



"Stand up, be bold, be strong. Take the whole responsibility on your own shoulders and know that you are the creator of your own destiny."

– Swami Vivekanand

Mark 720	Group PCB	Repeater NEET (2025-26) PCB Test	Date : 27/07/2025 Time : 3.00 Hrs
Physics - 45	Chemistry - 45	Biology - 90	

Question Booklet Version	Roll Number	Question Booklet Sr. No.
11 (Write this number on your Answer Sheet)		

• Today's Test Syllabus •

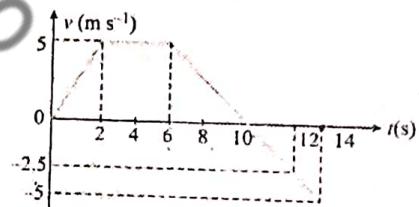
SECTION 'A' PHYSICS

01. The deceleration experienced by a moving motor boat, after its engine is cut-off is given by $\frac{dv}{dt} = -kv^3$, where k is constant. If v_0 is the magnitude of the velocity at cut-off, the magnitude of the velocity at a time t after the cut-off is
1) $v_0/2$ 2) v
3) $v_0 e^{-kt}$ 4) $\frac{v_0}{\sqrt{2v_0^2 kt + 1}}$

02. For motion of an object along the x -axis, the velocity v depends on the displacement x as $v=3x^2-2x$, then what is the acceleration at $x=2$ m.
1) 48 ms^{-2} 2) 80 ms^{-2}
3) 80 ms^{-2} 4) 10 ms^{-2}

03. The average velocity of a body moving with uniform acceleration after travelling a distance of 3.06 m is 0.34 ms^{-1} . If the change in velocity of the body is 0.18 ms^{-1} during this time, its uniform acceleration is
1) 0.01 ms^{-2} 2) 0.02 ms^{-2}
3) 0.03 ms^{-2} 4) 0.04 ms^{-2}

04. The variation of velocity of a particle moving along a straight line is shown in figure. The distance travelled by the particle in 12 s is

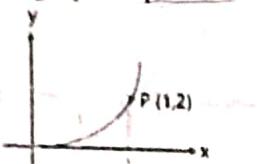


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08. Find $1 - \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} - \frac{1}{32} + \dots \infty$

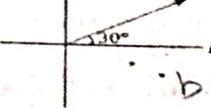
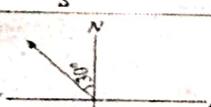
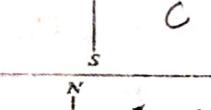
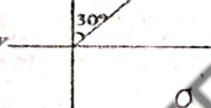
1) 2 2) 1 3) $\frac{2}{3}$ 4) ∞

09. The equation of graph shown in figure is $y = 3x^2$.
The slope of graph at point P is



- 1) 1 2) 2
3) 3 4) 6

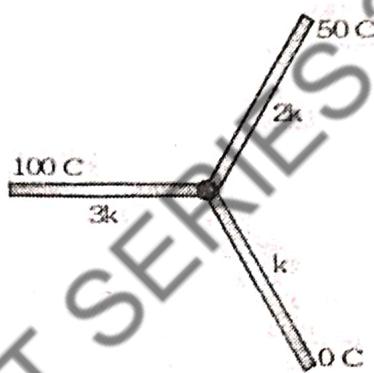
10. In column I some straight lines graphs are given and in column II corresponding signs of slopes and intercepts are given. Match the type of graphs of column I corresponding to signs of slopes and intercepts in column II.

Column I	Column II
 I.	a. 30° East of North
 II.	b. 30° North of East
 III.	c. 30° west of North
 IV.	d. 60° South of West

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- 1) i-b; ii-c; iii-a; iv;-d
- 2) i-a; ii-b; iii-c; iv;-d
- 3) i-c; ii-d; iii-b; iv;-a
- 4) i-b; ii-a; iii-d; iv;-c

11. Three rods of the same dimensions have thermal conductivities $3k$, $2k$ and k . They are arranged as shown, with their ends at 100°C , 50°C and 0°C . The temperature of their junction is:-



- 1) 75 °C 2) $\frac{200}{3}$ °C
 3) 40 °C 4) $\frac{100}{3}$ °C

12. A cup of tea cools from 80°C to 60°C in one minute. The ambient temperature is 30°C . In cooling from 60°C to 50°C . It will take :-

1) 50 s 2) 90 s
3) 60 s 4) 48 s

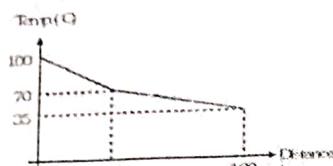
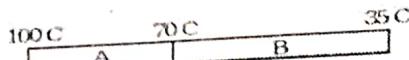
13. Ice starts forming in lake with water at 0°C when the atmospheric temperature is -10°C . If the time taken for 1 cm of ice be 7 hours, then the time taken for the thickness of ice to change from 1 cm to 2 cm is :-

1) 7 hours 2) 14 hours
3) less than 7 hours 4) more than 7 hours

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14. Two different rods A and B are kept as shown in figure. The variation of temperature of different cross sections with distance is plotted in a graph shown in figure. The ratio of thermal conductivities of A and B is



- 1) 2 2) 0.5
3) 1 4) $\frac{2}{3}$

15. A red star and a green star radiate energy at the same rate which star is bigger.

- 1) Red
2) Green
3) Both have same size
4) Can't be say anything

16. Hailstone at 0°C falls from a height of 1 km on an insulating surface converting whole of its kinetic energy into heat. What part of it will melt:- [$\text{g} = 10 \text{ m/s}^2$, Lice = $330 \times 10^3 \text{ J kg}^{-1}$]

- 1) $\frac{1}{33}$ 2) $\frac{1}{8}$
3) $\frac{1}{33} \times 10^{-4}$ 4) All of it will melt

17. If H_C , H_K and H_F are heat required to raise the temperature of one gram of water by one degree in Celsius, Kelvin and Fahrenheit temperature scales respectively then :-

- 1) $H_K > H_C > H_F$ 2) $H_F > H_C > H_K$
3) $H_K = H_C > H_F$ 4) $H_K = H_C = H_F$

18. Steam at 100°C is passed through 1.1 kg of water contained in a calorimeter of water equivalent 0.02 kg at 15°C till the temperature of the calorimeter and its contents rises to 80°C . The mass of the steam condensed in kg is

- 1) 0.130 2) 0.065
3) 0.260 4) 0.135

19. The ratio of maximum and minimum magnitudes of the resultant of two vectors \vec{a} and \vec{b} is 3: 1. Now, $|\vec{a}|$ is equal to

- 1) $|\vec{b}|$ 2) $2|\vec{b}|$
3) $3|\vec{b}|$ 4) $4|\vec{b}|$

20. Given $\vec{A} = 4\hat{i} + 6\hat{j}$ and $\vec{B} = 2\hat{i} + 3\hat{j}$ which of the following is correct?

- 1) $\vec{A} \times \vec{B} = \vec{0}$ 2) $\vec{A} \cdot \vec{B} = 24$

- 3) $\frac{|\vec{A}|}{|\vec{B}|} = \frac{1}{2}$ 4) \vec{A} and \vec{B} are antiparallel

21. Two vectors \vec{a} and \vec{b} are at angle of 60° with each other. Their resultant makes an angle of 45° with \vec{a} . If $|\vec{b}| = 2$ units, then $|\vec{a}|$ is

- 1) $\sqrt{3}$ 2) $\sqrt{3} - 1$
3) $\sqrt{3} + 1$ 4) $\sqrt{3}/2$

22. ABCDEF is a regular hexagon with point O as centre. The value of

$$\overrightarrow{AB} + \overrightarrow{AC} + \overrightarrow{AD} + \overrightarrow{AE} + \overrightarrow{AF}$$

- 1) $2\overrightarrow{AO}$ 2) $4\overrightarrow{AO}$
3) $6\overrightarrow{AO}$ 4) 0

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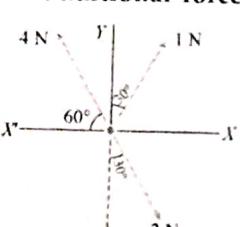
23. The angle between two vectors \vec{A} and \vec{B} is 0° . The resultant of these vectors \vec{R} makes an angle of $0/2$ with A. Which of the following is true?

 - $A = 2B$
 - $A = B/2$
 - $A = B$
 - $AB = 1$

24. Consider east as positive x-axis, north as positive y-axis. A girl walks 10 m east first time then 10 m in a direction 30° west of north for the second time and then third time in unknown direction and magnitude so as to return to her initial position. What is her third displacement in unit vector notation?

