dimensions of mass will be

(1) $[Fv^{-2}]$

(2) $[Fv^{-1}]$

(3) $[Ev^{-2}]$

(4) $[Ev^2]$

3. Maximum and minimum values of the resultant of two forces acting at a point are 7 N and 3 N respectively. The smaller force will be equal to

(1) 5 N (2) 4 N

(3) 2 N (4) 1 N

4. The sum of two forces at a point is 16 N. If their resultant is normal to the smaller force and has a magnitude of 8 N, then two forces are

(1) 6 N, 10 N

(2) 8 N, 8 N

(3) 4 N, 12 N

(4) 2 N, 14 N

5. A stone is released from a rising balloon accelerating upward with acceleration a. The acceleration of the stone just after the release is

(1) a upward

(2) g downward

(3) (g − a) downward

(4) (g + a) downward

6. The length of a seconds hand in watch is 1 cm. The change in velocity of its tip in 15 s is

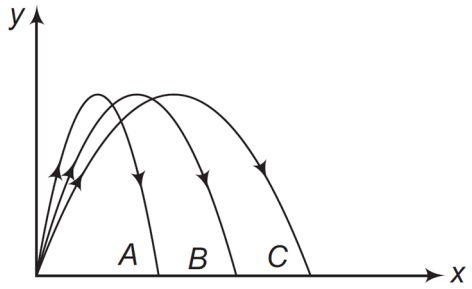
(1) zero

(2) $\frac{\pi}{30\sqrt{2}}$cm/s

(3) $\frac{\pi}{30}$cm/s

(4) $\frac{\pi\sqrt{2}}{30}$cm/s

7. The trajectories of the motion of three particles are shown in the figure. Match the entries of Column I with the entries of Column II. Neglect air resistance.



	Column I		**Column II**
(a)	Time of flight is least for	(p)	A
(b)	Vertical component of velocity is greatest for	(q)	B
(c)	Horizontal component of velocity is greatest for	(r)	C
(d)	Launch speed is least for	(s)	Same for all

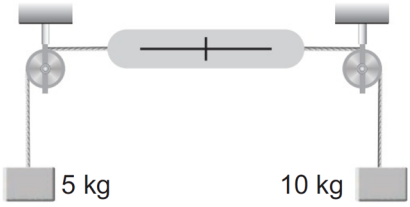
(1) (a)→(s), (b) → (s), (c) → (r), (d) → (p)

(2) (a)→(r), (b) → (p), (c) → (r), (d) → (s)

(3) (a)→(r), (b) → (r), (c) → (s), (d) → (p)

(4) (a)→(p), (b) → (q), (c) → (s), (d) → (r)

8. For the arrangement shown in the figure, the reading of spring balance is



(1) 50 N (2) 100 N

(3) 150 N (4) None of the above

9. The time taken by a body to slide down a rough 45° inclined plane is twice that required to slide down a smooth 45° inclined plane. The coefficient of kinetic friction between the object and rough plane is given by

(1) $\frac{1}{3}$ (2) $\frac{3}{4}$

(3) $\sqrt{\frac{3}{4}}$ (4) $\sqrt{\frac{2}{3}}$

10. A particle is placed at rest inside a hollow hemisphere of radius R. The coefficient of friction between the particle and the hemisphere is $\mu = \frac{1}{\sqrt{3}}$. The maximum height up to which the particle can remain stationary is

(1) $\frac{R}{2}$ (2) $\left(1-\frac{\sqrt{3}}{2}\right)R$

(3) $\frac{\sqrt{3}}{2}R$ (4) $\frac{3R}{8}$

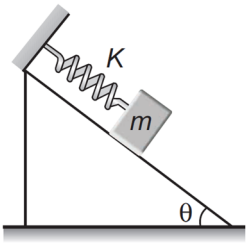
11. A smooth inclined plane of length L having inclination θ with the horizontal is inside a lift which is moving down with a retardation a. The time taken by a body to slide down the inclined plane from rest will be

(1) $\sqrt{\frac{2L}{(g+a)\sin\theta}}$ (2) $\sqrt{\frac{2L}{(g-a)\sin\theta}}$

(3) $\sqrt{\frac{2L}{a\sin\theta}}$

(4) $\sqrt{\frac{2L}{g\sin\theta}}$

12. A system of wedge and block as shown in figure, is released with the spring in its natural length. All surfaces are frictionless. Maximum elongation in the spring will be



(1) $\frac{2mg\sin\theta}{K}$ (2) $\frac{mg\sin\theta}{K}$

(3) $\frac{4mg\sin\theta}{K}$ (4) $\frac{mg\sin\theta}{2K}$

13. A force $F=(3t\,\hat{i}+5\,\hat{j})$ N acts on a body due to which its displacement varies as $S=(2t^2\,\hat{i}-5\,\hat{j})$ m.

