



Sky Tutorials

fly beyond the sky...

IIT-JEE | NEET | Foundation

NEET



Time: 200 Minute

M.M. 720

ALL INDIA SKY TEST SERIES

Pulse Batch – Neet

Date : 09/10/2023

SYLLABUS

PHYSICS	CHEMISTRY	BOTANY	ZOOLOGY
Ray Optics	Previous + Chemical Bonding (Hybridization)	Morphology of flowering plants	Animal Kingdom + Animal tissue + Breathing and exchange of gases + Body fluid and circulation

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

INSTRUCTIONS:

- This Question paper is divided in to four parts physics, chemistry, botany, zoology and each part is further divided into two sections.

Section -A contains 35 Questions Section B contains 15 questions. Please ensure that the Questions paper you have received contains **ALL THE QUESTIONS** in each Part.

- In Section A all the 35 Questions are compulsory and in Section B Contain 15 Question, out of these

15 Questions, candidates can choose to attempt any 10 Questions.

Each Question has four choices (a), (b), (c), (d) out of which **only one is correct & Carry 4 marks each 1 mark** will be deducted for each wrong answer.

GENERAL INSTRUCTION

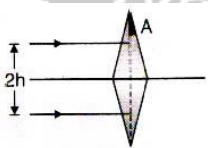




- Use only **blue/black pen (avoid gel pen)** for darkening the bubble.
- Indicate the correct answer for each question by filling appropriate bubble in your OMR answer sheet.
- The answer sheet will be checked through computer hence; the answer of the question must be marked by -shading the circles against the question by dark **blue/black pen**
- Blank papers, Clipboards, Log tables, Slide Rule, Calculator, Cellular Phones Papers and Electronic Gadgets in any form are **not** allowed to be carried inside the examination hall.

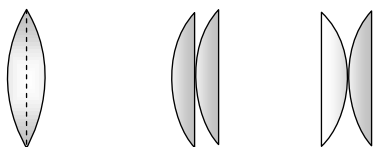

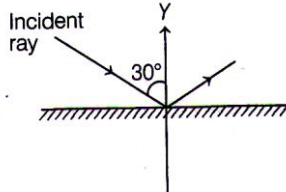
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PHYSICS

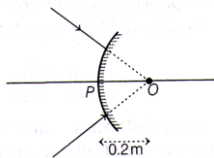
SECTION - A

1. An astronomical telescope has an objective of focal length 100 cm and an eye piece of focal length 5 cm. The final image of a star is seen 25 cm from the eyepiece. The magnifying power of the telescope is
(a) 20 (b) 22 (c) 24 (d) 26
2. When a telescope is adjusted for normal vision, the distance of the objective from the eyepiece is found to be 80 cm. The magnifying power of the telescope is 19. What are the focal lengths of the lenses?
(a) 61 cm, 19 cm (b) 40 cm, 40 cm
(c) 76 cm, 4 cm (d) 50 cm, 30 cm
3. The focal lengths of the objective and eye lens of a telescope are respectively 200 cm and 5 cm. The maximum magnifying power of the telescope will be
(a) - 40 (b) - 48 (c) - 60 (d) - 100
4. A plano convex lens fits exactly into a plano concave lens. Their plane surfaces are parallel to each other. If the lenses are made of different materials of refractive indices μ_1 and μ_2 and R is the radius of curvature of the curved surface of the lenses, then focal length of the combination is
(a) $\frac{R}{\mu_1 - \mu_2}$ (b) $\frac{2R}{\mu_2 - \mu_1}$
(c) $\frac{R}{2(\mu_1 - \mu_2)}$ (d) $\frac{R}{2 - (\mu_1 - \mu_2)}$
5. Two identical thin isosceles prisms of refracting angle A and refractive index μ are placed with their bases touching each other and this system can collectively act as a crude converging lens. A parallel beam of light is incident on this system as shown. The focal length of this so called converging lens is.

(a) $f = \frac{h}{\mu A}$ (b) $f = \frac{h}{A}$
(c) $f = \frac{h}{(\mu - 1)A}$ (d) $f = \frac{\mu h}{\mu - 1}$
6. Which one of the following spherical lenses does not exhibit deviation?
(a)  (b) 
(c)  (d) 
7. An astronomical telescope has an angular magnification of magnitude 5 for distant objects. The separation between the objective and eyepiece is 36 cm and the final image is formed at infinity. Determine the focal length of objective and eyepiece.
(a) $f_e = 6\text{cm}$, $f_o = 30\text{cm}$ (b) $f_o = 10\text{cm}$, $f_e = 6\text{cm}$
(c) $f_e = 5\text{cm}$, $f_o = 8\text{cm}$ (d) $f_o = 9\text{cm}$, $f_e = 5\text{cm}$
8. In a compound microscope, the magnified virtual image is formed at a distance of 25 cm from eyepiece. The focal length of its objective lens is 1 cm. If magnification is 100 and tube length of the microscope is 20 cm then focal length eyepiece lens in cm is
(a) 6.25 (b) 10 (c) 5 (d) 3.25
9. An astronomical telescope has an eye piece of focal length 5 cm. If the angular magnification of normal adjustment is 10, the distance between the objective and the eye piece is.
(a) 45 cm (b) 50 cm (c) 55 cm (d) 110 cm
10. Wavelength of light used in an optical instrument are $\lambda_1 = 4000 \text{ \AA}$ and $\lambda_2 = 5000 \text{ \AA}$, then ratio of their respective resolving power (corresponding to λ_1 and λ_2) is.
(a) 16 : 25 (b) 9 : 1 (c) 4 : 5 (d) 5 : 4
11. Two points separated by a distance of 0.1 mm can just be resolved in a microscope when a light of wavelength 6000 \AA is used. If the light of wavelength 4800 \AA is used this limit of resolution becomes.
(a) 0.08 mm (b) 0.10 mm
(c) 0.12 mm (d) 0.06 mm
12. The resolving power of a compound microscope can be increased if we.
(a) Use infrared light for illuminating the object under observation instead of visible light
(b) Use ultraviolet light for illuminating the object under observation instead of visible light
(c) Use an objective of larger focal length
(d) None of the above
13. A person cannot see distinctly at the distance less than one metre. Calculate the power of the lens that he should use to read a book at a distance of 25 cm
(a) + 3.0 D (b) + 0.125 D
(c) - 3.0 D (d) + 4.0 D

14. The least distance of distinct vision is 25 cm. The focal length of a convex lens is 5 cm. It can act as a simple microscope of magnifying power.
(a) 4 (b) 3 (c) 6 (d) N.O.T.
15. Four convergent lenses have focal lengths 100 cm, 10 cm, 4 cm and 0.3 cm. For a telescope with maximum possible magnification, we choose the lenses of focal lengths.
(a) 100 cm, 0.3 cm (b) 10 cm, 0.3 cm
(c) 10 cm, 4 cm (d) 100 cm, 4 cm
16. In a plano-convex lens the radius of curvature of the convex lens is 10 cm. If the plane side is polished, then the focal length will be (Refractive index = 1.5)
(a) 10.5 cm (b) 10 cm (c) 5.5 cm (d) 5 cm
17. The magnification of an object placed in front of a convex lens of focal length 20 cm in +2. To obtain a magnification of -2, the object has to be moved by a distance equal to.
(a) 40 cm (b) 30 cm (c) 20 cm (d) 10 cm
18. A thin converging lens of refractive index 1.5 has a power of +5 D. When this lens is immersed in a liquid, it acts as a diverging lens of focal length 100 cm. The refractive index of the liquid is.
(a) $\frac{4}{3}$ (b) $\frac{3}{2}$ (c) $\frac{5}{3}$ (d) 2
19. Two convex lenses of focal length f_1 and f_2 are mounted coaxially separated by a distance. If the power of the combination is zero, the distance between the lenses is.
(a) $|f_1 - f_2|$ (b) $f_1 + f_2$ (c) $\frac{f_1 f_2}{|f_1 - f_2|}$ (d) $\frac{f_1 f_2}{f_1 + f_2}$
20. Two similar plano-convex lenses are combined together in three different ways as shown in the adjoining figure. The ratio of the focal lengths in three cases will be

(a) 2 : 2 : 1 (b) 1 : 1 : 1 (c) 1 : 2 : 2 (d) 2 : 1 : 1
21. A converging lens is used to form an image on a screen. When upper half of the lens is covered by an opaque screen
(a) Half the image will disappear
(b) Complete image will be formed of same intensity
(c) Half image will be formed of same intensity
(d) Complete image will be formed of decreased intensity
22. An equiconvex lens of glass of focal length 0.1 metre is cut along a plane perpendicular to principle axis into two equal parts. The ratio of focal length of new lenses formed is
(a) 1 : 1 (b) 1 : 2 (c) 2 : 1 (d) $2 : \frac{1}{2}$
23. A convex lens is made of 3 layers of glass of 3 different materials as in the figure. A point object is placed on its axis. The number of images of the object are
(a) 3 (b) 4 (c) 1 (d) 2

24. Two thin lenses of focal lengths f_1 and f_2 are in contact and coaxial. The combination is equivalent to a single lens of power
(a) $f_1 + f_2$ (b) $\frac{f_1 f_2}{f_1 + f_2}$
(c) $\frac{f_2}{f_2 + f_1}$ (d) $\frac{f_1 + f_2}{f_1 f_2}$
25. By what angle, mirror should be rotated to obtain reflected ray along +Y-axis?