 - $-5\hat{i} - 5\sqrt{3}\hat{j}$
 - $5\hat{i} - 5\sqrt{3}\hat{j}$
 - $-5\hat{i} + 5\sqrt{3}\hat{j}$
 - She cannot return

25. Three forces are acting on a particle as shown in the figure. To have the resultant force only along the Y-direction, the magnitude of the minimum additional force needed is



26. Three liquids A, B and C having same specific heat and mass m, $2m$ and $3m$ have temperature 20°C , 40°C and 60°C respectively. Temperature of the mixture when :

Column I	Column II
(A) A and B are mixed	(p) 35°C
(B) A and C are mixed	(q) 52°C
(C) B and C are mixed	(r) 50°C
(D) A, B and C all three are mixed	(s) 45°C
	(t) None

27. Statement-1 : Water kept in an open vessel will quickly evaporate on the surface of the Moon. Statement-2 : The temperature at the surface of the moon is much higher than boiling point of water at Earth.

 - Statement-1 is True, Statement-2 is True ; Statement-2 is a correct explanation for Statement-1
 - Statement-1 is True, Statement-2 is True ; Statement-2 is not a correct explanation for Statement-1
 - Statement-1 is True, Statement-2 is False.
 - Statement-1 is False, Statement-2 is True.

28. Statement-1 : When hot water is poured in a beaker of thick glass, the beaker cracks. Statement-2 : Glass is a bad conductor of heat and outer surface of the beaker does not expand.

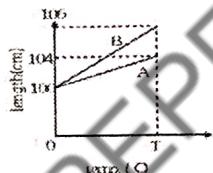
 - Statement-1 is True, Statement-2 is True ; Statement-2 is a correct explanation for Statement-1
 - Statement-1 is True, Statement-2 is True ; Statement-2 is not a correct explanation for Statement-1
 - Statement-1 is True, Statement-2 is False.
 - Statement-1 is False, Statement-2 is True.

29. Statement-1 : A sphere, a cube and a thin circular plate made of same material and of same mass are initially heated to 200°C , the plate will cool at fastest rate.

Statement-2 : Rate of cooling = $\frac{\sigma A \sigma}{ms}(T^4 - T_0^4) \propto$ surface area. Surface area is maximum for circular plate.

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38. A thief is running away on a straight road in a jeep moving with a speed of 9 ms^{-1} . A policeman chases him on a motor cycle moving at a speed of 10 ms^{-1} . If the instantaneous separation of the jeep from the motor cycle is 100 m , how long will it take for the policeman to catch the thief?

- 1) 1 s 2) 19 s
3) 90 s 4) 100 s

39. A train 100 m long travelling at 40 ms^{-1} starts overtaking another train 200 m long travelling at 30 ms^{-1} . The time taken by the first train to pass the second train completely is

- 1) 30 s 2) 40 s
3) 50 s 4) 60 s

40. A drunkard is walking along a straight road. He takes five steps forward and three steps backward and so on. Each step is 1 m long and takes 1 s . There is a pit on the road 11 m away from the starting point. The drunkard will fall into the pit after

- 1) 29 s 2) 21 s
3) 37 s 4) 31 s

41. A body starts from rest and travels a distance S with uniform acceleration, then moves uniformly a distance $2S$ and finally comes to rest after moving further $5S$ under uniform retardation. The ratio of the average velocity to maximum velocity is

- 1) $2/5$ 2) $3/5$
3) $4/7$ 4) $5/7$

42. If a particle travels n equal distances with speeds v_1, v_2, \dots, v_n , then the average speed \bar{V} of the particle will be such that

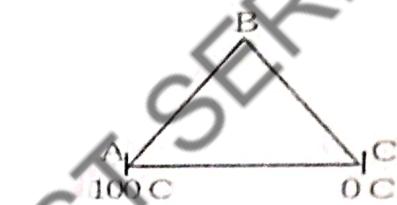
$$1) \bar{V} = \frac{v_1 v_2 + \dots + v_n}{n}$$

$$2) \bar{V} = \frac{n v_1 v_2 + v_n}{v_1 + v_2 + v_3 + \dots + v_n}$$

$$3) \bar{V} = \frac{1}{n} \left(\frac{1}{v_1} + \frac{1}{v_2} + \dots + \frac{1}{v_n} \right)$$

$$4) \bar{V} = \sqrt{v_1^2 + v_2^2 + \dots + v_n^2}$$

43. Three rods of equal length of same material are joined to form an equilateral triangle ABC as shown in figure. Area of cross-section of rod AB is S , of rod BC is $2S$ and that of AC is S , then



Column I

- (A) Temperature of junction B
(B) Heat current in AB
(C) Heat current in BC

Column II

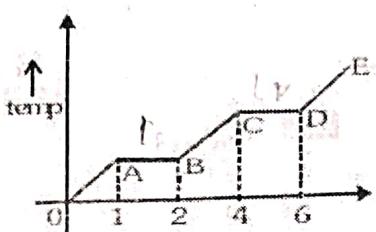
- (p) Greater than 50°C
(q) Less than 50°C
(r) Is equal to heat current in BC
(s) Is $\frac{2}{3}$ times heat current in AC
(t) None

- 1) (A) r (B) p, (C) s
2) (A) s (B) q, (C) p
3) (A) t (B) r, (C) s
4) (A) p (B) r, (C) t

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44. Statement-1 : A solid material is supplied heat at a constant rate. The temp. of the material is changing with the heat input as shown in figure. Latent heat of vaporization of substance is double that of fusion (given CD = 2AB).



and

Statement-2 : $L_f \propto AB$ and $L_v \propto CD$

- 1) Statement-1 is True, Statement-2 is True ;
Statement-2 is a correct explanation for
Statement-1

2) Statement-1 is True, Statement-2 is True ;
Statement-2 is not a correct explanation for
Statement-1

3) Statement-1 is True, Statement-2 is False.

4) Statement-1 is False, Statement-2 is True.

45. A particle moves along a straight line such
that its displacement S varies with time t as
 $S = \alpha + \beta t + \gamma t^2$.

Column I	Column II
I. Acceleration at $t = 2 \text{ s}$	a. $\beta + 5\gamma$
II. Average velocity during third second	b. 2γ
III. Velocity at $t = 1 \text{ s}$	c. α
IV. Initial displacement	d. $\beta + 2\gamma$

- 1) i-a; ii-b; iii-d; iv;-c
 - 2) i-d; ii-b; iii-c; iv;-a
 - 3) i-c; ii-a; iii-b; iv;-d
 - 4) i-b; ii-a; iii-d; iv;-c

Space For Rough Work

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SECTION 'B' CHEMISTRY

46. The orbital angular momentum of a 4p electron will be

- 1) $4 \cdot \frac{h}{2\pi}$
- 2) $\sqrt{2} \cdot \frac{h}{2\pi}$
- 3) $\sqrt{6} \cdot \frac{h}{4\pi}$
- 4) $\sqrt{2} \cdot \frac{h}{4\pi}$

47. Which of the following set of quantum numbers is permissible?

- 1) 4, 1, +2, +1/2
- 2) 4, 2, -1, +1/2
- 3) 4, 0, 0, 1
- 4) 4, 4, +2, -1/2

48. Number of orbitals represented by $n = 3$, $l = 2$ and $m = +2$ is

- 1) 1
- 2) 2
- 3) 3
- 4) 4

49. The number of nodal planes in $2p_x$ orbital is

- 1) Zero
- 2) 1
- 3) 2
- 4) Infinite

50. Which of the following orbital is represented by the complete wave function ψ_{410} ?

- 1) 4s
- 2) 3p
- 3) 4p
- 4) 4d

51. A completely filled d-orbital (d^{10}) is of

- 1) Spherical symmetry
- 2) Octahedral symmetry
- 3) Tetrahedral symmetry
- 4) Unsymmetry

52. Which of the following is paramagnetic?

- 1) Zn^{2+} ($Z = 30$)
- 2) Ni^{2+} ($Z = 28$)
- 3) Sc^{3+} ($Z = 21$)
- 4) O^{2-} ($Z = 8$)

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

- 1)
- 2)
- 3)
- 4) (2) and (3)

54. The eyes of a certain member of the reptile family pass a single visual signal to the brain when the visual receptors are struck 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 and must strike the receptor?

- 1) 1.0×10^5
- 2) 1.0×10^6
- 3) 1000
- 4) 1

55. As its closest approach, the distance between the Mars and the Earth is found to be 60 million km. When the planets are at this closest distance, how long would it take to send a radio message from a space probe sent to Mars from Earth?