Work done by this force in 2 second is

(1) 32 J (2) 24 J

(3) 46 J (4) 20 J

14. Power applied to a particle varies with time as P = $(3t^2 – 2t + 1)$ watt, where t is in second. Find the change in its kinetic energy between time t = 2 s and t = 4 s

(1) 32 J

(2) 46 J

(3) 61 J

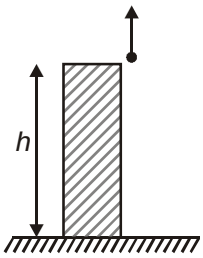
(4) 102 J

15. The front of a train moving with constant acceleration crosses a pole with speed *u* and the rear end of it crosses the same pole with speed *v*. The speed with which the mid-point of the train crosses the pole is

(1) $\sqrt{uv}$ (2) $\frac{u+v}{2}$

(3) $\sqrt{\frac{u^2+v^2}{2}}$ (4) $\frac{uv}{u+v}$

16. A particle is projected vertically up with a speed of 15 m/s from the top of a tower of height 20 m as shown in figure. The time taken by the particle to reach the ground is (take g = 10 m/s^2)



(1) 6 s (2) 5 s

(3) 4 s (4) 3 s

17. A body moves 6 m north. 8 m east and 10m vertically upwards, what is its resultant displacement from initial position (only magnitude)

(1) $10\sqrt{2}$m (2) 10m

(3) $\frac{10}{\sqrt{2}}$m

(4) 10 × 2m

18. If a car covers 2/5th of the total distance with υ_1 speed and 3/5th distance with υ_2 then average speed is

(1) $\frac{1}{2}\sqrt{v_1 v_2}$ (2) $\frac{v_1 + v_2}{2}$

(3) $\frac{2v_1 v_2}{v_1 + v_2}$ (4) $\frac{5v_1 v_2}{3v_1 + 2v_2}$

19. A particle moves in space such that

$x = 2t^3 + 3t + 4$; $y = t^2 + 4t - 1$;

$z = 2 \sin \pi t$

where x, y, z are measured in meter and t in second. The acceleration of the particle at t = 3s is

(1) $36\hat{i} + 2\hat{j} + \hat{k}\ ms^{-2}$ (2) $36\hat{i} + 2\hat{j} + \pi\hat{k}\ ms^{-2}$

(3) $36\hat{i} + 2\hat{j}\ ms^{-2}$ (4) $12\hat{i} + 2\hat{j}\ ms^{-2}$

20. The velocity of a particle moving on the x-axis is given by $v = x^2 + x$ where v is in m/s and x is in m. Find its acceleration in m/s^2 when passing through the point x = 2m

(1) 0 (2) 5

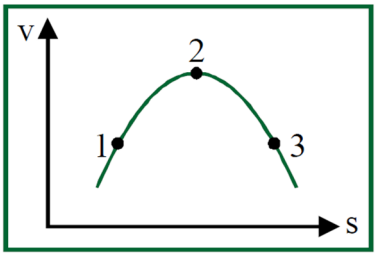
(3) 11 (4) 30

21. A boat crosses a river of width 1 km along the shortest path in 15 minutes. If the speed of boat in still water is 5 km/hr, then what is the speed of the river ?

(1) 1 km/hr (2) 3 km/hr

(3) 2 km/hr (4) 5 km/hr

22. The velocity–displacement curve for an object moving along a straight line is shown in the figure below.

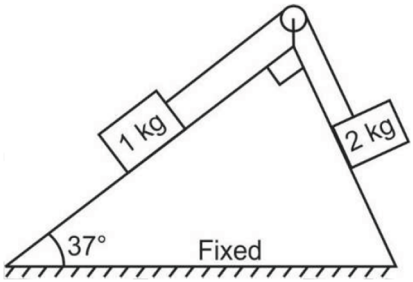


At which of the points marked, the object speeding up ?