(a) 360° clockwise (b) 15° anti-clockwise
(c) 30° anti-clockwise (d) 60° anti-clockwise
26. **Statement-1** If there is relative motion between a point object and a plane mirror, then there must be relative motion between object and image formed by mirror.
Statement-2 If the gap between object and mirror will change, the gap between object and image will also change.
(a) Statement-1 is true, Statement-2 is true; Statement-2 is a correct explanation for Statement-1.
(b) Statement-1 is true, Statement-2 is true; Statement-2 is not a correct explanation for Statement-1.
(c) Statement-1 is true, Statement-2 is false.
(d) Statement-1 is false, Statement-2 is true.
27. The largest distance of the image of a real object from a convex mirror of focal length 20 cm can be
(a) 20 cm
(b) infinite
(c) 10 cm
(d) depends on the position of the object

28. An object is placed in front of a convex mirror of radius of curvature 20 cm. Its image is formed 8 cm behind the mirror. The object distance is
 (a) 20 cm (b) 40 cm (c) 60 cm (d) 80 cm

29. A convergent beam of light is incident on a convex mirror of radius of curvature R as shown in figure. A real image is formed at a distance 0.4 m from the mirror. The radius of curvature of the mirror is



- (a) 0.4 m (b) 1.4 m (c) 0.8 m (d) 1.8 m

30. A rod of length 20 cm lies along the principal axis of a concave mirror of focal length 20 cm in such a way that its end closer to the pole is 40 cm away from the mirror. The length of the image is
 (a) 50 cm (b) 70 cm (c) 20 cm (d) 10 cm

31. A ray of light passes from glass, having a refractive index of 1.6 to air. The angle of incidence for which the angle of refraction is twice the angle of incidence is

- (a) $\sin^{-1}\left(\frac{4}{5}\right)$ (b) $\sin^{-1}\left(\frac{3}{5}\right)$
 (c) $\sin^{-1}\left(\frac{5}{8}\right)$ (d) $\sin^{-1}\left(\frac{2}{5}\right)$

32. **Statement A:** A simple microscope of smaller focal length is preferred

Statement B: For a simple microscope $m = \frac{1}{f} + D$

In the light of the above statements, choose the most appropriate answer from the options given below:

- (a) (A) is not correct but (B) is correct
 (b) Both (A) and (B) are correct and (B) is the correct explanation of (A).
 (c) Both (A) and (B) are correct but (B) is not the correct explanation of (A).
 (d) (A) is correct but (B) is not correct

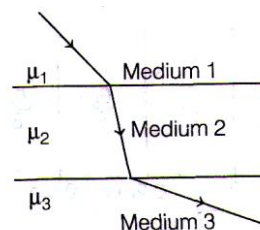
33. Critical angle of light passing from glass to air is minimum for

- (a) red (b) green
 (c) violet (d) same for all

34. An endoscope is employed by a physician to view the internal parts of a body organ. It is based on the principle of

- (a) total internal reflection (b) refraction
 (c) reflection (d) dispersion

35. A beam of light passes from medium 1 to medium 3 as shown in figure. What may be concluded about the three indices of refraction, μ_1, μ_2 and μ_3 ?



- (a) $\mu_3 > \mu_1 > \mu_2$ (b) $\mu_1 > \mu_3 > \mu_2$
 (c) $\mu_2 > \mu_3 > \mu_1$ (d) $\mu_2 > \mu_1 > \mu_3$

SECTION -B

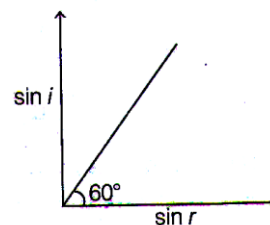
36. A slab of glass of refractive index 1.5 and thickness 3 cm is placed with the faces perpendicular to the principal axis of a concave mirror. If the radius of curvature of the mirror is 10 cm, the distance at which an object must be placed from the mirror, so that image coincides with object is

- (a) 9 cm (b) 10 cm (c) 11 cm (d) 12 cm

37. A convex lens of focal length 10 cm is in contact with a concave lens. The focal length of the combination is numerically equal to that of the concave lens. The focal length of the concave lens is

- (a) 10 cm (b) 15 cm (c) 5 cm (d) 20 cm

38. A ray of light is incident on a medium with angle of incidence i and refracted into a second medium with angle of refraction r . The graph of $\sin i$ versus $\sin r$ is as shown in figure. Then, the velocity of light in the first medium is n times the velocity of light in the second medium. What should be the value of n ?



- (a) $\sqrt{3}$ (b) $1/\sqrt{3}$
 (c) $\sqrt{3}/2$ (d) $2/\sqrt{3}$

39. A layer of oil 3 cm thick is floating on a layer of coloured water 5 cm thick. Refractive index of coloured water is $5/3$ and the apparent depth of the two liquids appears to be $36/7$ cm. Find the refractive index of oil.

- (a) 1.6 (b) 1.4 (c) 1.9 (d) 0.9

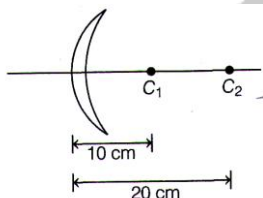
40. An illuminated object and a screen are placed 90 cm apart. What is the focal length of the lens, required to produce an image on the screen, twice the size of object ?

- (a) 20 cm (b) 30 cm (c) 40 cm (d) 50 cm

41. A spherical surface separates two media X and Y with refractive indices μ_1 and μ_2 , respectively. When an object is placed in X, its real image is formed in Y. The object and image distance are u and v , respectively. The magnification produced is

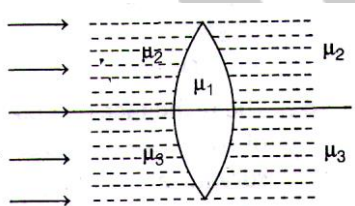
- (a) $\frac{v}{u}$ (b) $\frac{\mu_2 v}{\mu_1 u}$
 (c) $\frac{\mu_1 v}{\mu_2 u}$ (d) undefined

42. Figure shows a thin lens with centre of curvatures C_1 and C_2 . Find its focal length. (Take, $\mu = 1.5$)



- (a) 20 cm (b) 30 cm (c) 10 cm (d) 40 cm

43. A double convex lens, made of a material refractive index μ_1 , is placed inside two liquids of refractive indices μ_2 and μ_3 , as shown $\mu_2 > \mu_1 > \mu_3$. A wide, parallel beam of light is incident on the lens from the left. The lens will give rise to



- (a) a single convergent beam
 (b) two different convergent beams
 (c) two different divergent beams
 (d) a convergent and a divergent beam

44. When a lens of power P (in air) made of a material of refractive index 3 is dipped in a liquid of refractive index 4, the new power of lens is

- (a) $-\frac{4P}{3}$ (b) $\frac{P}{3}$ (c) $\frac{3P}{4}$ (d) $-\frac{P}{8}$

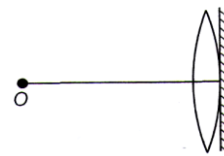
45. An object is placed at a distance of 5 cm from the first focus of a convex lens of focal length 10 cm. If a real image is formed, its distance from the lens will be

- (a) 15 cm (b) 20 cm (c) 25 cm (d) 30 cm

46. A point object is placed at a distance of 25 cm from a convex lens of focal length 20 cm. If a glass slab of thickness t and refractive index 1.5 is inserted between the lens and object, then image is formed at infinity. The thickness of the slab is

- (a) 10 cm (b) 5 cm (c) 20 cm (d) 15 cm

47. Behind a thin converging lens having both the surfaces of the same radius 10 cm, a plane mirror has been placed. The image of an object at a distance 40 cm from the lens is formed at the same position. What is the refractive index of the lens ?