- 1) 5s
- 2) 200 s
- 3) 0.2 s
- 4) 20 s

56. The Schrodinger wave equation for hydrogen atom is

$$\Psi_{2s} = \frac{1}{4\sqrt{2\pi}} \left(\frac{1}{a_0} \right)^{3/2} \left(2 - \frac{r}{a_0} \right)^{e^{-r/a_0}}$$

where a_0 is Bohr's radius. If the radial node in $2s$ be at r_0 , then r_0 would be equal to:

- 1) $\frac{a_0}{2}$
- 2) $2a_0$
- 3) $\sqrt{2} a_0$
- 4) $\frac{a_0}{\sqrt{2}}$

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57. A dye emits 50% of the absorbed energy as fluorescence. If the number of quanta absorbed and emitted out is in the ratio 1 : 2 and it absorbs the radiation of wavelength 'x' Å, then the wavelength of the emitted radiation will be
 1) x Å 2) $0.5x$ Å
 3) $4x$ Å 4) $0.25x$ Å

58. If the radius of first orbit of H-atom is x Å, then the radius of the second orbit of Li^{2+} ion will be

- 1) x Å 2) $\frac{4x}{3}$ Å
 3) $\frac{9x}{2}$ Å 4) $4x$ Å

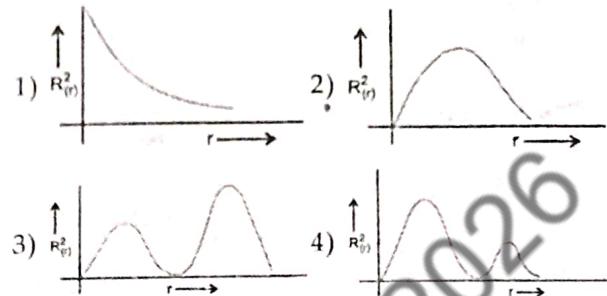
59. According to Bohr's model, the radius of Ne^{9+} ion in ground state should be
 1) 0.529 Å 2) 0.0529 Å
 3) 5.29 Å 4) 52.9 Å

60. The ratio of spacing between the third and fourth orbit to the spacing between sixth and seventh orbit of H-atom is
 1) 7 : 13 2) 13 : 7
 3) 16 : 49 4) 1 : 1

61. The ratio of circumference of third and second orbits of He^+ ion is
 1) 3 : 2 2) 2 : 3
 3) 9 : 4 4) 4 : 9

62. What is the orbit number of the He^+ ion in which electron have speed $\frac{1}{205.67}$ times the speed of light?
 1) 1 2) 2
 3) 3 4) 4

63. Which of the following graph is correct for $2p$ orbital?



64. The ionization energy of a hypothetical atom is 50 eV. If this atom obeys Bohr's atomic model, the energy of electron in its fifth orbit will be

- 1) -1250 eV 2) +2 eV
 3) -2 eV 4) +1250 eV

65. For which atom or ion, the energy level of the second excited state is -13.6 eV?

- 1) H 2) He^+
 3) Li^{2+} 4) Li

66. An electron jumps from the fourth orbit to the first orbit in a H-atom. The number of photons liberated out will be

- 1) 1 2) 2
 3) 3 4) 6

67. What is the wave number of the radiation of lowest frequency in the Lyman series of the spectrum of Li^{2+} ion?

- 1) $\frac{4}{27R}$ 2) $\frac{27R}{4}$
 3) $\frac{27RC}{4}$ 4) $\frac{4C}{27R}$

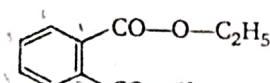
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68. Uncertainty in measuring the speed of a particle is numerically equal to the uncertainty in measuring its position. The value of these uncertainties will be

- 1) equal to $\sqrt{\frac{h}{4\pi m}}$
- 2) Less than $\sqrt{\frac{h}{4\pi m}}$
- 3) Greater than $\sqrt{\frac{h}{4\pi m}}$
- 4) (1) or (3)

69. Write the IUPAC name of the following compound :

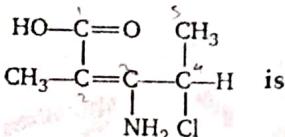


- 1) ethyl 2-(chlorocarbonyl) benzene carboxylate
- 2) ethyl-2-(chlorocarbonyl) hexanoate
- 3) 2-(ethoxycarbonyl) benzoyl chloride
- 4) None of these

70. The IUPAC name of is :

- 1) 1-hydroxy-1-cyclopropylethane
- 2) 1-hydroxyethylcyclopropane
- 3) Cyclopropylethanol
- 4) 1-cyclopropylethanol

71. The IUPAC name of compound



- 1) 2-Amino-3-chloro-2-methylpent-2-enoic acid
- 2) 3-Amino-4-chloro-2-methylpent-2-enoic acid
- 3) 4-Amino-3-chloro-2-methylpent-2-enoic acid
- 4) All of the above

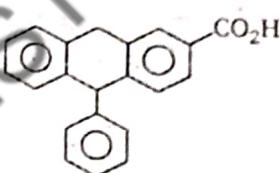
72. Which of the following compound is wrongly named?

- 1) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHCOOH}$; 2-Chloro pentanoic acid
- 2) $\text{CH}_3\text{C}=\text{CCHCOOH}$; 2-Methyl hex-3-enoic acid
- 3) $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCOCH}_3$; Hex-3-en-2-one
- 4) $\text{CH}_3-\text{CHCH}_2\text{CH}_2\text{CHO}$; 4-Methyl pentanal

73. Which of the following compounds is an anhydride ?

- 1) $\text{CH}_3\text{CO}-\text{C}_6\text{H}_5$
- 2) $\text{CH}_3\text{C}=\text{C}-\text{C}_6\text{H}_5$
- 3) CH_3COH
- 4) $\text{CH}_3\text{COOCCH}_3$

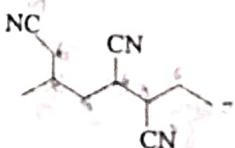
74. Double bond equivalent or degree of unsaturation in



is

- 1) 12
- 2) 13
- 3) 14
- 4) 15

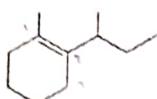
75. What is the correct IUPAC name of the compound ?



- 1) 3-cyano-2, 5-dimethyl heptanedinitrile
- 2) 5-cyano-3, 6-dimethyl heptanedinitrile
- 3) 2, 5-dimethyl-1, 3, 7-heptanedinitrile
- 4) 2-methyl hexane-1, 4, 5 tricarbonitrile

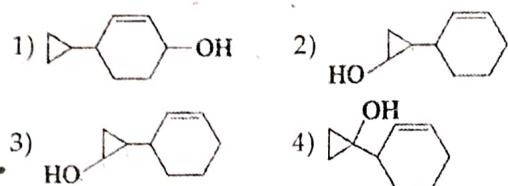
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76. IUPAC name of the given compound is

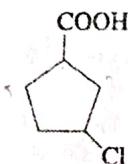


- 1) 1-methyl-2-(1'-methyl propyl) cyclohexene
- 2) 1-(1'-methyl propyl)-2-methyl cyclohexene
- 3) 2-methyl-1-(1'-methyl ethyl) cyclohexene
- 4) None of these

77. Which is the correct structure of 2-(2-cyclohexenyl) cyclopropanol ?



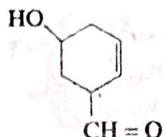
78. Statement-I : Following compound has its IUPAC name 3-chlorocyclopentanoic acid



Statement-II : COOH is the principal functional group of compound which determines the suffix name.

- 1) If both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- 2) If both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- 3) If Statement-I is correct and Statement-II is incorrect
- 4) If Statement-I is incorrect and Statement-II is correct

79. What is the correct IUPAC name of the compound ?



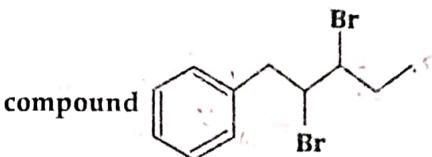
- 1) 3-hydroxy cyclohex-2-ene-1-carbaldehyde
- 2) 5-hydroxy cyclohex-2-ene-1-al
- 3) 3-formyl-cyclohex-4-ene-1-ol
- 4) 5-hydroxy cyclohex-2-ene-carbaldehyde

80. Statement-I : The IUPAC name of $\text{CH}_3\text{-CH}=\text{CH-C}\equiv\text{C-H}$ is pent-3-en-1-yne and not pent-2-en-4-yne.

Statement-II : Lowest locant rule for multiple bond is preferred.

- 1) If both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- 2) If both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- 3) If Statement-I is correct and Statement-II is incorrect
- 4) If Statement-I is incorrect and Statement-II is correct

81. Select the correct option as IUPAC name of the compound

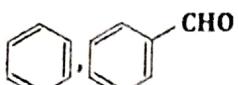


- 1) 2, 3-Dibromo-1-phenylpentane
- 2) 3, 4-Dibromo-5-phenylpentane
- 3) 3, 4-Dibromo-6-phenylpentane
- 4) None of the above

Space For Rough Work

QUESTION BOOKLET VERSION : 11

82. Which class of organic compounds do



and belong to ?

