

प्रा. मोटेगावकर सरांचे

RCC



स्वाधीन ती नंसतात जी
झोपल्यावर पडतात स्वाधीन ती
असतात जी तुम्हांला झोपू
देत नाहीत

- डॉ. व. घ. जे. अमुल कालारम

Mark
720

Group
PCB

Repeater NEET (2025-26) PCB Test

Date : 13/07/2025
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 •

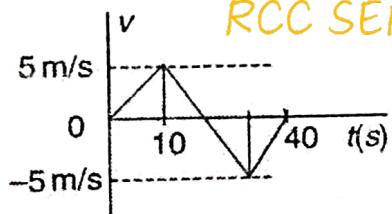
Physics : 1D+ Heat Transfer + Scalars & Vectors + TPM

Chemistry : GOC-I + Atomic Structure

Biology : Sexual Reproduction in F. Plant + Biological Classification + Circulation

SECTION 'A' PHYSICS

01. The velocity-time plot is shown in figure. Find the average speed in time interval $t = 0$ to $t = 40$ s during the period.



- 1) zero 2) 2.5 m/s 3) 5 m/s 4) none

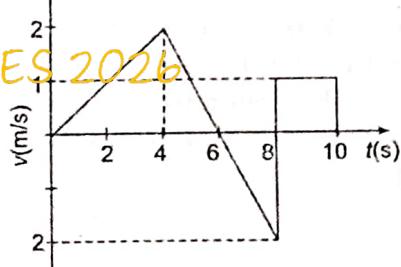
02. The displacement (x) of a particle depends on time t as $x = \alpha t^2 - \beta t^3$. Choose the incorrect statements from the following.

- 1) The particle never returns to its starting point
2) The particle comes to rest after time $\frac{2\alpha}{3\beta}$
3) The initial velocity of the particle is zero
4) The initial acceleration of the particle is 2α

03. The acceleration a (in ms^{-2}) of a body, starting from rest varies with time t (in second) according to the relation $a = 3t + 4$. The velocity of the body starting from rest at time $t = 2$ s will be

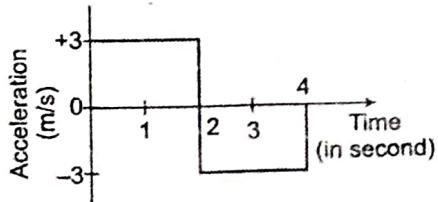
- 1) 10 ms^{-1} 2) 12 ms^{-1} 3) 14 ms^{-1} 4) 16 ms^{-1}

04. The velocity-time graph of a body moving in a straight line is given below. The displacement of the body in 10 s is



- 1) 4 m 2) 6 m
3) 8 m 4) 10 m

05. A particle starts from rest at $t = 0$ and moves in a straight line with an acceleration as shown below. The velocity of the particle at $t = 3$ s is



- 1) 2 m/s 2) 3 m/s
3) 4 m/s 4) 6 m/s

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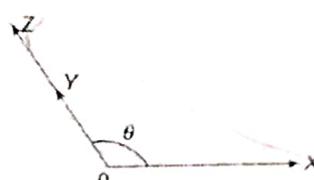
06. Two forces of magnitudes P and Q are inclined at an angle (θ) the magnitude of their resultant is $3Q$. When the inclination is changed to $(180 - \theta)$, the magnitude of the resultant force becomes Q . The ratio of the forces $\left(\frac{P}{Q}\right)$ is

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

07. The sum of the magnitudes of two forces acting at point is 18 and the magnitude of their resultant is 12. If the resultant is at 90° with the force of smaller magnitude, what are the magnitudes of forces ?

- | | |
|----------|----------|
| 1) 12, 5 | 2) 14, 4 |
| 3) 5, 13 | 4) 10, 8 |

08. Forces X , Y and Z have magnitudes 10 N , $5(\sqrt{3} - 1)\text{ N}$ and $5(\sqrt{3} + 1)\text{ N}$.



The forces Y and Z act in the same direction as shown in the diagram. The resultant of X and Y and the resultant of X and Z have the same magnitude. Find θ , the angle between X and Y .