(1) 1 (2) 2

(3) 1 and 3 (4) 1, 2 and 3

23. In the arrangement shown, pulley and string are ideal friction is absent. The acceleration of centre of mass is ($g = 10\ m/s^2$)



(1) $\frac{5\sqrt{3}}{2} m/s^2$ (2) $\frac{10\sqrt{5}}{3} m/s^2$

(3) $\frac{3\sqrt{5}}{10} m/s^2$

(4) $\frac{10\sqrt{5}}{9} m/s^2$

24. A bob of mass m is attained at one end of a light rod of length l and suspended freely as shown. The bob is then given velocity $v_0 = \sqrt{3gl}$. Then

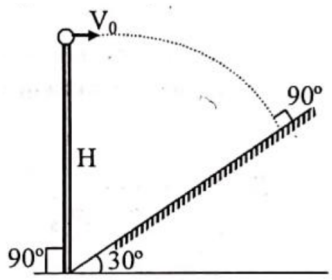
(1) The bob completes vertical circle

(2) Maximum tension in rod is 4mg

(3) Minimum speed of bob is $\sqrt{gl}$

(4) All of these

25. In the given figure, the angle of inclination of the inclined plane is 30°. Find the horizontal velocity V_0 so that the particle hits the inclined plane perpendicularly.



(1) $V_0 = \sqrt{\frac{2gH}{5}}$

(2) $V_0 = \sqrt{\frac{2gH}{7}}$

(3) $V_0 = \sqrt{\frac{gH}{5}}$

(4) $V_0 = \sqrt{\frac{gH}{7}}$

[CHEMISTRY]

26. The orbital angular momentum of an electron is $\sqrt{3}\frac{h}{\pi}$. Which of the following may be the permissible value of angular momentum of this electron revolving in unknown Bohr's orbit?

(1) $\frac{h}{\pi}$ (2) $\frac{h}{2\pi}$

(3) $\frac{3h}{2\pi}$

(4) $\frac{2h}{\pi}$

27. A volume of 10 ml of gaseous C_4H_x exactly requires 55 ml O_2 for complete combustion. The value of 'x' is

(1) 4 (2) 6

(3) 8 (4) 10

28. The simplest formula of a compound containing 50% of an element X (atomic weight 10) and 50% of element Y (atomic weight 20) is:

(1) XY (2) X_2Y

(3) XY_2 (4) X_2Y_3

(Space for Rough Work)

29. 10 mL of 1 M $BaCl_2$ solution and 5 mL of 0.5 M K_2SO_4 are mixed together to precipitate out $BaSO_4$. The amount of $BaSO_4$ precipitated will be

(1) 0.005 mol (2) 0.00025 mol

(3) 0.025 mol (4) 0.0025 mol

30. The correct set of quantum numbers for the unpaired electron of a chlorine atom, is:

(1) $2, 0, 0, +\frac{1}{2}$ (2) $2, 1, -1, +\frac{1}{2}$

(3) $3, 1, -1, +\frac{1}{2}$ (4) $3, 0, 0, \pm\frac{1}{2}$

31. Non-ideal gases approach ideal behaviour:

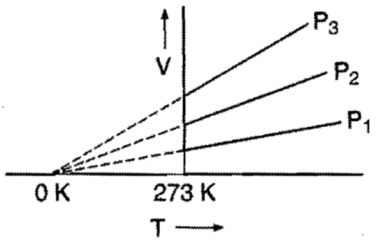
(1) high temperature and high pressure

(2) high temperature and low pressure

(3) low temperature and high pressure

(4) low temperature and low pressure

32. The volume-temperature graphs of a given mass of an idea gas at constant pressures are shown below What is the correct order of pressures?



(1) $P_1 > P_3 > P_2$ (2) $P_1 > P_2 > P_3$

(3) $P_2 > P_3 > P_1$

(4) $P_2 > P_1 > P_3$

33. Ionic conductances of hydrated M^+ ions are in the order –

(1) $Li^+(aq) > Na^+(aq) > K^+(aq) > Rb^+(aq) > Cs^+(aq)$

(2) $Li^+(aq) > Na^+(aq) < K^+(aq) < Rb^+(aq) < Cs^+(aq)$

(3) $Li^+(aq) > Na^+(aq) > K^+(aq) > Rb^+(aq) < Cs^+(aq)$

(4) $Li^+(aq) < Na^+(aq) < K^+(aq) < Rb^+(aq) < Cs^+(aq)$

34. Atomic weight of Cl is 35.5 and I is 127. What will be the atomic weight of Br, as per Dobereiners triad rule :-

(1) 81.2 (2) 85

(3) 95 (4) 162

35. Which of the following statements is not correct for sigma and pi bond formed between two carbon atoms?

(1) Free rotation of atoms about a sigma – bond is allowed but not in case of a pi-bond