- 1) Alicyclic
- 2) Acyclic
- 3) Benzenoid
- 4) Heterocyclic

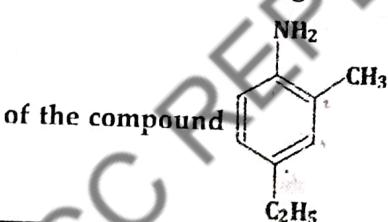
83. Match the general formula from Column-I with the class they belong to in Column-II :

Column-I	Column-II
A)	P) has tertiary N-atom
B)	Q) has tertiary carbon atom
C)	R) has five carbons in the parent chain
D)	S) has six carbons in the parent chain

A B C D

- 1) P, R, S
 - 2) Q
 - 3) P, Q, S
 - 4) Q, S, P
- 1) P, R
 - 2) P, R, S
 - 3) Q, R
 - 4) R
- 1) S
 - 2) Q, S
 - 3) P, R
 - 4) S
- 1) S
 - 2) Q, S
 - 3) P, R
 - 4) P

84. Which of the following is correct IUPAC name

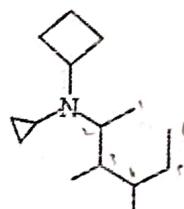


- 1) 1-Amino-2-methyl-4-ethylbenzene
- 2) 1-Ethyl-3-methyl-4-aminobenzene
- 3) 4-Ethyl-2-methylaniline
- 4) None of the above

85. Select the correct numbering for the following complex alkyl group.

- 1) $\begin{array}{ccccccc} & 5 & & 4 & & 3 & \\ & \text{CH}_3 & - & \text{CH} & - & \text{CH}_2 & - & \text{CH} - \\ & | & & & & | & & | \\ & \text{CH}_3 & & & & \text{CH}_3 & & \text{CH}_3 \end{array}$
- 2) $\begin{array}{ccccccc} & 4 & & 3 & & 2 & \\ & \text{CH}_3 & - & \text{CH} & - & \text{CH}_2 & - & \text{CH} - \\ & | & & & & | & & | \\ & \text{CH}_3 & & & & \text{CH}_3 & & \text{CH}_3 \end{array}$
- 3) $\begin{array}{ccccccc} & 4 & & 3 & & 2 & \\ & \text{CH}_3 & - & \text{CH} & - & \text{CH}_2 & - & \text{CH} - \\ & | & & & & | & & | \\ & \text{CH}_3 & & & & \text{CH}_3 & & \text{CH}_3 \end{array}$
- 4) $\begin{array}{ccccccc} & 1 & & 2 & & 3 & \\ & \text{CH}_3 & - & \text{CH} & - & \text{CH} & - & \text{CH} - \\ & | & & & & | & & | \\ & \text{CH}_3 & & & & \text{CH}_3 & & \text{CH}_3 \end{array}$

86. The correct IUPAC nomenclature of following compound is :

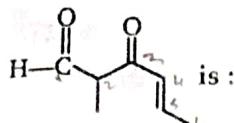


- 1) N-cyclobutyl-N-cyclopropyl-3,4-dimethylhexan-2-amine
- 2) 2-(N-cyclobutyle-N-cyclopropyl) amino-3,4-dimethylhexane
- 3) N-cyclobutyl-N-cyclopropyl-1,2,3-trimethylpentan-1-amine
- 4) N-cyclopropyl-N-cyclobutyl-3,4-dimethylhexan-2-amine

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QUESTION BOOKLET VERSION : 11

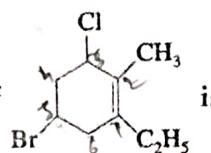
87. The IUPAC name of the compound



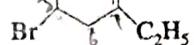
- is :
- 1) 5-formylhex-2-en-3-one
 - 2) 5-methyl-4-oxohex-2-en-5-al
 - 3) 3-keto-2-methylhex-5-enal
 - 4) 3-keto-2-methylhex-4-enal

88. The correct structure of 4-bromo-3-methylbut-1-ene is :

- 1) $\text{Br}-\text{CH}=\text{C}(\text{CH}_3)_2$
- 2) $\text{CH}_2=\text{CH}-\text{CH}(\text{CH}_3)-\text{CH}_2\text{Br}$
- 3) $\text{CH}_2=\text{C}(\text{CH}_3)\text{CH}_2\text{CH}_2\text{Br}$
- 4) $\text{CH}_3-\text{C}(\text{CH}_3)=\text{CHCH}_2-\text{Br}$

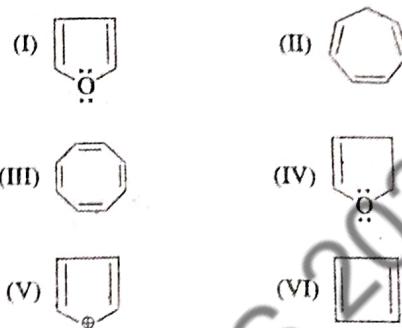


89. IUPAC name of



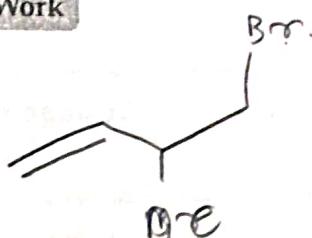
- 1) 4-Bromo-6-chloro-2-ethyl-1-methylcyclohex-1-ene
- 2) 5-Bromo-1-chloro-3-ethyl-2-methylcyclohex-2-ene
- 3) 5-Bromo-3-chloro-1-ethyl-2-methylcyclohex-1-ene
- 4) 1-Bromo-5-chloro-3-ethyl-4-methylcyclohex-3-ene

90. Which of the following compounds are antiaromatic



- 1) (III) and (VI)
- 2) (V) and (VI)
- 3) (I) and (V)
- 4) (I) and (IV)

Space For Rough Work



6 IT 9 IT
16 IT

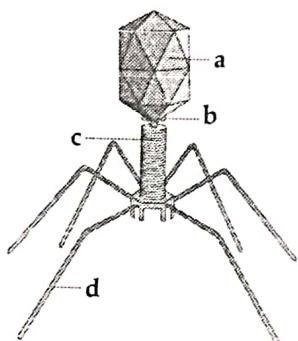
QUESTION BOOKLET VERSION : 11

SECTION 'C' BIOLOGY

91. Dikaryon formation is a characteristic of

- 1) Ascomycetes and basidiomycetes
- 2) Phycomycetes and basidiomycetes
- 3) Ascomycetes and phycomycetes
- 4) Phycomycetes and zygomycetes

92. Given below is the diagram of a bacteriophage. In which one of the options all the four parts, a, b, c and d are correct.



- 1) a-Tail fibres, b-Head, c-Sheath, d-Collar
- 2) a-Sheath, b-Collar, c-Head, d-Tail fibres
- 3) a-Head, b-Collar, c-Sheath, d-Tail fibres
- 4) a-Collar, b-Tail fibres, c-Head, d-Sheath

93. Which of the following statements are incorrect?

- a) Viruses, viroids are classified by Whittaker in kingdom Monera.
 - b) Viruses are non-cellular organisms.
 - c) Virus-mean venom and name was coined W.M. Stanley.
 - d) Contagium vivum fluidum was called D.J. Ivanowsky
 - e) Viruses are obligate parasite.
 - f) Virus contains either DNA or RNA.
- 1) (a), (b) and (c)
 - 2) (b), (d) and (f)
 - 3) (a), (c) and (d)
 - 4) (d), (e) and (f)

94. Sexual reproduction in fungus occurs in the following sequential event. Arrange them properly.

- a) Fusion of two nuclei called karyogamy.
- b) Fusion of protoplasm between two motile or non-motile gametes.
- c) Meiosis in zygote resulting in haploid spores.

- 1) (a) → (b) → (c)

- 2) (b) → (a) → (c)

- 3) (c) → (b) → (a)

- 4) (c) → (a) → (b)

95. Match the column I and Column II :

	Column-I	Column-II
P	Gonyaulax	i Soap box
Q	Slime moulds	ii Red tides
R	Chrysophytes	iii Released toxins for marine animals
		iv Spread over several feet
		v Survive for many years
		vi Golden algae
		vii Diatomaceous earth

- 1) P - vi, vii; Q - iv, v; R - i, ii, iii

- 2) P - iv, v; Q - i, ii, iii; R - vi, vii

- 3) P - ii, iii; Q - iv, v; R - i, vi, vii

- 4) P - iv, v; Q - vi, vii; R - i, ii, iii

96. Which of the following is correct about the slime mould?

- a) Its thalloid body, Plasmodium, has pseudopodia for locomotion and engulfing organic matter.
- b) During unfavourable conditions Plasmodium differentiates and produces fruiting bodies called sporangium.
- c) Spores possess no true cell wall.
- d) They are dispersed by air current.
- e) Being extremely resistant, spores survive for many years.
- f) Plasmodium can grow up to several feet.