- (a) 1.5 (b) $\frac{5}{3}$ (c) $\frac{9}{8}$ (d) $\frac{8}{7}$

48. Two identical glass ($\mu_g = \frac{3}{2}$) equiconvex lenses of focal length 20 cm are kept in contact. The space in between the two lenses is filled with water ($\mu_w = \frac{4}{3}$). The focal length of the combination is

- (a) 60 cm (b) 30 cm (c) 20 cm (d) 15 cm

49. Calculate the angle of minimum deviation for an equilateral triangular prism of refractive index $\sqrt{3}$.

- (a) 45° (b) 90° (c) 30° (d) 60°

50. A light ray incident normally on one face of an equilateral prism and emerges out grazingly at the other face. The refractive index of the prism is

- (a) $\sqrt{3}$ (b) $\sqrt{2}$ (c) $\frac{2\sqrt{3}}{5}$ (d) $\frac{2}{\sqrt{3}}$

CHEMISTRY

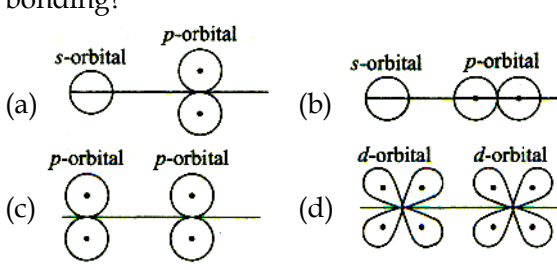
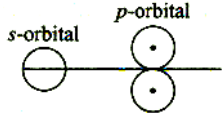
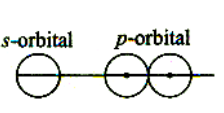
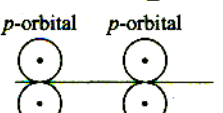
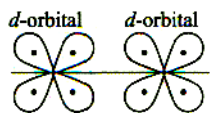
SECTION - A

51. Which one of the following exhibits the maximum covalent character?

- (a) FeCl_2 (b) AlCl_3
 (c) MgCl_2 (d) SnCl_2

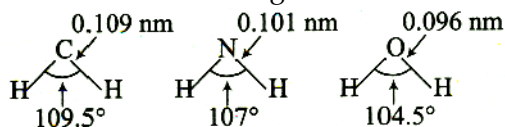
52. Covalent compounds have low melting point because

- (a) covalent molecules are held by weak van der Waals' force of attraction
 (b) covalent bond is less exothermic
 (c) covalent bond is weaker than ionic bond
 (d) covalent molecule have definite shape

53. During the formation of a chemical bond
 (a) electron-electron repulsion becomes more than the nucleus- electron attraction
 (b) energy of the system does not change
 (c) energy increases
 (d) energy decreases
54. Which of the following is not the characteristic of a covalent compound?
 (a) No definite geometry
 (b) Insoluble in polar solvent
 (c) Small difference in electronegativity between the combining atoms
 (d) Low melting point
55. Benzoic acid contains
 (a) 15 σ and 2π -bonds
 (b) 15 σ and 4π -bonds
 (c) 14 σ and 4π -bonds
 (d) 13 σ and 4π -bonds
56. Which of the following substance has the highest melting point?
 (a) BaO (b) MgO
 (c) KCl (d) NaCl
57. Most favorable conditions for ionic bonding are
 (a) high charge, small cation, large anion
 (b) low charge, large cation, small anion
 (c) low charge, large cation, large anion
 (d) high charge, small cation, small anion
58. Number of electrons surrounding Kr in KrF_2 is
 (a) 10 (b) 6 (c) 4 (d) 8
59. The correct order of the lattice energies of the following ionic compounds is
 (a) $NaCl > MgBr_2 > CaO > Al_2O_3$
 (b) $NaCl > CaO > MgBr_2 > Al_2O_3$
 (c) $Al_2O_3 > CaO > MgBr_2 > NaCl$
 (d) $MgBr_2 > Al_2O_3 > CaO > NaCl$
60. Which of the following overlaps leads to lateral bonding?

 (a)  (b) 
 (c)  (d) 
61. Which of the following is the correct order of dipole moment?
 (a) $NH_3 < BF_3 < NF_3 < H_2O$
 (b) $BF_3 < NF_3 < NH_3 < H_2O$
 (c) $BF_3 < NH_3 < NF_3 < H_2O$
 (d) $H_2O < NF_3 < NH_3 < BF_3$
62. The bond angle in NF_3 (102.3°) is smaller than NH_3 (107.2°). This is because of
 (a) large size of F compared to H
 (b) large size of N compared to F
 (c) opposite polarity of N in the two molecules
 (d) small size of H compared to N
63. The correct decreasing order of dipole moment in CH_3Cl , CH_3Br and CH_3F is
 (a) $CH_3F > CH_3Cl > CH_3Br$
 (b) $CH_3F > CH_3Br > CH_3Cl$
 (c) $CH_3Cl > CH_3F > CH_3Br$
 (d) $CH_3Cl > CH_3Br > CH_3F$
64. The correct order of increasing bond length of C – H, C – O, C – C and C = C is
 (a) $C - H < C - O < C - C < C = C$
 (b) $C - H < C = C < C - O < C - C$
 (c) $C - C < C = C < C - O < C - H$
 (d) $C - O < C - H < C - C < C = C$
65. The bond order of the N – O bonds in NO_3^- ion is
 (a) 0.33 (b) 1.00 (c) 1.33 (d) 1.50
66. The correct order of increasing bond angle in the following species is
 (a) $ClO_2^- < Cl_2O < ClO_2$ (b) $Cl_2O < ClO_2 < ClO_2^-$
 (c) $ClO_2 < Cl_2O < ClO_2^-$ (d) $Cl_2O < ClO_2^- < ClO_2$
67. The correct order of increasing dipole moment of
 I. toluene,
 II. *m*-dichlorobenzene,
 III. *o*-dichlorobenzene and
 IV. *p*-dichlorobenzene is
 (a) $IV < II < I < III$ (b) $IV < I < II < III$
 (c) $I < IV < II < III$ (d) $IV < I < III < II$
68. The bond angle in AsH_3 is greater than that in
 (a) NH_3 (b) H_2O
 (c) BCl_3 (d) None of these
69. **Assertion (A)** H – S – H bond angle in H_2S is closer to 90° but H – O – H bond angle in H_2O is 104.5° .
Reason: (R) Lone pair – lone pair repulsion is stronger in H_2S than in H_2O .
 (a) Both A and R are correct and R is the correct explanation of A
 (b) Both A and R are correct but R is not the correct explanation of A
 (c) A is correct but R is incorrect
 (d) Both A and R are incorrect

70. The bond lengths and bond angles in the molecule of methane, ammonia and water are given below

This variation in bond angle is a result of



- I. the increasing repulsion between hydrogen atoms as the bond length decreases.
 II. the number of non-bonding electron pairs in the molecule.
 III. a non-bonding electron pair having a greater repulsion force than a bonding electron pair.
- (a) I, II and III are correct
 (b) I and II are correct
 (c) II and III are correct
 (d) Only I is correct
71. What is the correct order of decreasing bond angle?
 (a) $NH_4^+ > NH_3 > NH_2^-$ (b) $NH_2 > NH_2^- > NH_4^+$
 (c) $NH_2^- < NH_3 > NH_4^+$ (d) $NH_3 > NH_4^+ > NH_2^-$
72. The structure of IF_7 is
 (a) square pyramidal
 (b) trigonal bipyramidal
 (c) octahedral
 (d) pentagonal bipyramidal
73. **Assertion (A)** The central atom of NH_3 and H_2O , are both sp^3 -hybridised yet H – N – H bond angle is greater than that of H – O – H.
Reason (R) In NH_3 , N-atom has one lone pair of electron whereas in H_2O , oxygen atom has two lone pair of electrons.
 (a) Both A and R are correct and R is the correct explanation of A
 (b) Both A and R are correct but R is not the correct explanation of A
 (c) A is correct but R is incorrect
 (d) Both A and R are incorrect
74. **Assertion (A)** In SF_6 , molecule, F-S-F bond angle is 90° .
Reason (R) SF_6 molecule has octahedral geometry with sp^3d^2 hybridisation.
 (a) Both A and R are correct and R is the correct explanation of A
 (b) Both A and R are correct but R is not the correct explanation of A
 (c) A is correct but R is incorrect
 (d) Both A and R are incorrect