(2) Sigma- bond determines the direction between carbon atoms but a pi-bond has no primary effect in this regard

(3) Sigma-bond is stronger than a pi-bond

(4) Bond energies of sigma-and pi-bonds are of the order of 264 kJ/mol and 347 kJ/mol respectively.

36. Read the following statements :

(i) The total number of lone pair electrons in XeF_2 are 'x'

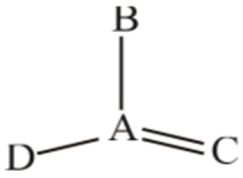
(ii) On the basis of Lewis dot structure the maximum number of π – electrons in H_2CO_3 molecule are 'y'

The sum of (x + y) is :

(1) 10 (2) 14

(3) 12 (4) 20

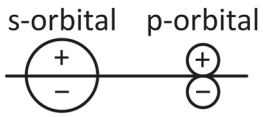
37. If formal charge on A is + 1 then, A belongs to which group of long form of periodic table.

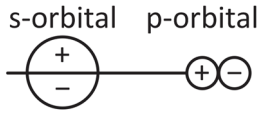


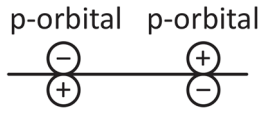
(1) 14 (2) 15

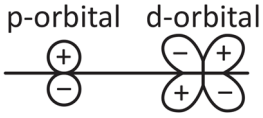
(3) 16 (4) 17

38. Which of the following leads to bonding?

(1) 

(2) 

(3) 

(4) 

39. Which of the following pair of compound have same hybridization but different shape of the molecule

(1) BeH_2, XeF_2 (2) BCl_3, SO_3

(3) CO_2, $BeCl_2$ (4) XeF_2, SeF_4

40. Which process can produce maximum number of Fe^{2+} ions from iron atom by absorbing energy from the given species.

Considering equal number of given species.

(1) Formation of N^- from N-atom

(2) Formation of F^- from F-atom

(3) Formation of Cl^- from Cl-atom

(4) Formation of S^- from S-atom

41. The first five ionization energies of an element are 9.1, 16.2, 22.5, 35 and 205.7 eV respectively. Then number of valence electron in the atom is

(1) 2 (2) 3

(3) 4 (4) 5

42. Four groups of students are studying with different samples of alkali metal halides as given below:

Group A : NaCl Group B : NaBr

Group C : KCl Group D : KBr

If all the four groups dissolved 0.1 moles of their salt in some water and then treated with the excess of acidified $AgNO_3$ solution, then which of the following statement(s) is/are correct regarding the mass of precipitate formed?

(1) All the four groups will obtain the same mass of precipitate.

(2) Group A and C will obtain the same mass of precipitate.

(3) Group A and D will obtain the same mass of precipitate.

(4) Group A and B will obtain the same mass of precipitate

43. **Statement I**: Molarity and molality for very dilute aqueous solution is approximately equal.

Statement II: For all aqueous solution, total mass of solvent is approximately equal to total volume of solution.

(1) Both statements are CORRECT, and Statement II is the CORRECT explanation of Statement I.

(2) Both statements are CORRECT, and Statement II is NOT the CORRECT explanation of Statement I.

(3) Statement I is CORRECT, but Statement II is INCORRECT.

(4) Statement I is INCORRECT, but Statement II is CORRECT.

44. A compound contains elements X and Y in 1:4 mass ratio. If the atomic masses of X and Y are in 1:2 ratio, the empirical formula of compound should be

(1) XY_2 (2) X_2Y

(3) XY_4

(4) X_4Y

45. A vessel contains a mixture of H_2 and D_2 gases. If a pin hole is made in the vessel, then

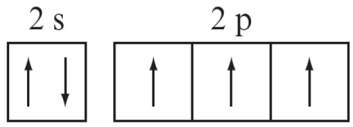
(1) mole fraction of H_2 in the gas remaining in the vessel will increase with time.