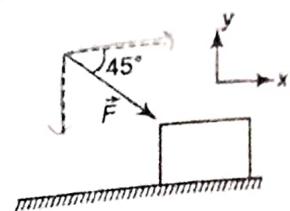
- | | |
|----------------|----------------|
| 1) 150° | 2) 135° |
| 3) 120° | 4) 105° |

09. 100 coplanar forces each equal to 10 N act on a body. Each force makes angle $\pi/50$ with the preceding force. What is the resultant force will be

- | | |
|--------------------|-------------------|
| 1) 1000 N | 2) 500 N |
| 3) 250 N | 4) Zero |

10. A person pushes a box kept on a horizontal surface with force of 100 N . In unit vector notation force can be expressed as :

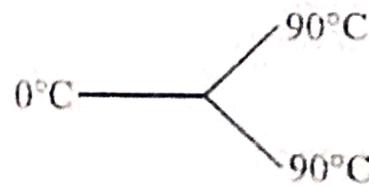
- | | |
|------------------------------------|------------------------------------|
| 1) $100(\hat{i} + \hat{j})$ | 2) $100(\hat{i} - \hat{j})$ |
| 3) $50\sqrt{2}(\hat{i} - \hat{j})$ | 4) $50\sqrt{2}(\hat{i} + \hat{j})$ |



11. Consider east as positive x -axis, north as positive y -axis and vertically upward direction as z -axis. A helicopter first rises up to an altitude of 100 m than flies straight in north 500 m and then suddenly takes a turn towards east and travels 1000 m east. What is positions vector of helicopter ? (Take starting point as origin)

- | | |
|--|---|
| 1) $1000\hat{i} - 500\hat{j} + 100\hat{k}$ | 2) $1000\hat{i} + 500\hat{j} - 100\hat{k}$ |
| 3) $1000\hat{i} + 500\hat{j} + 100\hat{k}$ | 4) $-1000\hat{i} + 500\hat{j} + 100\hat{k}$ |

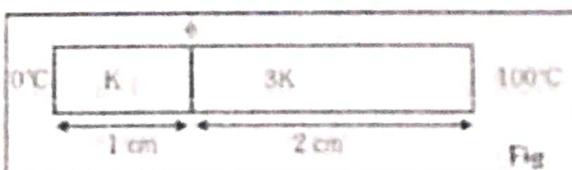
12. Three rods made of the same material and having the same cross-section have been joined as shown in the figure. Each rod is of the same length. The left and right ends are kept at 0°C and 90°C respectively. The temperature of the junction of the three rods will be :



- | | |
|-----------------------|-----------------------|
| 1) 45°C | 2) 60°C |
| 3) 30°C | 4) 20°C |

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13. The temperature of hot and cold end of a 20 cm long rod in thermal steady state are at 100°C and 20°C respectively. Temperature at the centre of the rod is
 1) 50°C 2) 60°C 3) 40°C 4) 30°C
14. Under steady state, the temperature of a body
 1) Increases with time
 2) Decreases with time
 3) Does not change with time and is same at all the points of the body
 4) Does not change with time but is different at different points of the body
15. If the coefficient of conductivity of aluminium is $0.5 \text{ cal/cm-sec}^{-\circ}\text{C}$, then in order to conduct 10 cal/sec-cm^2 in the steady state, the temperature gradient in aluminium must be
 1) $5^{\circ}\text{C}/\text{cm}$ 2) $10^{\circ}\text{C}/\text{cm}$
 3) $20^{\circ}\text{C}/\text{cm}$ 4) $10.5^{\circ}\text{C}/\text{cm}$
16. The ratio of the diameters of two metallic rods of the same material is $2 : 1$ and their lengths are in the ratio $1 : 4$. If the temperature difference between them are equal, the rate of flow of heat in them will be in the ratio of -
 1) $2 : 1$ 2) $4 : 1$
 3) $8 : 1$ 4) $16 : 1$
17. Two bars of thermal conductivities K and $3K$ and lengths 1 cm and 2 cm respectively have equal cross-sectional area, they are joined length wise as shown in the figure. If the temperature at the ends of this composite bar is 0°C and 100°C respectively (see figure), then the temperature of the interface (ϕ) is