75. Match the compounds given in Column I with the shape given in Column II and mark the correct option.

	Column I		Column II
(a)	XeF_6	1.	Distorted octahedral
(b)	XeO_3	2.	Square planar
(c)	$XeOF_4$	3.	Pyramidal
(d)	XeF_4	4.	Square pyramidal

Codes

	A	B	C	D
(a)	1	2	4	3
(b)	4	3	1	2
(c)	4	1	2	3
(d)	1	3	4	2

76. Which of the following pair of ions are isoelectronic and isostructural ?

- (a) CO_3^{2-}, SO_3^{2-} (b) ClO_3^-, CO_3^{2-}
 (c) SO_3^{2-}, NO_3^- (d) ClO_3^-, SO_3^{2-}

77. Match the following Columns.

	Column I (Compound)		Column II (Structure)
(A)	ClF_3	1.	Square planar
(B)	PCl_5	2.	Tetrahedral
(C)	IF_5	3.	Trigonal bipyramidal
(D)	CCl_4	4.	Square pyramidal
(E)	XeF_4	5.	T-shaped

Codes

	A	B	C	D	E
(a)	5	4	3	2	1
(b)	5	3	4	2	1
(c)	5	3	4	1	2
(d)	4	3	5	2	1

78. The AsF_5 molecule is trigonal bipyramidal. The hybrid orbitals used by the As-atoms for bonding are

- (a) $d_{x^2-y^2}, d_{z^2}, s, p_x, p_y$ (b) d_{xy}, s, p_x, p_y, p_z
 (c) $s, p_x, p_y, p_z, d_{z^2}$ (d) $d_{x^2-y^2}, s, p_x, p_y$

79. If I_2 is dissolved in aqueous KI, the intense yellow species I_3^- is formed. The structure of I_3^- ions is

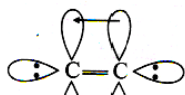
- (a) square pyramidal
 (b) trigonal bipyramidal
 (c) octahedral
 (d) pentagonal bipyramidal

80. **Assertion (A)** C – H bond in ethyne is shorter than C-H bonds in ethene.

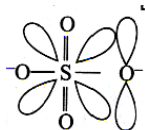
Reason (R) Carbon atom in ethene is sp hybridized while it is sp^2 in ethyne.

- (a) Both A and R are correct and R is the correct explanation of A
 (b) Both A and R are correct but R is not correct explanation of A
 (c) A is correct but R is incorrect
 (d) Both A and R are incorrect

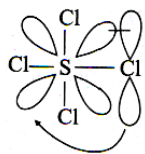
81. Which of the following represents $p\pi - d\pi$ back donation?



(a)



(b)



(c)

(d) Both (b) and (c)

82. Which of the following has $p\pi - d\pi$ bonding?

- (a) NO_3^- (b) SO_3^{2-} (c) BO_3^{3-} (d) CO_3^{2-}

83. **Assertion (A)** $SeCl_4$ does not have a tetrahedral structure.

Reason (R) Se in $SeCl_4$ has two lone pair.

- (a) Both A and R are correct and R is the correct explanation of A
 (b) Both A and R are correct but R is not the correct
 (c) A is correct but R is incorrect
 (d) Both A and R are incorrect
84. H_2O is dipolar, whereas BeF_2 is not. It is because
 (a) the electronegativity of F is greater than that of O
 (b) H_2O involves hydrogen bonding whereas BeF_2 is a discrete molecule
 (c) H_2O is linear and BeF_2 is angular
 (d) H_2O is angular and BeF_2 is linear

85. Among the following molecules

I. XeO_3 II. $XeOF_4$ III. XeF_6

Those having same number of lone pairs on Xe are

- (a) I and II (b) I and III
 (c) II and III (d) I, II and III

SECTION – B

86. Insulin contains 3.4% sulphur. What will be the minimum molecular weight of insulin ?

- (a) 94.176 (b) 1884
 (c) 941.176 (d) 976

87. The mole fraction of a given sample of I_2 in C_6H_6 is 0.2. The molality of I_2 in C_6H_6 is :

- (a) 0.32 (b) 3.2 (c) 0.032 (d) 0.48

88. Calculate the molality of 40% weight by volume solution of MgO if the density of the solution is 2 g/mL :

- (a) 5 (b) 10 (c) 6.25 (d) 12.5

89. To which electronic transition between Bohr orbits in hydrogen, the second line in the Balmer series belongs ?

- (a) $3 \rightarrow 2$ (b) $4 \rightarrow 2$
 (c) $5 \rightarrow 2$ (d) $6 \rightarrow 2$

90. The number of radial nodal surface in 3s and 2p :

- (a) 2, 0 (b) 2, 1
 (c) 1, 0 (d) 0, 2

91. The correct order of increasing atomic radius of the following elements is :

- (a) $S < O < Se < C$ (b) $O < C < S < Se$
 (c) $O < S < Se < C$ (d) $C < O < S < Se$

92. The incorrect statement among the following is :

- (a) the first ionisation potential of Al is less than the first ionisation potential of Mg
 (b) the second ionisation potential of Mg is greater than the second ionisation potential of Na
 (c) the first ionisation potential of Na is less than the first ionisation potential of Mg
 (d) the third ionisation potential of Mg is greater than the third ionisation potential of Al

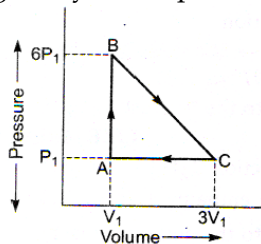
93. Which is not the correct order of electronegativity?

- (a) $Cl > S > Br > I$ (b) $Si > Al > Mg > Na$
 (c) $F > Cl > Br > I$ (d) None of these

94. The correct order of acidic strength is :

- (a) $Cl_2O_7 > SO_2 > P_4O_{10}$
 (b) $CO_2 > N_2O_5 < SO_3$
 (c) $Na_2O > MgO > Al_2O_3$
 (d) $K_2O > CaO > MgO$

95. An ideal gas is taken around the cycle ABCA as shown in P-V diagram. The net work done by the gas during the cycle is equal to :

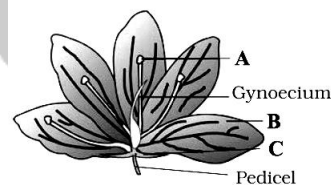


- (a) $12 P_1 V_1$ (b) $6 P_1 V_1$
(c) $5 P_1 V_1$ (d) $P_1 V_1$
96. The entropy will usually increase when :
- a molecule is broken into two or more smaller molecules.
 - a reaction occurs that results in an increase in the number of moles of gas.
 - a solid changes to a liquid.
 - a liquid changes to a gas.
- (a) I only (b) III only
(c) IV only (d) I, II, III, and IV
97. Which of the following reaction is exothermic reaction?
- (a) Combustion of methane
(b) Decomposition of water
(c) Dehydrogenation of ethane to ethylene
(d) Conversion of graphite to diamond
98. Which of the following reactions define ΔH_f° ?
- (a) $C_{(Diamond)} + O_2(g) \rightarrow CO_2(g)$
(b) $\frac{1}{2} H_2(g) + \frac{1}{2} F_2(g) \rightarrow HF(g)$
(c) $N_2(g) + 3H_2(g) \rightarrow 2NH_3$
(d) $CO(g) + \frac{1}{2} O_2(g) \rightarrow CO_2(g)$
99. The equilibrium constant expression for the equilibrium $2NH_3(g) + 2O_2(g) \rightleftharpoons N_2O(g) + 3H_2O(g)$ is :
- (a) $K_c = \frac{[N_2O][H_2O]^3}{[NH_3][O_2]}$ (b) $K_c = \frac{[H_2O]^3[N_2O]}{[NH_3]^2[O_2]^2}$
(c) $K_c = \frac{[NH_3]^2[O_2]^2}{[N_2O][H_2O]^3}$ (d) $K_c = \frac{[NH_3][O_2]}{[N_2O][H_2O]}$
100. The pH values of 1 M solutions of CH_3COONa , CH_3COOH , CH_3COONH_4 and NaOH will be such that :
- (a) $NaOH > CH_3COONH_4 > CH_3COONa > CH_3COOH$
(b) $NaOH > CH_3COONH_4 > CH_3COONa > CH_3COOH$
(c) $CH_3COOH > CH_3COONH_4 > CH_3COONa > NaOH$
(d) $CH_3COONa > CH_3COOH > CH_3COONH_4 > NaOH$