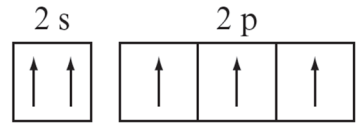
(2) mole fraction of D_2 in the gas remaining in the vessel will increase with time.

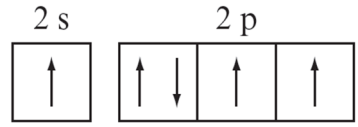
(3) the average molecular weight of gas remaining in the vessel will increase with time.

(4) the partial pressure of H_2 in the gas remaining in the vessel will increase with time.

46. Which of the following configuration is violating Pauli's exclusion principle?

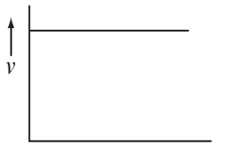
(1) 

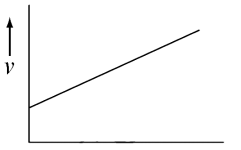
(2) 

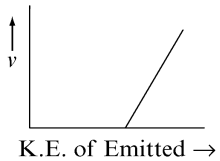
(3) 

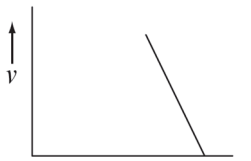
(4) (2) and (3)

47. Which of the following graphs is correct for the photoelectric effect?

(1) 

(2) 

(3) 

(4) 

48. The eyes of a certain member of the reptile family pass a signal visual single to the brain when the visual receptors are stuck by photons of wavelength 662.6 nm. If a total energy of 3.0×10^{-14} J is required to trap the signal, what is the minimum number of photons that must strike the receptor?

(1) 1.0×10^5 (2) 1.0×10^6

(3) 1000 (4) 1

49. If an electron in H-atom jumps from one orbit to other, its angular momentum doubles. The distance of electron from nucleus becomes ____ times the initial distance.

(1) 2 (2) 4

(3) $\frac{1}{2}$ (4) $\frac{1}{4}$

50. The nitrogen atom has 7 protons and 7 electrons. The nitride ion will have:

(1) 10 protons and 7 electrons

(2) 7 protons and 10 electrons

(3) 4 protons and 7 electrons

(4) 4 protons and 10 electrons

[BIOLOGY]

51. Statement 1 : Families like solanaceae, convolvulaceae are included in order polynomials.

Statement : This classification is based on vegetative characters as well as reproductive characters.

(1) Only statement I is correct

(2) Only statement II is correct

(3) Both Statements are correct

(4) Both Statements are incorrect

52. Assertion : Properties of tissues are not present in constituent cells

Reason : Properties of tissues arise due to interaction b/w their constituent organelles.

(1) Both Assertion & Reason are correct and reason is correct explanation of assertion.

(2) Both assertion & reason are correct & reason is not correct explanation of assertion

(3) Assertion is true but reason is false

(4) Both assertion & reason are incorrect

53. Contagium vivum fluidum was proposed by :

(1) D.J. Ivanowski (2) M.W. Beijerinck

(3) Stanley (4) Robert Hooke

54. Systematics is the study of

(1) Diversity amongst groups of organisms

(2) Grouping of organisms

(3) Identification and grouping of organisms

(4) Identification, classification and taxonomy

55. Megasporangium is equivalent to :

(1) Nucellus (2) Ovule

(3) Integument (4) Couple

56. n & 2n ploidy is of [respectively] :

(1) Egg & nucellus cell

(2) Synergid & antipodals

(3) Egg & Antipodals

(4) Egg & Endosperm

57. **Assertion** : The mycoplasma are organisms that completely lack a cell wall.

Reason : They are the smallest living cells known and cannot survive without oxygen

(1) Both Assertion & Reason are correct and reason is correct explanation of assertion.