- Fig
- 1) 50°C 2) $\frac{100}{3}^{\circ}\text{C}$
 3) 60°C 4) $\frac{200}{3}^{\circ}\text{C}$
18. Two walls of thicknesses d_1 and d_2 and thermal conductivity k_1 and k_2 are in contact. In the steady state, if the temperatures at the outer surface are T_1 and T_2 , the temperature at the common wall is-
 1) $\frac{K_1 T_1 d_2 + K_2 T_2 d_1}{K_1 d_2 + K_2 d_1}$ 2) $\frac{K_1 T_1 + K_2 T_2}{d_1 + d_2}$
 3) $\left(\frac{K_1 d_1 + K_2 d_2}{T_1 + T_2} \right) T_1 T_2$ 4) $\frac{K_1 d_1 T_1 + K_2 d_2 T_2}{K_1 + d_1 + K_2 d_2}$
19. A spherical body of area A , and emissivity $e = 0.6$ is kept inside a black body. What is the rate at which energy is radiated per second at temperature T .
 1) $0.6 \sigma AT^4$ 2) $0.4 \sigma AT^4$
 3) $0.8 \sigma AT^4$ 4) $1.0 \sigma AT^4$
20. Radius of two spheres of same material are 1 & 4 m respectively and their temperature are 4×10^3 and 2×10^3 K respectively. Then ratio of emitted energy of spheres per sec. will be -
 1) $1:2$ 2) $2:1$
 3) $1:1$ 4) $4:1$
21. Cooling rate of a sphere of 600 K at external environment (200 K) is R . When the temperature of sphere is reduced to 400 K then cooling rate of the sphere becomes :
 1) $\frac{3}{16} R$ 2) $\frac{16}{3} R$
 3) $\frac{9}{27} R$ 4) None

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22. If temperature of ideal black body increased by 10%, then percentage increase in quantity of radiation emitted from its surface will be :-
- 1) 10%
 - 2) 40%
 - 3) 46%
 - 4) 100%
23. The rectangular surface of area $8\text{cm} \times 4\text{ cm}$ of a black body at a temperature of 127°C emits energy at the rate of E . If the length and breadth of the surface are each reduced to half of the initial value and the temperature is raised to 327°C , the rate of emission of energy will become.
- 1) $\frac{3}{8}E$
 - 2) $\frac{81}{16}E$
 - 3) $\frac{9}{16}E$
 - 4) $\frac{81}{64}E$
24. The length of a seconds hand in watch is 1 cm. The change in velocity of its tip in 15 s is
- 1) zero
 - 2) $\frac{\pi}{30\sqrt{2}}\text{ cm/s}$
 - 3) $\frac{\pi}{30}\text{ cm/s}$
 - 4) $\frac{\pi\sqrt{2}}{30}\text{ cm/s}$
25. A car covers $\frac{1}{3}$ part of total distance with a speed of 20 km hr^{-1} and second $\frac{1}{3}$ part with a speed of 30 km hr^{-1} and the last $\frac{1}{3}$ part with a speed of 60 km hr^{-1} . The average speed of the car is
- 1) 55 km hr^{-1}
 - 2) 30 km hr^{-1}
 - 3) 45 km hr^{-1}
 - 4) 37.3 km hr^{-1}
26. A particle moves towards east with velocity 5 m/s . After 10 seconds its direction changes towards north with same velocity. The average acceleration of the particle is
- 1) Zero
 - 2) $\frac{1}{\sqrt{2}}\text{ m/s}^2\text{ N-W}$
 - 3) $\frac{1}{\sqrt{2}}\text{ m/s}^2\text{ N-E}$
 - 4) $\frac{1}{\sqrt{2}}\text{ m/s}^2\text{ S-W}$
27. The coefficient of thermal conductivity depends upon -
- 1) Temperature difference of two ends
 - 2) Area of the plate
 - 3) Thickness of the plate
 - 4) Material of the plate
28. A particle moves along a straight line such that its displacement at any time t is given by $s = t^3 - 6t^2 + 3t + 4$. The velocity, when its acceleration is zero, is
- 1) 3 ms^{-1}
 - 2) -12 ms^{-1}
 - 3) 42 ms^{-1}
 - 4) -9 ms^{-1}
29. The acceleration of a particle is increasing linearly with time t as bt . The particle starts from the origin with an initial velocity v_0 . The distance travelled by the particle in time t will be
- 1) $v_0t + \frac{1}{6}bt^3$
 - 2) $v_0t + \frac{1}{3}bt^3$
 - 3) $v_0t + \frac{1}{3}bt^2$
 - 4) $v_0t + \frac{1}{2}bt^2$
30. If the displacement of a particle varies with time as $\sqrt{x} = t + 3$
- 1) velocity of the particle is inversely proportional to t
 - 2) velocity of particle varies linearly with t
 - 3) velocity of particle is proportional to \sqrt{t}
 - 4) initial velocity of the particle is zero