- 1) All except (c)
- 2) (a), (b) and (c)

- 3) (a), (b), (c) and (f)
- 4) (b), (c) and (f)

97. Which of the given statements are true?

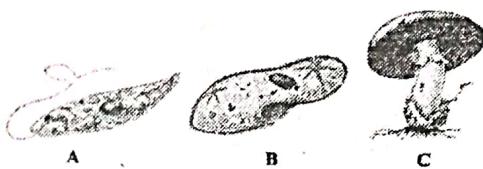
- i. During the development of a dicot embryo, heart shaped embryo is followed by globular embryo.
 - ii. The part of embryonal axis above the level of cotyledons is epicotyl, while the part below the level of cotyledons is hypocotyl.
 - iii. Monocot seeds possess a single cotyledon represented by scutellum in grass family.
- 1) i and ii
 - 2) ii and iii
 - 3) i and iii
 - 4) i, ii and iii

98. Match column-I (Characters/feature) with column-II (examples) and choose the correct option.

Column-I (Characters/features)	Column-II (Examples)
a Red dinoflagellates	i Rhizopus
b Unicellular fungi used to make bread and beer	ii Gonyaulax
c Source of antibiotics	iii Yeast
d Bread mould	iv Penicillium

- 1) a-iii, b-ii, c-i, d-iv 2) a-ii, b-iii, c-i, d-iv
3) a-ii, b-iii, c-iv, d-i 4) a-ii, b-iv, c-iii, d-i

99. Identify the figures A, B and C given below.



- 1) A - Euglena, B - Paramecium, C - Agaricus
2) A - Euglena, B - Planaria, C - Agaricus
3) A - Planaria, B - Paramecium, C - Agaricus
4) A - Euglena, B - Paramecium, C - Aspergillus

100. Match Column-I and Column-II and choose the correct option.

Column I	Column II
a. Phycomycetes	i. Agaricus, Ustilago
b. Ascomycetes	ii. Mucor, Rhizopus
c. Deuteromycetes	iii. Alternaria, Colletotrichum
d. Basidiomycetes	iv. Penicillium, Claviceps

- 1) a-ii, b-iv, c-iii, d-i 2) a-i, b-iii, c-ii, d-iv
3) a-iv, b-ii, c-i, d-iii 4) a-iii, b-ii, c-i, d-iv

101. In gymnosperms,

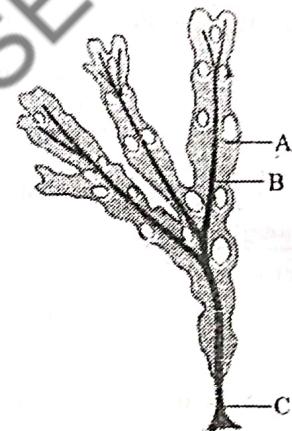
- A. Ovules and seed remain exposed, both before and after fertilization
B. Plants are medium-sized or tall trees or shrubs
C. Roots are generally tap roots Choose the correct option.
1) Only A is correct
2) Only A and B are correct
3) Only B and C are correct
4) All A, B, and C are correct

102. Match the column-I and column-II w.r.t. plant groups and their examples.

Column-I	Column-II
i. Chlorophyceae	a. <i>Polysiphonia</i>
ii. Phaeophyceae	b. <i>Volvox</i>
iii. Rhodophyceae	c. <i>Polytrichum</i>
iv. Moss	d. <i>Salvinia</i>
v. Heterosporous pteridophyte	e. <i>Pinus</i>
vi. Monoecious gymnosperm	f. <i>Dictyota</i>

- 1) i-(f), ii-(a), iii-(e), iv-(c), v-(a), vi-(b)
2) i-(b), ii-(f), iii-(d), iv-(e), v-(c), vi-(a)
3) i-(b), ii-(f), iii-(a), iv-(d), v-(c), vi-(e)
4) i-(b), ii-(f), iii-(a), iv-(c), v-(d), vi-(e)

103. Identify A, B, and C in the given figure and select the correct option :



- 1) A - Frond, B - Air bladder, C - Stipe
2) A - Holdfast, B - Air bladder, C - Frond
3) A - Air bladder, B - Frond, C - Holdfast
4) A - Frond, B - Stipe, C - Holdfast

104. Which of the following statements is not correct?

- 1) Insects that consume pollen or nectar without bringing about pollination are called pollen nectar robbers
2) Pollen germination and pollen tube growth are regulated by chemical components of pollen interacting with those of the pistil
3) Some reptiles have also been reported as pollinators in some plant species
4) Pollen grains of many species can germinate on the stigma of a flower, but only one pollen tube of the same species grows into the style

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105. Select the mismatched pair :

- Unicellular flagellated - *Chlamydomonas*
- Unicellular non-flagellated - *Chlorella*
- Flagellated colonial - *Volvox*
- Kelps - *Chara*

106. Some characters are given below. Which of them are true for red algae?

- Greater concentration found in warmer areas.
- Reserve food material is present in the form of agar.
- Sexual reproduction may be isogamous, anisogamous, and oogamous.
- Complex post-fertilization development occurs.

Choose the correct answer from the options given below :

- a and b
- c and d
- a and d
- b and d

107. Match the ploidy as the following.

Column-I		Column-II	
a.	Gemma cell of Liverworts	i.	(n)
b.	Capsule of moss	ii.	(2n)
c.	Archegonia of liver worts	iii.	(n)
d.	Prottonema of moss	iv.	(n)

- a-i, b-ii, c-iii, d-iv
- a-ii, b-i, c-iii, d-iv
- a-iv, b-i, c-iii, d-ii
- a-i, b-iii, c-ii, d-iv

108. In Cycas

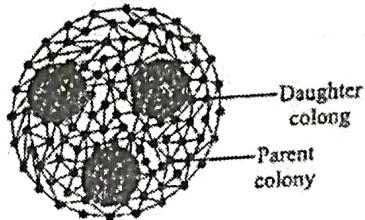
- microsporangia and ovule are present in same sporophyte
- micro and megasporophylls are present in same cone
- male cone and megasporophylls are borne on separate plants
- male cone and megasporophylls are borne on the same plant

109. Match the columns and find out the correct combination:

Column-I		Column-II	
a	mycorrhiza	i	<i>Ginkgo biloba</i>
b	coralloid roots	ii	<i>Pinus</i>
c	living fossil	iii	<i>Cycas</i>
d	redwood tree	iv	<i>Sequoia</i>

- a-ii, b-iii, c-i, d-iv
- a-ii, b-i, c-iii, d-iv
- a-i, b-iii, c-iv, d-ii
- a-iii, b-ii, c-i, d-iv

110. Select the option which gives correct information regarding.



- A green algae and its cell wall possess cellulose, but lacks algin.
- A brown algae and its stored material is floridean starch.
- A pteridophyte and is having protonema stage in its life cycle.
- A moss and the plant body is thalloid.

111. Which one is correct about *Marchantia*?

- Plant body is monoecious or dioecious.
- Sporophyte is differentiated into foot, seta and capsule.
- Spore germinates to produce gametophyte.
- All of these

112. In which of the following, all listed genera belong to the same class of algae

- Porphyra*, *Ectocarpus*, *Ulothrix*
- Volvox*, *Spirogyra*, *Chlamydomonas*
- Chara*, *Fucus*, *Polysiphonia*
- Sargassum*, *Laminaria*, *Gracilaria*

113. Pyrenoids are made up of

- core of fats surrounded by sheath of protein.
- core of protein surrounded by fatty sheath.
- proteinaceous centre and starchy sheath.
- core of nucleic acid surrounded by protein sheath

114. Plant body in pteridophyte is

- sporophyte (2n) having no root, stem and leaf.
- gametophyte (n) having root, stem and leaf.
- gametophyte (n) having no root, stem and leaf.
- sporophyte (2n) having true root, stem and leaf.

115. Artificial system of classification given by Linnaeus is based on

- The number and structure of stamen and carpel
- Evolutionary as well as genetic affinities
- Gross morphology
- Natural affinities among the organism

QUESTION BOOKLET VERSION : 11

- 116.** which of the following criteria is not used as basis of natural system of classification?

 - 1) Gross morphology 2) Ultrastructure
 - 3) Phytochemistry 4) Phylogeny

117. Match Column-I with Column-II and choose the correct option.

Column I		Column II	
a.	<i>Rhizopus</i>	i.	Deuteromycetes
b.	<i>Aspergillus</i>	ii.	Basidiomycetes
c.	<i>Puccinia</i>	iii.	Ascomycetes
d.	<i>Alternaria</i>	iv.	Phycomycetes

- 1) a-i, b-ii, c-iii, d-iv 2) a-iv, b-iii, c-i, d-ii
 3) a-ii, b-iii, c-ii, d-i 4) a-ii, b-iii, c-ii, d-i

118. Read the following statements w.r.t. algae :

 - A few freshwater forms of algae form massive plant bodies.
 - Vascular tissues are absent.
 - Most common asexual spore is zoospore.
 - Sexual reproduction can be isogamous, anisogamous, or oogamous.
 - Embryo formation is seen in marine brown and red algae.

How many above given statements are correct?

- 1) Two
 - 2) Three
 - 3) Four
 - 4) Five

- (119) Assertion : Only red algae can flourish at the great depth of sea.

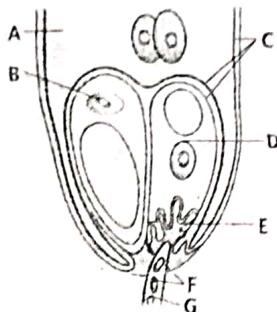
Reason : Red alga has the pigments rhodophycin and phycocyanin. [New/Old NCERT Page 27/33]

- 1) If both assertion and reason are true and the reason is the correct explanation of the assertion.
 - 2) If both assertion and reason are true, but reason is not the correct explanation of the assertion.
 - 3) If assertion is true, but reason is false.
 - 4) If both assertion and reason are false.