(2) Both assertion & reason are correct & reason is not correct explanation of assertion

(3) Assertion is true but reason is false

(4) Both assertion & reason are incorrect

58. Match column I & column II

	Column I		**Column II**
a.	Stamen	(i)	Seed coat
b.	Carpel	(ii)	Megasporangium
c.	Ovule	(iii)	Megasporophyll
d.	Integument	(iv)	Microsporophyll

(1) a-iv ; b-iii ; c-ii ; d-i

(2) a-i ; b-iii ; c-ii ; d-iv

(3) a-iii ; b-iv ; c-ii ; d-i

(4) a-ii ; b-iii ; c-iv ; d-i

59. Which one of the following organisms is not an example of eukaryotic cells :

(1) Amoeba proteus

(2) Paramecium caudatum

(3) Nostoc

(4) Euglena viridis

60. Independent gametophyte is the feature of :

(1) Selaginella & Cycas

(2) Salvenia & Ginkgo

(3) Petunia & Marsilia

(4) Funaria & Sphagnum

61. Two stages of gametophyte is not seen in :

(1) Pteris (2) Funaria

(3) Polytrichum (4) Sphagnum

62. Vexillary aestivation is characteristic feature of flower of :

(1) Calotropis (2) Pea

(3) China Rose (4) Cotton

63. Plant division that possess archegonia but no antheridia :

(1) Cycas

(2) Selaginella

(3) Hibiscus

(4) Polysiphonia

64. In the five-kingdom classification, Chlamydomonas and Chlorella have been included in :

(1) Algae

(2) Plantae

(3) Monera

(4) Protista

65. Examples of phyllode and Phylloclade respectively :

(1) Opuntia & Euphorbia

(2) Cycas & opuntia

(3) Acacia & Opuntia

(4) Cassia & Euphorbia

66. Match the following :

(A) Eicchornia	(i) Corms
(B) Euphorbia	(ii) Offset
(C) Amorphophallus	(iii) Spine
(D) Garlic	(iv) Bulbs

(1) A-(ii) ; B-(iii) ; C-(i) ; D-(iv)

(1) A-(iv) ; B-(iii) ; C-(i) ; D-(ii)

(1) A-(ii) ; B-(iv) ; C-(i) ; D-(iii)

(1) A-(i) ; B-(iv) ; C-(iii) ; D-(ii)

67. Statement I : Underground stem of grasses & strawberry helps in vegetative propagation

Statement II : Australian Acacia is a very good example of phylloclade

(1) Both Assertion & Reason are correct and reason is correct explanation of assertion.

(2) Both assertion & reason are correct & reason is not correct explanation of assertion

(3) Assertion is true but reason is false

(4) Both assertion & reason are incorrect

68. Dependent sporophyte are shown in :

(1) Gymnosperms

(2) Angiosperms

(3) Pteridophytes

(4) None of above

69. Assertion : Roots are always positively geotropic.

Reason : Roots never have lenticels.

(1) Both Assertion & Reason are correct and reason is correct explanation of assertion.

(2) Both assertion & reason are correct & reason is not correct explanation of assertion

(3) Assertion is true but reason is false

(4) Both assertion & reason are incorrect

70. Which one of the following matches is correct?

(1) Alternaria- Sexual reproduction absent, Deuteromycetes

(2) Mucor- Reproduction by conjugation, Ascomycetes

(3) Agaricus- Parasitic fungus, Basidiomycetes

(4) Phytophthora- Aseptate mycelium, Basidiomyetes

71. Match the column I & column II :

A. Stem Tendril	(i) Citrus
B. Stem Thorns	(ii) Pea
C. Leaf Tendril	(iii) Cucumber
D. Leaf spines	(iv) Opuntia

(1) A-(iii) ; B-(i) ; C-(ii) ; D-(iv)

(2) A-(iv) ; B-(iii) ; C-(i) ; D-(ii)

(3) A-(ii) ; B-(iv) ; C-(i) ; D-(iii)

(4) A-(i) ; B-(iv) ; C-(iii) ; D-(ii)

72. Consider the following four statements whether they are correct or wrong?

(A) The sporophyte in liverworts is more elaborate than that in mosses.

(B) Salvinia is heterosporous

(C) The life-cycle in all seed bearing plants is diplontic

(D) In Pinus male and female cones are borne on different trees

The two wrong statements together are :

(1) Statements (B) and (C)

(2) Statements (A) and (B)

(3) Statements (A) and (C)

(4) Statements (A) and (D)

73. Choose endospermic seed containing plant :

Maize, Mangifera, Castor, Rice, Beans, Grams, Wheat, Banana, Orchids.

(1) 2 (2) 4

(3) 5 (4) 6

74. Assertion : Spines & thorns have similar origin & junction.

Reason : Both are developed from leaf apical bud.

(1) Both Assertion & Reason are correct and reason is correct explanation of assertion.