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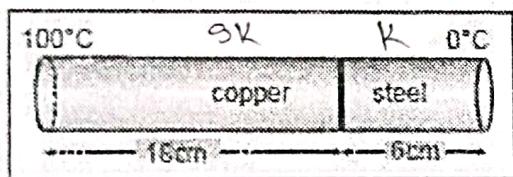
31. A particle moving in a straight line has velocity-displacement equation as $v = 5\sqrt{1+s}$. Here v is in ms^{-1} and s in metres. Select the correct alternative.

- 1) particle is initially at rest
- 2) Initially velocity of the particle is 5 m/s and the particle has a constant acceleration of 12.5 ms^{-2}
- 3) Particle moves with a uniform velocity
- 4) None of the above

32. If $|\vec{A} \times \vec{B}| = |\vec{A} \cdot \vec{B}|$, then angle between \vec{A} and \vec{B} will be

- 1) 30°
- 2) 45°
- 3) 60°
- 4) 90°

33. The coefficient of thermal conductivity of copper is nine times that of steel. In the composite cylindrical bar shown in the figure what will be the temperature at the junction of copper and steel ?



- 1) 75°C
- 2) 67°C
- 3) 33°C
- 4) 25°C

34. A particle travels with speed 50 m/s from the point $(3 \text{ m}, -7 \text{ m})$ in a direction $7\hat{i} - 24\hat{j}$. Find its position vector after 3 seconds.

- 1) $(45\hat{i} - 125\hat{j})\text{m}$
- 2) $(45\hat{i} - 151\hat{j})\text{m}$
- 3) $(45\hat{i} + 125\hat{j})\text{m}$
- 4) $(35\hat{i} - 115\hat{j})\text{m}$

35. The angles which a vector $\hat{i} + \hat{j} + \sqrt{2}\hat{k}$ makes with X , Y and Z axes respectively are

- 1) $60^\circ, 60^\circ, 60^\circ$
- 2) $45^\circ, 45^\circ, 45^\circ$
- 3) $60^\circ, 60^\circ, 45^\circ$
- 4) $45^\circ, 45^\circ, 60^\circ$

36. If $\vec{A} = 2\hat{i} + 3\hat{j} - \hat{k}$ and $\vec{B} = -\hat{i} + 3\hat{j} + 4\hat{k}$ then projection of \vec{A} on \vec{B} will be

- 1) $\frac{3}{\sqrt{13}}$
- 2) $\frac{3}{\sqrt{26}}$
- 3) $\sqrt{\frac{3}{26}}$
- 4) $\sqrt{\frac{3}{13}}$

37. The position of a particle is given by $\vec{r} = (\hat{i} + 2\hat{j} - \hat{k})$ momentum $\vec{P} = (3\hat{i} + 4\hat{j} - 2\hat{k})$. The angular momentum is perpendicular to
 1) x -axis
 2) y -axis
 3) z -axis
 4) Line at equal angles to all the three axes

38. A body of mass 5 kg falls from a height of 30 metre. If its all mechanical energy is changed into heat, then heat produced will be:-

- 1) 350 cal
- 2) 150 cal
- 3) 60 cal
- 4) 6 cal

39. A bullet moving with velocity v collides against wall. consequently half of its kinetic energy is converted into heat. If the whole heat is acquired by the bullet, the rise in temperature will be:-

- 1) $v^2/4S$
- 2) $4v^2 / 2S$
- 3) $v^2/2S$
- 4) v^2 / S

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QUESTION BOOKLET VERSION : 11

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|---|--|--------------------|--------------------|
| 40. The amount of heat required in converting 1 g ice at -10°C into steam at 100°C will be :: | 1) 3028 J 2) 6056 J
3) 721 J 4) 616 J | | |
| 41. 2 kg ice at -20°C is mixed with 5 kg water at 20°C . Then final amount of water in the mixture would be;

Given specific heat of ice = 0.5 cal/g $^{\circ}\text{C}$,
Specific heat of water = 1 cal/g $^{\circ}\text{C}$,
Latent heat of fusion for ice = 80 cal/g.