120. The phenomenon observed in some plants wherein parts of the sexual apparatus is used for forming embryos without fertilisation is called

- 1) parthenocarpy
 - 2) apomixis
 - 3) vegetative propagation
 - 4) sexual reproduction

121. Refer to the given figure of egg apparatus showing entry of pollen tube into a synergid. Identify any two of the labelled parts and select the correct option.



- 1) A-Central cell, G - Egg nucleus
 - 2) C - Plasma membrane, D - Vegetative nucleus
 - 3) B - Egg nucleus, F-Male gametes
 - 4) B - Central cell, E - Filiform apparatus

122. Study the following statements and select the correct option.

- i. Tapetum nourishes the developing pollen grains.
 - ii. Hilum represents the junction between ovule and funicle.
 - iii. In aquatic plants such as water hyacinth and water lily, pollination occurs by water.

- iv. The primary endosperm nucleus is triploid.

 - i and ii are correct but iii and iv are incorrect.
 - i, ii and iv are correct but iii is incorrect.
 - ii, iii and iv are correct but i is incorrect.
 - i and iv are correct but ii and iii are incorrect

123. Which of the following statements about sporopollenin is false?

- 1) Exine is made up of sporopollenin
 - 2) Sporopollenin is most resistant organic material
 - 3) Exine has apertures called germpores where sporopollenin is present
 - 4) Sporopollenin can withstand high temperature and strong acids

124. A hexaploid (6n) plant gets pollinated by an octaploid (8n) plant. As a result of double fertilization, what will be the ploidy of embryo and endosperm respectively?

- 1) $10n$, $7n$ 2) $6n$, $8n$
3) $7n$, $10n$ 4) $8n$, $6n$

QUESTION BOOKLET VERSION : 11

125. Match the columns :

Column - I		Column - II	
a. Malacophily	i. Bats		
b. Ophiophily	ii. Birds		
c. Chiropterophily	iii. Snakes		
d. Ornithophily	iv. Snails		

- 1) a-iii, b-iv, c-ii, d-i 2) a-iv, b-iii, c-i, d-ii
 3) a-i, b-ii, c-iv, d-iii 4) a-iv, b-iii, c-ii, d-i

126. The cells of endosperm of angiosperm have 24 chromosomes. What will be the number of chromosomes in the gametes?

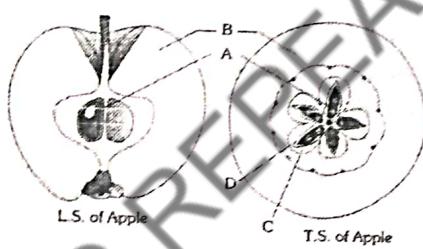
- 1) 8 2) 16
 3) 23 4) 32.

127. Assertion (A) : Apomixis (agamospermy) is a form of asexual reproduction that mimics sexual reproduction.

Reason (R): In apomixis (agamospermy) seeds are formed without involving sexual reproduction.

- 1) (A) and (R) are true and the (R) is the correct explanation of the (A).
 2) (A) and (R) are true but the (R) is not the correct explanation of the (A).
 3) (A) is true but (R) is false
 4) (A) and (R) are false

128. Select the right option in which the edible part (A, B, C and D) shown in the figure is correctly identified



- 1) D - Endocarp 2) C = Epicarp + Mesocarp
 3) B - Thalamus 4) A - Seed

129. A female gymnospermic plant with the genotype TT gets pollinated by another gymnosperm with the genotype tt. As a result of fertilization what will be the genotype of embryo and endosperm respectively?

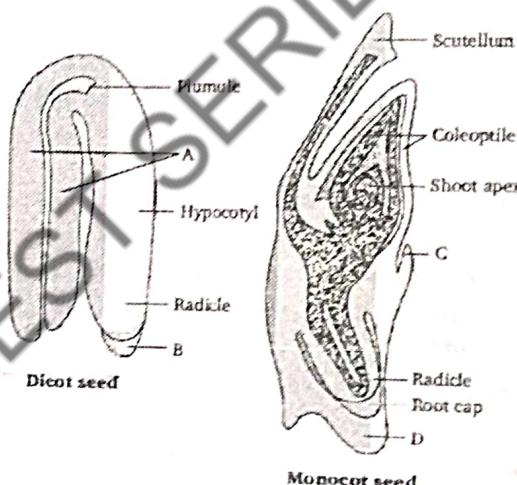
- 1) Tt, T 2) Tt, TTt
 3) tt, Tt 4) TTt, Tt

130. Match the column I and II

Column-I		Column-II	
a. Edible delicacies	i. Pencillium, Streptomyces		
b. Experimental genetics	ii. Neurospora crassa		
c. Source of antibiotics	iii. Puccinia, Ustilago		
d. Rust and smut diseases	iv. Morels and truffles		

- 1) a-iv, b-ii, c-iii, d-i 2) a-iii, b-i, c-ii, d-iv
 3) a-iv, b-ii, c-i, d-iii 4) a-iv, b-iii, c-ii, d-i

131. Identify the structures marked as A, B, C, D in the diagrams of dicot and monocot seeds given below :



- 1) A = Cotyledons, B = Epiblast, C = Root cap, D = Coleoptile
 2) A = Cotyledons, B = Root cap, C = Epiblast, D = Coleorrhiza
 3) A = Epiblast, B = Coleorrhiza, C = Coleoptile, D = Cotyledons
 4) A = Cotyledons, B = Coleorrhiza, C = Root cap, D = Epiblast

132. Assertion : Polyembryony is found in all angiosperm.

Reason : All angiosperm are produced by apomixis.

- 1) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
 2) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
 3) If the assertion is true but the reason is false.
 4) If both the assertion and reason are false.

133. If the female parent produces unisexual flower:

- 1) Emasculation must be done before maturity
- 2) Emasculation must be done after maturity
- 3) Emasculation must be done before pollination
- 4) Emasculation is not needed

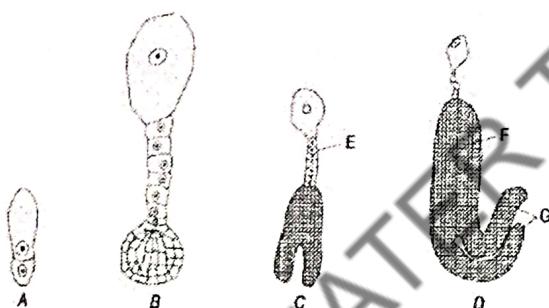
134. Read the following statements.

- I. Generative cell is bigger and contains abundant food reserve.
- II. Vegetative cell is small and floats in the cytoplasm of the generative cell.
- III. In angiosperms various stages of reductional divisions can be studied in young anthers.
- IV. Hilum represents the junctions between ovule and funicle.

Choose the option with correct set of statements.

- 1) I and II
- 2) I and III
- 3) II and IV
- 4) III and IV

135. Identify the different stages in embryogenesis in the given diagram A, B, C, D, E, F and G.



- 1) A-2-celled stage, B-Heart-shaped embryo, C-Globular embryo, D-Mature embryo, E-Radicle, F-Suspensor, G-Cotyledon
- 2) A-2-celled stage, B-Mature embryo, C-Heart-shaped embryo, D-Globular embryo, E-Cotyledon, F-Radicle, G-Suspensor
- 3) A-2-celled stage, B-Globular embryo, C-Heart-shaped embryo, D-Mature embryo, E-Suspensor, F-Radicle, G-Cotyledon
- 4) A-Mature embryo, B-Heart-shaped embryo, C-Globular embryo, D-2-celled stage, E-Suspensor, F-Cotyledon, G-Radicle

SECTION 'D' Biology

136. Assertion : At maturity, only one chamber appear in each anther lobe.

Reason : At maturity, stomium tissue degenerate which is present between the pollen sacs.

- 1) Both Assertion and Reason are True and the Reason is correct explanation of the Assertion.
- 2) Both Assertion and Reason are True but Reason is not a correct explanation of the Assertion.
- 3) Assertion is True but the Reason is False
- 4) Both Assertion and Reason are False.

137. Match the column I with column II

	Column - I	Column - II
1	Hollow bag like structure	p Ovule
2	End of the mitosis creation of small nucleus by assymetric spindle	q Megaspore mother cell
3	Structure made up by integuments and megasporangia	r Anther
4	Structure madeup by three nuclei at micropylar end	s Antipodal cell
5	Bilayered uninucleate structure	t Pollen grains
		u Generative cell
		v Egg apparatus

1) (1 - t), (2 - u), (3 - q), (4 - s), (5 - t)

2) (1 - r), (2 - t), (3 - p), (4 - s), (5 - q)

3) (1 - t), (2 - u), (3 - p), (4 - v), (5 - q)

4) (1 - r), (2 - u), (3 - p), (4 - v), (5 - t)

138. Statement I : Filiform apparatus is present at the micropylar part of the egg cell which guides the entry of pollen tube.

Statement II : Double fertilization is a unique event of flowering plants.