(2) Both assertion & reason are correct & reason is not correct explanation of assertion

(3) Assertion is true but reason is false

(4) Both assertion & reason are incorrect

75. Read the following five statements (A-E) and answer as asked next to them :

(A) In Adiantum the female gametophyte is retained on the parent sporophyte

(B) In Ginkgo male gametophyte is not independent

(C) The sporophyte in Riccia is more developed than that in Polytrichum

(D) Sexual reproduction in Volvox is isogameous

(E) The spores of slime moulds lack cell walls

How many of the above statements are correct?

(1) Three

(2) Four

(3) One

(4) Two

76. Which of the following statement is incorrect?

(1) 30 per cent of starch is hydrolyzed at pH 6.8

(2) Intrinsic factor secreted by peptic cells help in absorption of Vit B12.

(3) Pepsinogen is converted into pepsin by HCl.

(4) Mucus and bicarbonates present in gastric juice protect mucosal epithelium from excoriation by HCl.

77. All of the following enzymes are present in pancreatic juice except

(1) Amylase

(2) Lipases

(3) Carboxypeptidase

(4) Nucleotidases.

78. Read the following statements carefully w.r.t. PEM. Choose the option with all correct statements.

(a) Causes wasting of muscles in infants and children

(b) Causes failure of growth and brain development

(c) Some fat is left under the skin in marasmus

(d) Kwashiorkor is found in infants less than one year of age

(1) a and b (2) b and c

(3) c and d (4) a and d.

79. Which of the following products of digestion are absorbed by intestinal mucosa by simple diffusion, facilitated transport as well as by active transport ?

(1) Glucose and amino acids

(2) Glucose and glycerol

(3) Chylomicron and Na^+

(4) Fructose and fatty acids.

80. Select the incorrect match.

(1) Inspitratory capacity $\rightarrow$ TLC – FRC

(2) Expiratory capacity $\rightarrow$ (FRC-RV) + TV

(3) Vital capacity $\rightarrow$ IRV + EC

(4) Total lung capacity $\rightarrow$ VC – RV

81. All of the following factors are favourable for formation of oxyhaemoglobin at alveolar level except

(1) High pO_2 (2) High H^+

(3) Low pCO_2 (4) Low temperature.

82. A centre called 'X' for regulation of respiration is present in pons region of brain. Neutral signals from 'X' can cause 'Y' effect on the duration of inspiration.

Select the correct option for 'X' and 'Y'

(1) **X-**Pneumotaxic centre; **Y-**No change

(2) **X-**Corpus callosum ; **Y-**Reduces the duration

(3) **X-**Pneumotaxic centre; **Y-**Reduces the duration

(4) **X-**Corpora ; **Y-**Increases the duration quadrigemina

83. If a, b and c are the saliva, gastric juice, and pancreatic juice respectively. Arrange the respective pH in decreasing order and select the correct option.

(1) a > c > b (2) c > a > b

(3) b > a > c (4) c > b > a.

84. Which of the following statement is incorrect w.r.t. Rh grouping ?

(1) Nearly 80% of humans are Rh positive

(2) Rh antibodies from the Rh positive mother can leak into the blood of the Rh negative foetus and destroy the foetal RBCs.

(3) Erythroblastosis foetalis can be avoided by administering anti-Rh antibodies to the mother immediately after the delivery of the first child.

(4) Rh antigen is similar to one present in Rhesus monkeys.

85. Given below is the table for the ABO grouping. Choose the option which correctly fills the blank I, II, III and IV respectively.

Blood group	Antigens on RBCs	Antibodies in plasma	Donor's group
A	I	II	O
O	III	IV	O

(1) Anti-A ; B ; AB ; anti A, B

(2) A ; anti-A ; nil ; A, B

(3) Anti A; anti-B ; nil; A, B

(4) A ; anti B ; nil ; anti-A, B

86. Lymph can be best described as

(1) Plasma without clotting factors

(2) Blood without RBCs, WBCs and platelets

(3) Blood minus RBCs and proteins only

(4) Blood without RBCs, larger plasma proteins and most of the formed elements in the blood vessels.

87. Read the following statements carefully.

a. Nodal tissue has the ability to generate action potentials without any external stimuli.

b. Nodal tissue is a specialized cardiac musculature.

c. The number of action potentials that could be generated in a minute is same at different parts of the nodal system.

d. The nodal tissue present in the upper right corner of the right atrium is also called pacemaker of the heart

Select the option that contains incorrect statement only

(1) A, b and d (2) c only

(3) a and c only (4) d only.