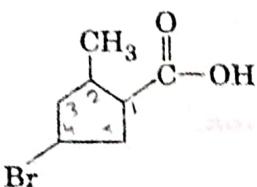
1) 6 kg 2) 5 kg
3) 4 kg 4) 2 kg | | | |
| 42. A block of ice with mass m falls into a lake. After impact, a mass of ice $m/5$ melts. Both the block of ice and the lake have a temperature of 0°C . If L represents the heat of fusion, the minimum distance the ice fell before striking the surface is | | | |
| 1) $\frac{L}{5g}$ | 2) $\frac{5L}{g}$ | 3) $\frac{gL}{5m}$ | 4) $\frac{mL}{5g}$ |
| 43. 10 g of ice at 0°C is kept in a calorimeter of water equivalent 10 g. How much heat should be supplied to the apparatus to evaporate the water thus formed? (Neglect loss of heat) | 1) 6200 cal 2) 7200 cal
3) 13600 cal 4) 8200 cal | | |
| 44. A 2100 W continuous flow geyser (instant geyser) has water inlet temperature = 10°C while the water flows out at the rate of 20 g/s. The outlet temperature of water must be about | 1) 20°C 2) 30°C
3) 35°C 4) 40°C | | |
| 45. Rate of heat flow through a metal rod is Q_1 . Temperatures of ends of rod are T_i and T_r . If all the linear dimensions of the rod become double and temperature difference remains same, it's rate of heat flow is Q_2 , then :: | 1) $Q_1 = 2Q_2$ 2) $Q_2 = 2Q_1$
3) $Q_2 = 4Q_1$ 4) $Q_1 = 4Q_2$ | | |

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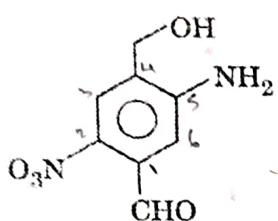
SECTION 'B' CHEMISTRY

46. The IUPAC name of the following compound is



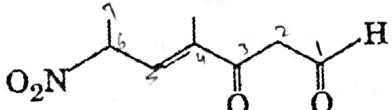
- 1) 4-Bromo-2-methylcyclopentane carboxylic acid
- 2) 5-Bromo-3-methylcyclopentanoic acid
- 3) 3-Bromo-5-methylcyclopentane carboxylic acid
- 4) 3-Bromo-5-methylcyclopentanoic acid

47. The IUPAC name of the following compound is



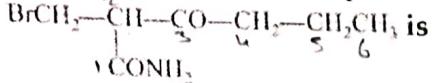
- 1) 3-amino-4-hydroxymethyl-5-nitrobenzaldehyde
- 2) 2-nitro-4-hydroxymethyl-5-aminobenzaldehyde
- 3) 4-amino-2-formyl-5-hydroxymethylnitrobenzene
- 4) 5-amino-4-hydroxymethyl-2-nitrobenzaldehyde

48. The correct IUPAC name of the following compound is :



- 1) 4-methyl-2-nitro-5-oxohept-3-enal
- 2) 4-methyl-5-oxo-2-nitrohept-3-enal
- 3) 4-methyl-6-nitro-3-oxohept-4-enal
- 4) 6-formyl-4-methyl-2-nitrohex-3-enal

49. IUPAC name of the compound

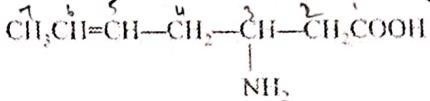


- 1) 2-(Bromomethyl)-3-oxohexanamide
- 2) 1-Bromo-2-amido-3-oxohexane
- 3) 1-Bromo-2-amido-n-propyl ketone
- 4) 3-Bromo-2-propanoyl-propanamide

50. Which of the following compounds has wrong IUPAC name ?

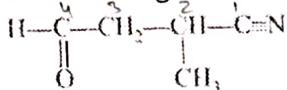
- 1) $\text{CH}_3\text{---CH}_2\text{---CH}_2\text{---COO---CH}_2\text{CH}_3 \rightarrow$
ethyl butanoate
- 2) $\text{CH}_3\text{---}\overset{7}{\text{CH}}\text{---}\overset{6}{\text{CH}_2}\text{---}\overset{5}{\text{CHO}} \rightarrow$
3-ethylbutanal
- 3) $\text{CH}_3\text{---}\overset{7}{\text{CH}}\text{---}\overset{6}{\text{CH}}\text{---}\overset{5}{\text{CH}_3} \rightarrow$
3-ethyl-2-butanol
- 4) $\text{CH}_3\text{---}\overset{7}{\text{CH}}\text{---}\overset{6}{\text{C}}\text{---}\overset{5}{\text{CH}_2}\text{---}\overset{4}{\text{CH}_3} \rightarrow$
2-methyl-3-pentanone