BOTANY

SECTION - A

101. Which among the following is not a function of veins?
- (a) It act as water, mineral, food transport channel
(b) Provides rigidity to the lamina of leaf
(c) Helps in transpiration and photosynthesis
(d) Both (a) and (b)
102. 'Nepenthes' is found in the nitrogen deficient soil. A very peculiar pitcher like structure is found in this plant. This pitcher like structure is a modification of:
- (a) Root (b) Stem
(c) Inflorescence (d) Leaf
103. Label the following A, B and C:



- (a) A - Androecium, B - Corolla, C - Calyx
(b) A - Calyx, B - Corolla, C - Androecium
(c) A - Calyx, B - Androecium, C - Corolla
(d) A - Corolla, B - Androecium, D - Calyx
104. *Muliathi* which is used as a medicine is extracted from a plant's bark which is a member of:
- (a) Solanaceae (b) Fabaceae
(c) Liliaceae (d) Asteraceae
105. A lateral branch with short internodes and each node bearing a rosette of leaves and a tuft of roots is found in aquatic plants like:
- (a) Mint and Jasmine
(b) Pistia and Eichhornia
(c) Pineapple and Banana
(d) Chrysanthemum and Jasmine

106. Identify the family with the following characters:
- Leaves having alternate phyllotaxy
 - Bisexual and actinomorphic flowers
 - Five epipetalous stamens
 - Fruits are berry or capsule
 - Seeds are endospermous
- (a) Solanaceae (b) Liliaceae
(c) Fabaceae (d) Brassicaceae

107. Match the following columns:

	Column - I (Types of roots)		Column - II (Example)
A.	Tap root	(i)	Wheat
B.	Fibrous root	(ii)	Mustard
C.	Adventitious root	(iii)	Monestra
D.	Prop root	(iv)	Banyan

- (a) A - ii, B - iii, C - i, D - iv
 (b) A - i, B - ii, C - iii, D - iv
 (c) A - ii, B - i, C - iii, D - iv
 (d) A - iii, B - i, C - ii, D - iv

108. Monocot seeds are mostly endosporic, except few like:

- (a) Orchids (b) Rice
 (c) Wheat (d) Maize

109. The below figure is of a ovary can you tell this type of ovary is present in flower of:



- (a) Plum (b) Rose
 (c) Guava (d) Mustard

110. Perennial herbs with underground bulbs or corms or rhizomes is common in the family?

- (a) Liliaceae (b) Fabaceae
 (c) Poaceae (d) Brassicaceae

111. When ovules are borne on central axis and sepals are absent, the placentation is:

- (a) Marginal placentation
 (b) Parietal placentation
 (c) Superficial placentation
 (d) Free central placentation

112. Below is a list of some plants. You have to identify a fumigatory and medicinal plants respectively which belong to Solanaceae are:

- (A) Indigofera (B) Belladonna
 (C) Tobacco (D) Colchicum autumnale
 (a) A, B (b) Only C (c) D, C (d) C, B

113. Keel is characteristic of the flowers of:

- (a) Bean (b) Gulmohur
 (c) Cassia (d) Calotropis

114. Match the following with column I & column II and choose the correct answer

	Column - I (Aestivation)		Column - II (Example)
A.	Valvate	(i)	Calotropis
B.	Twisted	(ii)	China rose
C.	Imbricate	(iii)	Cassia
D.	Vexillary	(iv)	Pea

- (a) A - i, B - ii, C - iii, D - iv
 (b) A - ii, B - i, C - ii, D - iv
 (c) A - i, B - iv, C - iii, D - ii
 (d) A - i, B - iii, C - ii, D - iv

115. The technical term used for the androecium in a flower of China rose (*Hibiscus rosasinensis*) is:

- (a) Polyadelphous (b) Monoadelphous
 (c) Diadelphous (d) Polyandrous

116. Which statement is false among the following:

- (A) When the stamens are united into more than two bundles this condition is seen in Citrus.
 (B) When more than one carpel is present it can be free as in Pea.
 (C) Petiole in Australian acacia expands become green and synthesized food.
 (D) When a shoot tip transforms into a flower, it is always solitary.
 (a) A, B and C (b) B, C and D
 (c) Only B (d) A, C and D

117. A special type of structure is found in brinjal where stamens are attached to the petals. Name the structure:

- (a) Epiphyllous (b) Epipetalous
 (c) Gamosepalous (d) Gamopetalous

118. In which plant, initially the ovary is one-chambered but it becomes two chambered due to the formation of the false septum:

- (a) Dianthus (b) Tomato
 (c) Primrose (d) Argemone

119. Match the following

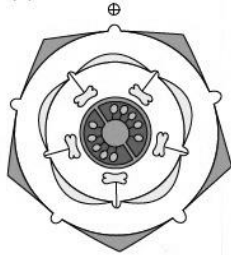
	Column - I (Placentation)		Column - II (Example)
A.	Marginal	(i)	Lemon
B.	Axile	(ii)	Dianthus
C.	Parietal	(iii)	Sunflower
D.	Free central	(iv)	Pea
E.	Basal	(v)	Mustard

- (a) A - iv, B - i, C - v, D - ii, E - iii
 (b) A - iv, B - i, C - v, D - iii, E - ii
 (c) A - i, B - iv, C - v, D - ii, E - iii
 (d) A - iv, B - ii, C - v, D - i, E - iii

120. The fruit is a characteristic feature of the following plants. If a fruit is formed without fertilization of ovary is called:
 (a) Monocarpic (b) Parthenocarpic
 (c) Mesocarpic (d) Polygamous
121. Which among the following statement is false with respect to drupe:
 (a) They develops from multicarpellary superior ovary
 (b) These are single seeded
 (c) Mango and coconut are drupe
 (d) Mesocarp of coconut is fibrous
122. The coconut water and the edible part of coconut are equivalent to:
 (a) Mesocarp (b) Embryo
 (c) Endosperm (d) Endocarp
123. A scar on the seed coat through which the developing seeds are attached to the fruit is called as _____.
 (a) testa (b) tegmen
 (c) hilum (d) micropyle
124. In a cereal grain the single cotyledon of embryo is represented by:
 (a) Scutellum (b) Aleurone layer
 (c) Endosperm (d) Coleorhiza
125. Pericarp consist of:
 (a) Epicarp + Mesocarp
 (b) Epicarp + Endocarp
 (c) Epicarp + Endocarp + Mesocarp
 (d) Mesocarp + Endocarp
126. What would be the number of chromosomes of the aleurone cells of a plant with 22 chromosomes in its root tip cells:
 (a) 11 (b) 22 (c) 33 (d) 66
127. Arrange the different zone in root from lower to upper side:
 (a) Meristematic zone, Root cap, Zone of elongation, Zone of maturation
 (b) Root cap, Meristematic zone, Zone of elongation, Zone of maturation
 (c) Root cap, Meristematic zone, Zone of maturation, Zone of elongation
 (d) Root cap, Zone of elongation, Meristematic zone, Zone of maturation
128. Floral formula which is represented by symbol and it show:
 (a) Cohesion and adhesion within part of whorl and between whorl
 (b) The position of mother axis with respect to flower is represented by a dot on the top of the floral diagram
 (c) Arrangement and relation of floral parts with one another
 (d) All of these
129. Match the following group I and group II:
- | | Group - I | | Group - II |
|------|-----------|----|-------------------|
| I. | G | A. | Superior ovary |
| II. | ⊕ | B. | Zygomorphic ovary |
| III. | % | C. | Actinomorphic |
| IV. | P | D. | Perianth |
- (a) I - A, II - C, III - B, IV - D
 (b) I - B, II - A, III - C, IV - D
 (c) I - B, IV - C, III - B, IV - D
 (d) I - D, II - C, III - A, IV - B
130. The function of micropyle in an ovule is to:
 (a) Allow the entry of pollen tube for fertilization
 (b) Allow the entry of water for seed germination
 (c) Help in the formation of parthenocarpic fruits
 (d) More than one option is correct
131. Pentamerous, actinomorphic flowers, bicarpellary ovary, and fruit a capsule or berry, are characteristic feature of:
 (a) Brassicaceae (b) Solanaceae
 (c) Liliaceae (d) Asteraceae
132. Following characters are given of a family, identify the family:
 (A) Androecium - 10, diadelphous, anther ditheous
 (B) Ovary superior, monocarpellary, unilocular with many ovules, style single
 (a) Fabaceae (b) Solanaceae
 (c) Liliaceae (d) Graminae
133. Which among the following condition is present in Chilli
 (a) Epipetalous stamens & valvate aestivation
 (b) Unisexual flower, 4 sepals
 (c) Fruit rarely berry
 (d) Many non endospermous seeds
134. Exstipulate leaves are found in
 (a) Fabaceae (b) Solanaceae
 (c) Liliaceae (d) (b) & (c)
135. Belladonna & Asparagus respectively have
 (a) 5 and 6 stamens (b) 6 stamens
 (c) 5 and 3 stamens (d) None

SECTION - B

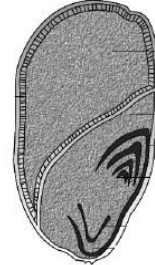
136. A diagnostic feature for identification of pea (Fabaceae) flower is:
- Cruciform corolla
 - Inferior ovary
 - Tetradynamous stamens
 - Vexillary aestivation in petals
137. Identify the floral diagram shown below as well as related plant of its occurrence and select the right option for the two together?