- 1) Both statement I and statement II are true.
- 2) Both statement I and statement II are false.
- 3) Statement I is true but statement II is false.
- 4) Statement I is false but statement II is true

139. How many divisions are required for formation of 3-celled mature male gametophyte from pollen mother cell?

- 1) 2 meiotic and 2 mitotic divisions
- 2) 1 meiotic and 2 mitotic divisions
- 3) 1 meiotic and 3 mitotic divisions
- 4) 1 meiotic and 1 mitotic division

QUESTION BOOKLET VERSION : 11

140. It is possible to store pollen grains of a large number of species for years in liquid nitrogen at

- 1) 196°C 2) -196°C
- 3) 0°C 4) -96°C

141. For artificial hybridization experiment in bisexual flower, which of the following sequence of event is correct?

- A. Cross pollination
- B. Bagging
- C. Re-bagging
- D. Emasculation

- 1) D → B → A → C 2) A → D → B → C
- 3) D → A → C 4) B → D → A → C

142. Which of the following structure guides the entry of pollen tube in embryo sac?

- 1) Antipodal cells
- 2) Secondary nucleus
- 3) Filiform apparatus
- 4) Chalazal cells

143. Apomixis is a mechanism in which

- 1) Fruits are produced without fertilization
- 2) A diploid egg is fertilized by a male gamete
- 3) Nucellus or integuments participate in embryo formation
- 4) Embryo always develop from haploid cells

144. Calculate ploidy of fruit if female plants is 6n & male is 10n

- 1) 6n 2) 10n
- 3) 7n 4) 8n

145. Calculate number of meosis required to produce 10 embryo sac

- 1) 6 2) 30
- 3) 10 4) 15

146. Which of the following use water from their environment as circulating fluid –

- 1) Sponges 2) Coelenterates
- 3) 1) and 2) 4) Fishes

147. Blood, a special type of connective tissue

- 1) Consists of a fluid matrix (Plasma)
- 2) Has formed elements
- 3) Is the most commonly used body fluid by most of the higher organisms
- 4) All

148. Which of the following statements is false?

- 1) Erythrocytes/RBC are the least abundant of all the cells in blood.
- 2) The number of RBCs in adult man per mm³ of blood is 5 million to 5.5. million.
- 3) RBC are formed in the red bone marrow in the adults.
- 4) RBCs are enucleate in most of the mammals.

149. Match the following –

Column I	Column II
a. basophils	i. Phagocytes
b. Neutrophils	ii. Secrete histamine, serotonin, heparin and involved in inflammatory response
c. Monocytes	iii. Resist infections and are also involved in allergic reaction
d. Eosinophils	iv. Immunity
e. Lymphocytes	v. Clotting
1) a-i, b and c-i, d-iii, e-iv	
2) a-ii, b and c-i, d-iii, e-iv	
3) a-iii, b and c-i, d-ii, e- iv	
4) a-iv, b and c-iii, d-i, e-ii	

150. Find the correct descending order of percentage proportion of leucocytes in human blood.

- 1) Neutrophils → Basophils → Lymphocytes → Acidophils (Eosinophils) Monocytes
- 2) Neutrophils → Monocytes → Lymphocytes → Acidophils → Basophils
- 3) Neutrophils → Lymphocytes → Monocytes → Acidophils → Basophils
- 4) Neutrophils → Acidophils → Basophils → Lymphocytes → Monocytes

151. Assertion – A physician might order a white cell count for a patient with symptoms of an infection.

Reason- An increase in the number of white blood cells (leukocytes) may indicate that the person is combating an infection.

- 1) Both assertion and reason are true and reason is correct explanation of assertion.
- 2) Both assertion and reason are true and reason is not correct explanation of assertion.
- 3) Assertion is true but reason is false.
- 4) Both assertion and reason are false

- 152. Which of the following statement are correct?**
- Ca²⁺ is necessary for blood coagulation
 - Coagulation in blood vessel is prevented during normal condition by heparin
 - Clotting of blood involves changes of fibrinogen to fibrin by thrombin
 - Blood clotting involves cascading process involving a number of factors present in the active form always
- 1) I, III, IV 2) II, IV
 3) I, II, III 4) III, IV

- 153. Advantages of closed circulatory system over open circulatory system includes which of the following?**
- Closed system can direct blood to specific tissues
 - Exchange occurs more rapidly
 - Close circulatory system can support higher levels of metabolic activity
 - All

- 154. Which of the following is correct about human heart?**
- The volume of both atria > the volume of both ventricles
 - The volume of both ventricle > the volume of both atria
 - The volume of both atria = the volume of both ventricles
 - Ventricles are upper chambers and atria are lower chambers in our heart

155. Match the following.

	Column I	Column II
A	Superior vena cava	p Carries deoxygenated blood to lungs
B	Inferior vena cava	q carries oxygenated blood from lungs
C	Pulmonary artery	r brings deoxygenated blood from lower part of body to right atrium
D	Pulmonary vein	s bring deoxygenated blood from upper part of body to right atrium

- 1) A-q, B-s, C-r, D-p 2) A-s, B-p, C-q, D-r
 3) A-s, B-r, C-p, D-q 4) A-s, B-p, C-r, D-q

- 156. Origin of heart beat and its conduction is represented by -**
- SA-node → Purkinje fibres → AV-node → Bundle of His
 - AV-node → Bundle of His → SA-node → Purkinje fibres
 - Purkinje fibres → AV-node → SA-node → Bundle of His
 - SA-node → AV-node → Bundle of His → Purkinje fibres

- 157. SA node is called pace maker of the heart. Why?**
- It can change contractile activity generated by AV node
 - It delays the transmission of impulse between the atria and ventricles
 - It gets stimulated when it receives neural signal
 - It initiates and maintains the rhythmic contractile activity of heart

- 158. Atria-ventricular node (AVN) is situated in**
- Lower left corner of left auricle, close to AV-septum
 - Lower left corner of right auricle, close to AV-septum
 - Upper left corner of right auricle, close to AV-septum
 - Upper left corner of left auricle, close to AV-septum

- 159. Which of the following correctly traces the electrical impulses that trigger each heart beat**
- Pacemaker → AV node → Atria → Ventricles
 - Pacemaker → Atria → AV node → Ventricles
 - AV node → Pacemaker → Auricles → Ventricles
 - Ventricle → pacemaker → AV node → Auricle

- 160. An atrioventricular valve prevents the back flow or leakage of blood from –**
- The right ventricle into the right atrium
 - The left atrium into the left ventricle
 - The aorta into the left ventricle
 - The pulmonary vein into the right atrium

QUESTION BOOKLET VERSION : 11

161. Assertion- If you trace the path of a molecule of carbon dioxide that starts in an arteriole in the right thumb and leaves the body in exhaled air, the minimum number of capillary beds the molecule encountered is 2.

Reason- The molecule of carbon dioxide would need to enter a capillary bed in the thumb before returning to the right atrium and ventricle, then travel to the lung and enter a capillary from which it would diffuse into an alveolus and be available to be exhaled.

- 1) Both assertion and reason are true and reason is correct explanation of assertion.
- 2) Both assertion and reason are true and reason is not correct explanation of assertion.
- 3) Assertion is true but reason is false.
- 4) Both assertion and reason are false.

162. During ventricular systole –

- 1) Oxygenated blood is pumped into the aorta and deoxygenated blood is pumped into the pulmonary artery
- 2) Oxygenated blood is pumped into the pulmonary artery and deoxygenated blood is pumped into the artery
- 3) Oxygenated blood is pumped into aorta and deoxygenated blood is pumped into pulmonary vein
- 4) Oxygenated blood is pumped into pulmonary vein and deoxygenated blood is pumped into pulmonary artery

163. Which of the following events do not occur during joint diastole?

- I. All 4 chambers of heart are in relaxed state
 - II. Tricuspid and bicuspid valves open
 - III. Action potential is conducted from SAN to AVN
 - IV. Blood from the pulmonary veins and vena cava flows into the left and right ventricles respectively through the left and right atria
 - V. The Semilunar valves are closed
- 1) Only V 2) Only III
3) Only IV 4) Only I and II

164. The accompanying diagram shows three stages in the cardiac cycle-



Which of the following sequence is correct?

- 1) 2, 3, 1
- 2) 1, 2, 3
- 3) 2, 1, 3
- 4) 3, 1, 2

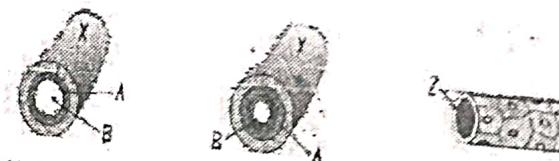
165. Which of the following statement is not true?

- 1) Cardiac output of an athlete is much higher than that of an ordinary man
- 2) In each minute a single cardiac cycle is performed
- 3) Cardiac sounds are of clinical diagnostic significances
- 4) Cardiac cycle includes Auricular systole, ventricular systole and joint diastole/complete diastole

166. Assertion - The AV node delay the electrical impulse moving from the SA node and the atria to the ventricles

Reason- The delay allows the atria to empty completely, filling ventricles fully before they contract.

- 1) Both assertion and reason are true and reason is correct explanation of assertion.
- 2) Both assertion and reason are true and reason is not correct explanation of assertion.
- 3) Assertion is true but reason is false.
- 4) Both assertion and reason are false.