51. The IUPAC name of the following is :



- 1) 3-Aminohept-5-enoic acid
- 2) 5-Aminohex-2-enecarboxylic acid
- 3) 3-Aminohept-4-enoic acid
- 4) 5-Aminohept-2-enoic acid

52. IUPAC name of given compound is :

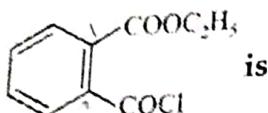


- 1) 3-Carbonitrile-3-methylbutanal
- 2) 3-Formyl-2-methylpropanenitrile
- 3) 3-Cyanobutanal
- 4) 2-Methyl-4-oxobutanenitrile

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QUESTION BOOKLET VERSION

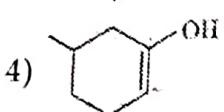
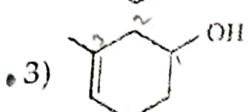
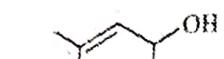
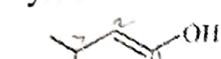
53. IUPAC name of the compound



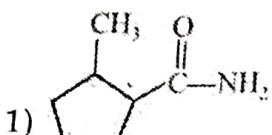
is

- 1) 2-Chlorocarbonylethylbenzene carboxylate
 2) 2-Carboxyethylbenzoyl chloride
 3) Ethyl-2-(chlorocarbonyl)benzene carboxylate
 4) Ethyl-1-(chlorocarbonyl)benzene carboxylate

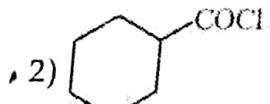
54. Which of the following structure is 3-Methyl cyclohex-3-enol ?



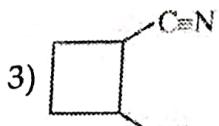
55. Which of the following IUPAC names are incorrect ?



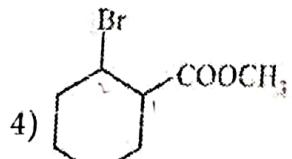
2-Methylcyclopentane carboxamide.



Cyclohexanoyl chloride.



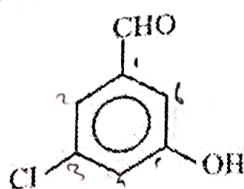
2-Methylcyclobutane carbonitrile



Methyl-2-bromocyclohexane carboxylate

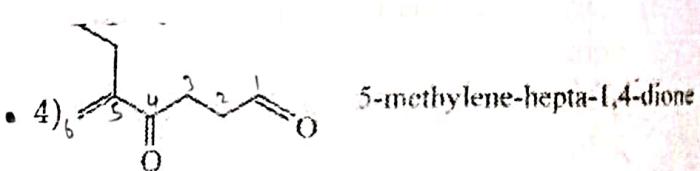
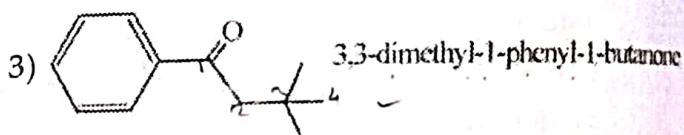
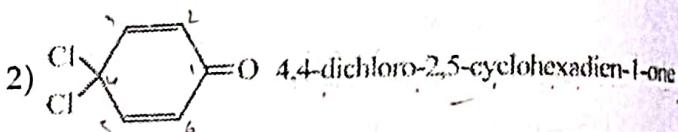
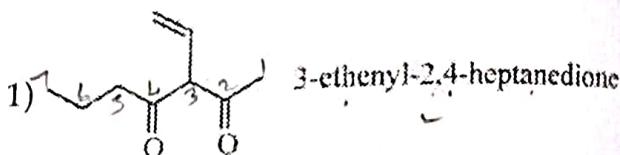
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56. The IUPAC name of the following compound is
CHO



- 1) 5-Chloro-3-hydroxybenzenecarbaldehyde
 - 2) 3-Chloro-5-formylphenol
 - 3) 3-Chloro-5-hydroxybenzenecarbaldehyde
 - 4) 1-Chloro-3-formyl-5-hydroxybenzene