	Family	Plant
(a)	Liliaceae	Onion
(b)	Cruciferae	Mustard
(c)	Fabaceae	Pea
(d)	Solanaceae	Ashwagandha

138. Which of the following characters can not be expressed by floral formula?
- Sexuality
 - Symmetry
 - Adhesion of floral parts
 - Aestivation
139. Read the following four statements:
- Zygomorphic flowers are found in Fabaceae family
 - Monoadelphous stamens are found in Fabaceae family
 - Papilionaceous corolla is found in Fabaceae family
 - Inferior ovary is found in Fabaceae family
- How many of the above statements are wrong?
- Four
 - One
 - Two
 - Three
140. Read the following four statements:
- Cymose inflorescence is found in *Solanum*
 - Valvate aestivation is found in Solanaceae
 - Epiphyllous stamens are found in Solanaceae
 - Swollen placenta is found in Solanaceae family
- How many of the statements are right?
- Four
 - One
 - Two
 - Three

141. Among given examples how many have axile placentation?
Mustard, Tomato, Onion, *Tulip*, lupin, *Petunia*, Lemon, China rose, *Gloriosa*, *Aloe*, Pea, Moong, Tobacco and *Colchicum*
- Three
 - Five
 - Six
 - Ten
142. Examine the figure given below and select the incorrect option



- Embryo has shield shaped scutellum
 - Coleoptile is covering of plumule
 - Seed coat is fused with fruit wall
 - Starch rich aleurone layer covers endosperm
143. **Statement A:** Opuntia and Euphorbia are found into arid region. They contain chlorophyll in their stem and carry out photosynthesis.
Statement B: Stem tendrils are found in gourds and grapevines that are slender and spirally coiled and help plants to climb.
- Statement B is correct and statement A is wrong
 - Both the statement A and B are correct
 - Statement A is correct and statement B is wrong
 - Both the statement A and B are wrong
144. Staminode is the
- A fertile stamen
 - A primitive structure
 - A node having stamen
 - A sterile stamen
145. Persistent calyx is present in the
- Fabaceae
 - Solanaceae
 - Liliaceae
 - Brassicaceae
146. Mesocarp is fibrous in:
- Mango
 - Coconut
 - Tomato
 - Potato
147. How many among the following flowers possess bilateral and radial symmetry, respectively?
Pea, Canna, Datura, Cassia, Mustard, Gulmohar, Bean, Chilli
- 3, 3
 - 3, 4
 - 4, 3
 - 4, 2

ZOOLOGY

SECTION - A

148. Which of the following is correct for endosperm is:
- (A) A food storing tissue.
 (B) In bean, gram and pea, the endosperm is not present in mature seeds.
 (C) Orchids are monocotyledonous non-endospermic seeds.
 (D) Formed as a result of double fertilization.
- (a) (A), (B) & (D) (b) (A), (b) & (C)
 (c) (B), (C) & (D) (d) (A), (B), (C) & (D)

149. A dot on the top of the floral diagram represents position of:
- (a) Calyx
 (b) Flower
 (c) Mother axis
 (d) Axial arrangement of flower

150. Find out incorrect statement among the followings:

Statement - I: In mango and coconut, the fruit is known as drupe.

Statement - II: In some seeds such as castor the endosperm formed as a result of double fertilization while in beans, gram and pea seeds are non - endospermic.

Statement - III: The outer covering of endosperm separates the embryo by (a) proteinous layer called aleurone layer.

Statement - IV: Colchicine is obtained from a member of Solanaceae.

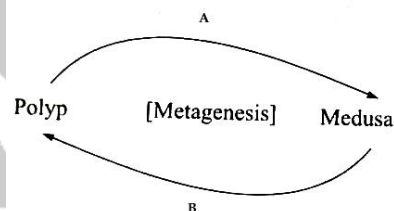
- (a) Statement I and II are incorrect
 (b) Statement I, II and III are incorrect
 (c) Statement II and IV are incorrect
 (d) Statement IV is incorrect

151. Match the columns I and II, and list of animals with their level of organization and choose the correct sequence.

Column I		Column II	
(A)	Organ level	p.	<i>Pheretima</i>
(B)	Cellular arrggregate level	q.	<i>Fasciola</i>
(C)	Tissue level	r.	<i>Spongilla</i>
(D)	Organ system level	s.	<i>Obelia</i>

- (a) A- (s), B - (r), C - (p), D - (q)
 (b) A - (s), B - (q), C - (r), D - (p)
 (c) A - (q), B - (s), C - (r), D - (p)
 (d) A - (q), B - (r), C - (s), D - (p)

152. Recognise the figure and find out the correct matching.



- (a) A - sexually, B - asexually
 (b) A - asexually, B - sexually
 (c) A - asexually, B - parthenogenetically
 (d) A - sexually, B - parthenogenetically

153. Read the following statements carefully :

- (A) Hooks and suckers are present in parasitic forms
 (B) Some of them absorb nutrients from the host directly through their body surface
 (C) Fertilisation is internal and development is through many larval stages

Here we are talking about :

- (a) Platyhelminthes (b) Aschelminthes
 (c) Annelids (d) Molluscs

154. Read the following statements carefully

- A. They are triploblastic
 B. Alimentary canal is complete with a well-developed muscular pharynx
 C. An excretory tube removes body wastes from the body cavity through excretory pore
 D. They are dioecious
 E. Fertilisation is internal

Above features belongs to which phylum?

- (a) Annelida (b) Arthropoda
 (c) Aschelminthes (d) Mollusca

155. Which of the following is not correctly matched?
 (a) Gregarious pest – *Locusta* (locust)
 (b) Living fossil – *Limulus* (king crab)
 (b) Economically important insects – *Apis* (honey bee), *Bombyx* (silkworm)+
 (d) Vectors – Mosquitoes (*Anopheles*, *Culex* and *Aedes*) and Lac insect (*Laccifer*)

156. The most distinctive feature of echinoderms is the
 (a) Presence of endoskeleton of calcareous ossicles
 (b) Absence of excretory system
 (c) Presence of water vascular system
 (d) All of the above

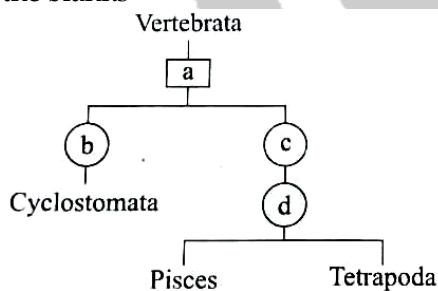
157. Malpighian tubules are
 (a) Excretory organs of insects
 (b) Excretory organs of annelids
 (c) Respiratory organs of insects
 (d) Respiratory organs of annelids

158. Match the columns I and II, and choose the correct combination from the options given.

	Column I		Column II
(A)	Tusk shell	I.	<i>Chaetopleura</i>
(B)	Squid	II.	<i>Dentalium</i>
(C)	Chiton	III.	<i>Aplysia</i>
(D)	Sea-hare	IV.	<i>Loligo</i>

- (a) A – III, B – IV, C – II, D – I
 (b) A – II, B – IV, C – I, D – III
 (c) A – III, B – II, C – IV, D – I
 (d) A – II, B – IV, C – III, D – I

159. Fill in the blanks

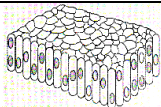
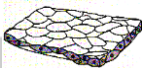

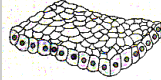


- (a) a-subphylum, b-chondrichthyes, c-osteichthyes, d-class
 (b) a-subphylum, b-agnatha, c-gnathostomata, d-class
 (c) a-superclass, b-agnatha, c-gnathostomata, d-class
 (d) a-division, b-agnatha, c-gnathostomata, d-superclass.