167. Identify X, Y and Z?

- 1) X-vein, Y-Artery, Z-Capillary
- 2) X-Capillary, Y-Artery, Z-Vein
- 3) X-Artery, Y-Capillary, Z-Vein
- 4) X-Vein, Y-Capillary, Z-Artery

168. The hepatic-portal vein carries blood from to the _____ before it is delivered to the systemic circulation-

- 1) Liver, intestine
- 2) Pancreas, intestine
- 3) Intestine, liver
- 4) Hepatic artery, hepatic vein

169. Assertion – There is low velocity of blood flow in the capillaries.

Reason – There is large total crosssectional area of the capillaries.

- 1) Both assertion and reason are true and reason is correct explanation of assertion.
- 2) Both assertion and reason are true and reason is not correct explanation of assertion.
- 3) Assertion is true but reason is false.
- 4) Both assertion and reason are false.

170. Cardiac centre can moderate. the cardiac functions through -

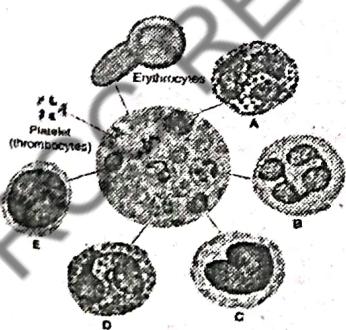
- 1) Somatic neural system
- 2) Parasympathetic nervous system only
- 3) Autonomic nervous system (ANS)
- 4) Sympathetic nervous system only

171. Normal BP= 120 / 80 mmHg in an adult.

In this measurement 120 mmHg is the _____ pressure and 80 mmHg is _____ pressure-

- 1) Diastolic, systolic
- 2) Systolic, diastolic
- 3) Pulse, diastolic
- 4) Pulse, systolic

172. Diagrammatic representation of formed elements in blood is given below. Identify A to E and select the correct option:



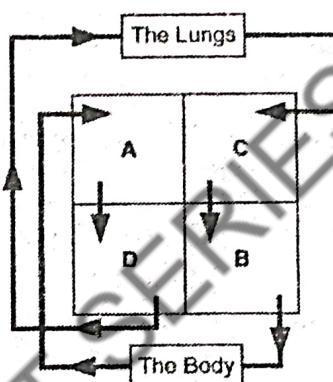
	A	B	C	D	E
1)	Basophil	Neutrophil	Monocyte	Eosinophil	Lymphocyte
2)	Basophil	Lymphocyte	Monocyte	Eosinophil	Neutrophil
3)	Monocyte	Neutrophil	Basophil	Eosinophil	Lymphocyte
4)	Basophil	Monocyte	Neutrophil	Eosinophil	Lymphocyte

PCB TEST

173. Which of the following is not a part of conducting system?

- I. SA node
- II. Fossa ovalis
- III. Chordae tendinae
- IV. Purkinje fibres
- V. Bundle of His
- 1) I, II and III
- 2) II, III and V
- 3) II and III only
- 4) I, III and IV

174. A box diagram of human heart is given below. Correctly identify the chambers A to D.



- 1) A-Right ventricle, B-Left ventricle, C-Left atrium, D-Right atrium
- 2) A-Right atrium, B-Right ventricle, C-Left atrium, D-Left ventricle
- 3) A-Left atrium, B-Left ventricle, C-Right atrium, D-Right ventricle
- 4) A-Right atrium, B-Left ventricle, C-Left atrium, D-Right ventricle

175. Read the following five statements (A to E) and select the option with all correct statements:

- A) The stroke volume divided by the heart rate (no. of beats per min.) gives the cardiac output.
- B) Lymph is a colourless fluid containing specialised lymphocytes which are responsible for the immune responses of the body.
- C) In fishes the heart pumps out deoxygenated blood which is oxygenated by the gills and supplied to the body parts from where deoxygenated blood is returned to the heart.
- D) Parasympathetic neural signals increase the rate of heart-beat, speed of conduction of action potential and thereby the cardiac output.
- E) The cardiac output of an athlete will be much higher than that of an ordinary man.

- 1) (A), (C) and (D)
- 2) (A), (B) and (D)
- 3) (A), (D) and (E)
- 4) (B), (C) and (E)

QUESTION BOOKLET VERSION : 11

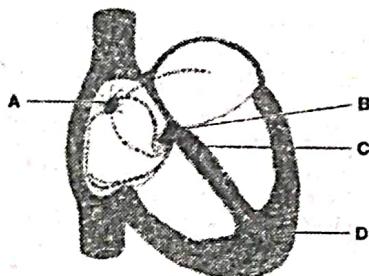
176. Consider the following statements with respect to the structure of human heart.

- A. Heart is protected by a double walled membranous bag, pericardium, enclosing the pericardial fluid.
- B. The walls of atria are much thicker than that of the ventricles.
- C. The openings of the right and the left ventricles into the pulmonary artery and the aorta respectively are provided with the semilunar valves.
- D. The opening between the left atrium and the left ventricle is guarded by a valve formed of three muscular flaps or cusps, the tricuspid valve.

Of the above statements:

- 1) B and D are correct 2) A and B are correct
- 3) A and C are correct 4) A and D are correct

177. The diagram of the conducting system of human heart is given below. Correctly identify the labelling A to D.



- 1) A-AV node, B-SA node, C-Bundle of His, D-Purkinje fibres
- 2) A-SA node, B-AV node, C-Purkinje fibres, D-Bundle of His
- 3) A-AV node, B-SA node, C-Purkinje fibres, D-Bundle of His
- 4) A-SA node, B-AV node, C-Bundle of His, D-Purkinje fibres

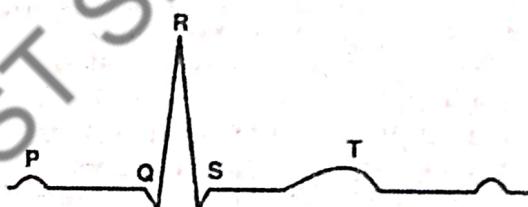
178. Select the wrong statement regarding ECG:

- 1) The P-wave represents the electrical excitation (or depolarisation) of the atria.
- 2) The QRS complex represents the depolarisation of the ventricles.
- 3) The end of the T-wave marks the beginning of systole.
- 4) The T-wave represents the return of the ventricles from excited to normal state (repolarisation).

179. Which one of the following statements is not true?

- 1) The AV node can generate the maximum number of action potentials, i.e., 70-75 per minute, and is responsible for initiating and maintaining the rhythmic contractile activity of the heart.
- 2) The valves in the heart allows the flow of blood only in one direction, i.e., from the atria to the ventricles and from the ventricles to the pulmonary artery or aorta.
- 3) During a cardiac cycle, each ventricle pumps out approximately 70 mL of blood which is called the stroke volume.
- 4) ECG is a graphical representation of the electrical activity of the heart during a cardiac cycle.

180. Refer to the diagram of ECG given and select the correct statement:



- 1) The first wave called, Q-wave, is the result of action potential that causes depolarisation the atrial myocardium.
- 2) The P-wave represents repolarisation of atria.
- 3) Electrocardiogram is the instrument used to record potential differences of heart muscles.
- 4) The P-Q interval is the time from the beginning of the P wave the beginning of QRS complex.



Answer Key - Repeater PCB

PCB Test (Solution)

Date : 27-07-2025

Physics

Chemistry

Biology

01. 4	19. 2	37. 4	55. 2	73. 4	91 1	109.1	127.1	145.3	163 2
02. 2	20. 1	38. 4	56. 2	74. 3	92 3	110.1	128.3	146.3	164 3
03. 2	21. 2	39. 1	57. 3	75. 4	93 3	111.4	129.1	147.4	165 2
04. 1	22. 3	40. 1	58. 2	76. 1	94 2	112.2	130.3	148.1	166 1
05. 2	23. 3	41. 3	59. 2	77. 2	95 3	113.3	131.2	149.2	167 1
06. 3	24. 1	42. 3	60. 1	78. 4	96 1	114.4	132.4	150.3	168 3
07. 2	25. 3	43. 4	61. 3	79. 4	97 2	115.1	133.4	151 1	169 1
08. 3	26. 1	44. 1	62. 3	80. 1	98 3	116.4	134.4	152 3	170 3
09. 4	27. 3	45. 4	63. 2	81. 1	99 1	117.3	135.3	153 4	171 2
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12. 4	30. 1	48. 1	66. 1	84. 3	102.4	120.2	138.4	156 4	174 4
13. 4	31. 2	49. 2	67. 2	85. 3	103.3	121.3	139.2	157 4	175 4
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15. 1	33. 2	51. 1	69. 1	87. 4	105.4	123.3	141.1	159 2	177 4
16. 1	34. 1	52. 2	70. 4	88. 2	106.3	124.3	142.3	160 1	178 3
17. 3	35. 4	53. 2	71. 2	89. 3	107.1	125.2	143.3	161 1	179 1
18. 4	36. 4	54. 1	72. 2	90. 2	108.3	126.1	144.1	162 1	180 4