88. Choose the correct option

a.	Atherosclerosis	i.	Heart stops beating
b.	Cardiac arrest	ii.	Heart muscle is suddenly damaged
c.	Heart failure	iii.	Ineffective pumping of blood
d.	Heart attack	iv.	Coronary artery Disease

89. Choose the odd one out w.r.t. the amount of blood filtered by the kidneys.

(1) 1100-1200 ml of blood per minute

(2) $1/5^{th}$ of the blood pumped by each ventricle of the heart in a cardiac cycle.

(3) 20% of the cardiac output

(4) 1/5×(Stroke volume × heart rate)

90. Which of the following is a part of JGA (juxta glomerular apparatus)?

(1) Modifications of all cells of DCT

(2) All cells of afferent arteriole

(3) Cellular modifications in DCT and afferent arteriole at the location of their contact

(4) Cellular modifications in collecting duct and DCT.

91. Select the correct statement for the part of renal tubule which is lined by simple cuboidal brush border epithelium

(1) Passive reabsorption of glucose and amino acids

(2) Active reabsorption of nitrogeneous wastes like urea

(3) Minimum reabsorption

(4) 70-80% of electrolytes and water are reabsorbed.

92. Closure of tricuspid and bicuspid valve in a cardiac cycle is the result of

(1) Atrial systole

(2) Ventricular diastole

(3) Joint diastole

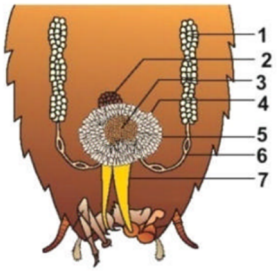
(4) Ventricular systole.

93. Select the odd one from the options given below w.r.t. regulation of kidney functions

(1) Vasopressin (2) Angiotensin II

(3) ANF (4) Aldosterone.

94. Male reproductive system of cockroach is shown in the given diagram



Select the option with **incorrect** identification of labellings :

(1) 2 – Phallic gland, 4 – Long tubules

(2) 1 – Testis, 5 – Seminal vesicles

(3) 3 – Small tubules, 6 – Vas deferens

(4) 1 – Phallic gland, 7 – Ejaculatory duct

95. Maximum Reabsorption of filtrate occurs from which part of nephron in presence of Anti-Diuretic Hormone (ADH)?

(1) PCT (2) Collecting duct

(3) DCT (4) loop of Henle

96. How many functions given below in the box are performed by epithelial tissue?

Absorption, Secretion, Diffusion, Conduction of Mucus, Protection, Filtration, Regeneration, Production of Stimuli, Gametogenesis, Transportation of Gametes

(1) 7 (2) 9

(3) 8 (4) 10

97. Connective Tissue are the most abundant and widely distributed in the body of complex animals because

(a) A sheath of tough connective tissue encloses several bundles of muscle fibers

(b) Dense connective tissue is present in our skin

(c) Major Circulating fluid of the body is blood which is a specialized connective tissue

(d) They are responsible for linking and supporting of other tissues and organs

(e) Specialized Connective tissues form structural frame work of the body

Choose the correct option

(1) a and b only (2) a, b, c and d

(3) a, b and c only (4) a, b, c, d and e

98. The enzyme commission number of an enzyme 'x' is 2 : 3 : 1 : 4 'x' belongs to a class of enzyme that catalyze.

(1) $NAD^+ + 2H^+ + 2e^- \longrightarrow NADH + H^+$

(2) $S - G + S^1 \longrightarrow S + S^1 - G$

(3) $X - C - C - Y \longrightarrow X - Y + C = C$

(4) $A - B + H_2O \longrightarrow A - OH + B - H$

99. Which of the following sets of polymers is formed by joining of monomers through bonds that is formed by elimination of water moiety?

(1) Starch, Chitin, Uridylic acid

(2) Cellulose, Collagen, Adenosine

(3) Chitin, Adenosine, Starch

(4) Glycogen, Trypsin, Insulin

100. Essential amino acids have to be taken through diet as our body cannot synthesize than. How many of the following belongs to the same categories?

Alanine, Cysteine, Proline, Tryptophan, Phenylalanine, Serine, Glycine, Lysine

Select the correct option

(1) Five (2) Three

(3) Seven (4) Four