160. Read the following statements and find out the incorrect statements

- (a) *Ascidia*, *Salpa* and *Doliolum* belongs to phylum Urochordata
 (b) *Branchiostoma* (Amphioxus or Lancelet) belongs to phylum Cephalochordata
 (c) All chordates are vertebrates but all vertebrates are not chordates
 (d) All of the above

161. Match the columns I, II and III and choose the correct combination from the options given.

	Column I		Column II		Column III
A.		1.	Squamous epithelium	K.	Ducts of glands
B.		2.	Cuboidal epithelium	L.	Fallopian tubes
C.		3.	Columnar Epithelium	M.	Air sacs of lungs
D.		4.	Ciliated columnar epithelium	N.	Lining of stomach

- (a) A – 3 – K, B – 2 – M, C – 1 – N, D – 4 – L
 (b) A – 4 – N, B – 1 – K, C – 3 – L, D – 2 – M
 (c) A – 3 – N, B – 1 – M, C – 4 – L, D – 2 – K
 (d) A – 3 – N, B – 1 – M, C – 4 – K, D – 2 – L

162. The excess of nutrients which are not used immediately are converted into fats and stored in

- (a) Areolar tissue
 (b) Adipose tissue
 (c) Dense regular connective tissue
 (d) Dense irregular connective tissue

163. Match the columns I and II, and choose the correct combination from the options given.

	Column I		Column II
(A)	Adhering Junction	1	Help to stop substances from leaking across a tissue
(B)	Gap Junctions	2	Perform comenting to keep neighbouring cells to together
(C)	Tight Junctions	3	Facilitate the cells to com-municate with each other

- (a) A – 3, B – 2, C – 1 (b) A – 2, B – 3, C – 1
 (c) A – 2, B – 1, C – 3 (d) A – 1, B – 3, C – 2




164. In all connective tissues, except the cells secrete fibres of structural proteins called collagen or elastin.

- (a) Blood (b) Bone
 (c) Cartilage (d) Areolar tissue

165. How many of the following statements are related to bone ?
- (A) It is a specialized connective tissue having hard and pliable ground substance rich in calcium salts and collagen fibres which gives bone its strength.
- (B) It is the main tissues that provides structural frame to the body.
- (C) It supports and protects softer tissues and organs
- (D) The bone cells, with smooth muscles attached to them to bring about movements.
- (E) They also interact with smooth muscles attached to them to bring about movements.
- (a) Two (b) Three (c) Four (d) Five

166. Cartilage is present
- (A) In the tip of nose and middle ear joints
- (B) between adjacent bones of vertebral column
- (C) between adjacent bones of limbs and hands in adults
- (a) A, B, and C (b) A and B
- (c) B and C (d) A and C

167. Match the columns I, II and III and choose the correct combinations from the options given.

	Column I		Column II		Column III
A.		1.	Striated muscle	K.	Wall of blood vessels
B.		2.	Unstriated muscle	L.	Nodal tissue
C.		3.	Striated involuntary muscle	M.	Biceps

- (a) A-3-L, B-1-K, C-2-M
- (b) A-1-M, B-2-K, C-3-L
- (c) A-3-L, B-1-M, C-2-K
- (d) A-1-K, B-3-L, C-2-M

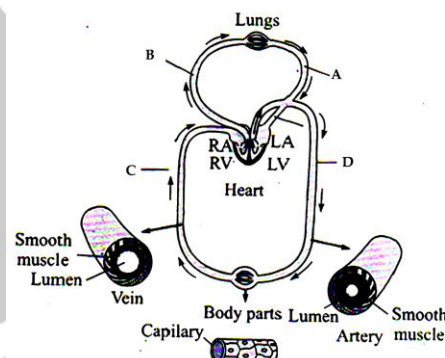
168. Read the following statements and find out the correct statements
- (a) The squamous epithelium is involved in functions like forming a diffusion boundary.
- (b) The cuboidal and columnar epithelium help in secretion and absorption.
- (c) The function of ciliated epithelium is to move particles or mucus in a specific direction over the epithelium.
- (d) All of the above
169. Some of the columnar or cuboidal cells get specialized for secretion and are called
- (a) Ciliated epithelium and are of two types - ciliated columnar and ciliated cuboidal
- (b) Compound epithelium and are of three types
- (c) Glandular epithelium and are of two types - exocrine and endocrine
- (d) Glandular epithelium and are of two types - unicellular and multicellular
170. Fill in the blanks
- A. Humans have a pair of external nostrils opening out above the upper lips. It leads to a ...1... through the ...2...
- B. The nasal chamber opens into ...3...
- C. The ...3... opens through glottis of the larynx region into the ...4...
- D. The ...5... is a cartilaginous box which helps in sound production and hence called the sound box.
- (a) 1 - nasal chamber, 2 - nasal passage, 3 - pharynx, 4 - trachea, 5 - larynx
- (b) 1 - nasal passage, 2 - nasal chamber, 3 - pharynx, 4 - trachea, 5 - larynx
- (c) 1 - nasal chamber, 2 - nasal passage, 3 - pharynx, 4 - bronchi, 5 - larynx
- (d) 1 - nasal passage, 2 - nasal chamber, 3 - pharynx, 4 - pharynx, 5 - larynx
171. Conducting part of the respiratory system is formed
- (a) From external nostrils up to the initial bronchioles
- (b) From external nostrils up to the terminal bronchioles
- (c) From external nostrils up to the duct of alveoli
- (d) From external nostrils up to the alveoli
172. Which is the site of actual diffusion of O₂ and CO₂ between blood and atmospheric air?
- (a) Exchange part of respiratory system
- (b) Conducting part of respiratory system
- (c) Respiratory part of respiratory system
- (d) Both A and C

173. Which is the correct sequence of steps in respiration
 (A) Transport of gases by the blood
 (B) Breathing or pulmonary ventilation
 (C) Cellular respiration
 (D) Diffusion of O₂ and CO₂ between blood and tissues
 (E) Diffusion of O₂ and CO₂ across alveolar membrane
 (a) B → E → A → D → C
 (b) B → A → E → C → D
 (c) B → D → A → E → C
 (d) B → E → D → A → C
174. Air is breathed through
 (a) Trachea → lungs → larynx → pharynx → alveoli
 (b) Nose → larynx → pharynx → bronchus → alveoli → bronchioles
 (c) Nostrils → pharynx → larynx → trachea → bronchi → bronchioles → alveoli
 (d) Nose → mouth → lungs
175. External and internal intercostal muscles are present in
 (a) Diaphragm (b) Ribs
 (c) Lungs (d) Between the ribs
176. Volume of air remaining in the lungs even after a forcible expiration is called
 (a) IRV (b) RV
 (c) FRC (d) EC
177. The direction of concentration gradient for oxygen is from
 (a) Tissues to blood and blood to alveoli
 (b) Blood to tissues and tissues to alveoli
 (c) Alveoli to blood and blood to tissues
 (d) Tissues to blood and alveoli to blood
178. Oxyhaemoglobin dissociates at
 (a) Low pO₂ in tissues
 (b) High pO₂ in tissues
 (c) Low pCO₂ in tissues
 (d) All times irrespective of pO₂
179. Match the columns I and II, and choose the correct combination from the options given.

	Column I		Column II
(A)	Eosinophils	1.	0.5-1%
(B)	Basophils	2.	2-3%
(C)	Neutrophils	3.	6-8%
(D)	Lymphocytes	4.	20-25%
(E)	Monocytes	5.	60-65%

- (a) A-1, B-2, E-3, C-4, D-5
 (b) B-1, A-2, E-3, D-4, C-5
 (c) C-1, A-2, B-3, D-4, E-5
 (d) B-1, C-2, D-3, C-4, E-5

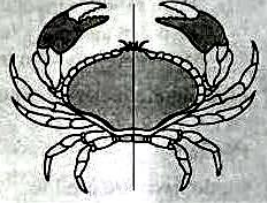
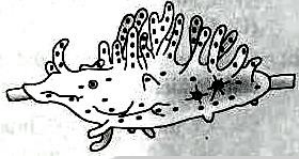

180. Cell fragments of megakaryocytes yield
 (a) Erythrocytes (b) Granulocytes
 (c) Agranularcytes (d) Blood platelets
181. A doctor suggested to a couple not to have more than one child because of
 (a) Rh⁺ male and Rh⁻ female
 (b) Rh⁺ male and Rh⁺ female
 (c) Rh⁺ male and Rh⁺ female
 (d) Rh⁻ male and Rh⁻ female
182. Which is correct about joint diastole?
 A. Bicuspid and tricuspid valves are open
 B. Bicuspid and tricuspid valves are closed
 C. semilunar valves are open
 D. Semilunar valves are closed
 (a) A and C (b) B and D
 (c) A and D (d) B and C
183. The recording (ECG) of the heart activity is taken by the machine
 (a) Electrocardiogram
 (b) Electrocardiograph
 (c) Electroencephalograph
 (d) Both (a) and (b)
184. Recognise the figure and find out the correct matching



- (a) A-dorsal aorta, B-vena cava, C-pulmonary artery, D-pulmonary vein
 (b) C-dorsal aorta, D-vena cava, B-pulmonary artery, A-pulmonary vein
 (c) D-dorsal aorta, C-vena cava, A-pulmonary artery, B-pulmonary vein
 (d) D-dorsal aorta, C-vena cava, b-pulmonary artery, A-pulmonary vein
185. Sphygmomanometer is an instrument used to record
 (a) Systolic pressure (b) Diastolic pressure
 (c) Cardiac output (d) Both (a) and (b)

SECTION – B

186. Match the columns I and II, and choose the correct combination from the options given.

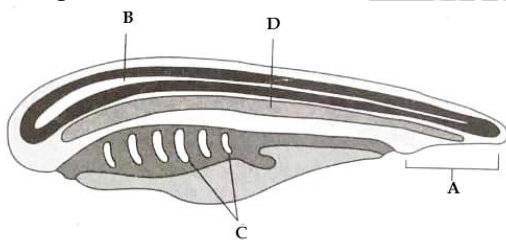
	Column I		Column II
A.	Any plane passing through central axis of body divides the organism into two identical halves.	1.	
B.	Body can be divided into identical left and right halves in only one plane.	2.	
C.	Any plane that passes through the centre does not divide them into equal halves.	3.	

- (a) A-1, B-2, C-3 (b) A-3, B-2, C-1
 (c) A-3, B-1, C-2 (d) A-2, B-3, C-1

187. Notochord occurs all through the length of body and throughout life in

- (a) Hemichordata (b) Urochordata
 (c) Cephalochordata (d) Vertebrata

188. Recognise the figure and find out the correct matching.



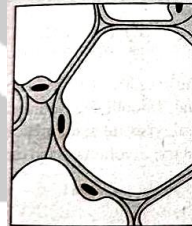


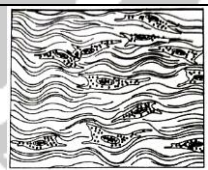
- i. Nerve cord ii. Notochord
 iii. Post and tail iv. Gill slits
 (a) A-iii, B-ii, C-iv, D-i
 (b) A-iii, B-ii, C-i, D-iv
 (c) A-iii, B-i, C-iv, D-ii
 (d) A-ii, B-i, C-iv, D-iii

189. Match the columns I and II, and choose the correct combination from the options given

	Column I		Column II
A.	Tendon	1.	Loose connective tissue
B.	Ligament	2.	Dense regular connective tissue
C.	Areolar tissue	3.	Dense irregular connective tissue
D.	Adipose tissues	4.	Specialised connective tissue

- (a) A - 2, B - 1, C - 4, D - 3
 (b) A - 1, B - 4, C - 3, D - 2
 (c) A - 2, B - 2, C - 3, D - 1
 (d) A - 2, B - 2, C - 1, D - 1

190. Match the columns I, II and III and choose the correct combination from the options given.

	Column I		Column II		Column III
A.		1.	Areolar tissue	K.	Tendo
B.		2.	Adipose tissue	L.	Ligament
C.		3.	Dense regular connective tissue	M.	Present in skin
D.		4.	Dense irregular connective tissue	N.	Beneath the skin

- (a) A-1-M, B-2-N, C-4-K, D-3-L
 (b) A-2-N, B-1-M, C-3-L, D-2-K
 (c) A-1-M, B-2-N, C-3-K, D-2-L
 (d) A-2-N, B-1-N, C-4-M, D-3-K

Direction:

- (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 the correct explanation of the assertion
 (c) If assertion is true, but reason is false
 (d) If both assertion and reason are false

191. **Assertion:** The product of endocrine gland is secreted directly into the fluid bathing the gland.

Reason: Endocrine gland are ductless glands.

- (a) (b) (c) (d)

192. **Assertion A:** The amount of CO_2 that can diffuse through the diffusion membrane per unit difference in partial pressure is much higher compared to that of O_2 .

Reason R : Solubility of CO_2 is 20-25 times higher than that of O_2

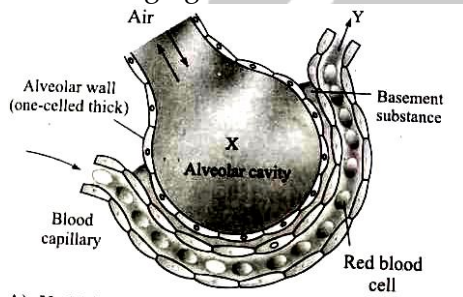
- (a) (b) (c) (d)

193. **Assertion A:** Every 100 ml of oxygenated blood can deliver around 4 ml of O_2 to tissues under normal physiological conditions.

Reason R : Every 100 ml of deoxygenated blood delivers approximately 5 ml of CO_2 to the alveoli.

- (a) (b) (c) (d)

194. The partial pressure of oxygen at the site X and Y in the following figure is



- (a) X : 104 mm Hg, Y: 95 mm Hg
 (b) X : 159 mm Hg, Y : 95 mm Hg
 (c) X : 104 mm Hg, Y: 40 mm Hg
 (d) X : 159 mm Hg, Y: 95 mm Hg

195. When you hold your breath, which of the following gas changes in blood would first led to the urge to breathe?

- (a) Falling CO_2 concentration
 (b) Falling CO_2 and falling O_2 concentration
 (c) Falling O_2 concentration
 (d) Increasing CO_2 concentration

196. Match the column I with column II, and choose the correct combination from the option given below

	Column - I		Column - II
A.	FRC	(i)	ERV + IRV + TV
B.	IC	(ii)	ERV + RV
C.	VC	(iii)	TV + IRV
D.	Total lung Capacity	(iv)	TV + ERV
E.	EC	(v)	VC + RV

- | | A | B | C | D | E |
|-----|------|-------|------|------|-------|
| (a) | (iv) | (iii) | (ii) | (v) | (i) |
| (b) | (ii) | (iii) | (i) | (iv) | (i) |
| (c) | (v) | (ii) | (iv) | (i) | (iii) |
| (d) | (ii) | (iii) | (i) | (v) | (iv) |

197. Match the items given in Column I with those in Column II and select the correct option given below.

	Column I		Column II
A.	Fibrinogen	i.	Osmotic balance
B.	Globulin	ii.	Blood clotting
C.	Albumin	iii.	Defence mechanism

	A	B	C
(a)	iii	ii	i
(b)	i	ii	iii
(c)	i	iii	ii
(d)	ii	iii	i

198. Match Column I with Column II.

	Column I		Column II
A.	P-Wave	i.	Depolarisation of ventricles
B.	QRS complex	ii.	Repolarisation of ventricles
C.	T-wave	iii.	Coronary ischemia
D.	Reduction in the size of T-wave	iv.	Depolarisation of atria
		v.	Repolarisation of atria

Select the correct option.

	A	B	C	D
(a)	iv	i	ii	v
(b)	ii	i	v	iii
(c)	ii	iii	v	iv
(d)	iv	i	ii	iii

199. If the heart rate of a person is about 75 beats per minute, and stroke volume is 70 mL per minute, then the cardiac output will be.

- (a) 5000 mL (b) 5250 mL
 (c) 5500 mL (d) 5150 mL

200. A man whose blood group is not known meets with a serious accident and needs blood transfusion immediately, which one of the blood groups readily available in the hospital will be safe for transfusion?

- (a) O, Rh- (b) O, Rh+ (c) AB, Rh- (d) AB, Rh+

TEST ASSESSMENT AND ANALYSIS SHEET

Name.....Test topic -Date

Physics	Marks per question	Total Ques.	Attempted	Unattempted	Correct	Incorrect	Net score
Multiple choice questions							
Q. No. (Incorrect)							
Q. No. (Unattempted)							
Chemistry	Marks per question	Total Ques.	Attempted	Unattempted	Correct	Incorrect	Net score
Multiple choice questions							
Q. No. (Incorrect)							
Q. No. (Unattempted)							
Biology	Marks per question	Total Ques.	Attempted	Unattempted	Correct	Incorrect	Net score
Multiple choice questions							
Q. No. (Incorrect)							
Q. No. (Unattempted)							
Total net score							