57. Which of the following compound is not named correctly?

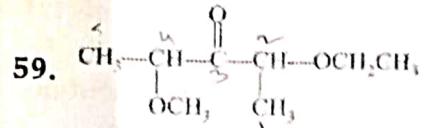


58. Which of the following statements is wrong for a homologous series ?

- 1) All members have same general formula
 - 2) All members have the same functional group
 - 3) All members have the same chemical properties
 - 4) All members have the same physical properties

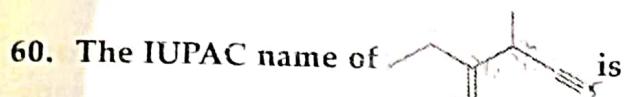
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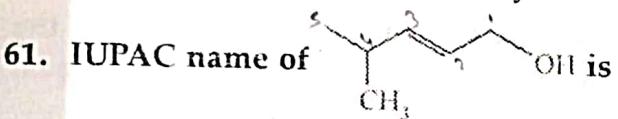


The IUPAC name of this compound is

- 1) 2-Ethoxy-4-methoxypentan-3-one
 - 2) 2-Methoxy-4-ethoxypentan-3-one
 - 3) 2-Ethoxy-4-methoxypentan-3-one
 - 4) None of these



- 1) 2-Ethyl-3-methyl-1-penten-4-yne
 - 2) 2-Ethyl-3-methyl-4-pentyn-1-ene
 - 3) 4-Ethyl-3-methyl-1-pentyn-4-ene
 - 4) 4-Ethyl-3-ethyl-4-penten-1-yne



- 1) 5-Methylhexanol
 - 2) 2-Methylhexanol
 - 3) 2-Methylhex-3-ene
 - 4) 4-Methylpent-2-en-

62. Match the following :

List I	List II
1. CH_3COOH and HCOOCH_3	i) Metamers
2. $\text{CH}_3-\text{CH}_2-\text{C}\equiv\text{CH}$ and $\text{CH}_3-\text{C}\equiv\text{C}-\text{CH}_3$	ii) Position isomers
3. $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$ and $\text{CH}_3-\text{CH}(\text{NH}_2)-\text{CH}_3$	iii) Tautomers
4. $\text{CH}_3\text{CH}_2\text{OH}$ and $(\text{CH}_3)_2\text{O}$	iv) Functional isomers

The correct matching is

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67. How many cyclic isomers of C_5H_{10} are possible?

- 1) Chain isomers 2) Positional isomers
 - 3) Functional isomers 4) Metamers

67. How many cyclic isomers of C_5H_{10} are possible?

- 1) Chain isomers 2) Positional isomers
 - 3) Functional isomers 4) Metamers

How many cyclic isomers of C_5H_{10} are possible?

1) 4 2) 3 3) 2 4) 5

- 1) 4 2) 3 3) 2 4) 5

1) 4 2) 3 3) 2 4) 5

1) 4 2) 3 3) 2 4) 5



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68. The electron in the hydrogen atom undergoes transition from higher orbit to orbit of radius 211.6 pm. This transition is associated with		73. The threshold frequency of a metal corresponds to the wavelength of x nm. In two separate experiments 'A' and 'B', incident radiations of wavelength $\frac{1}{2}x$ nm and $\frac{1}{4}x$ nm respectively are used. The ratio of kinetic energies of the released electrons in experiment 'B' to that in experiment 'A' is
1) Paschen series 2) Brackett series 3) Lyman series 4) Balmer series		1) $\frac{1}{3}$ 2) 2 3) 4 4) 3
69. There are two statements, one labelled as Assertion (A) and the other as Reason (R). Examine both the statements carefully and mark the correct choice.		74. A 600 W mercury lamp emits monochromatic radiation of wavelength 331.3 nm. How many photons are emitted from the lamp per second? ($h = 6.626 \times 10^{-34}$ Js; velocity of light = 3×10^8 ms $^{-1}$)
(A) Hydrogen has one electron in its orbit but it produces several spectral lines		1) 1×10^{19} 2) 1×10^{20} 3) 1×10^{21} 4) 1×10^{23}
(R) There are many excited energy levels available.		75. The wave number of the spectral line in the emission spectrum of hydrogen will be equal
1) Both (A) and (R) are correct and (R) is the correct explanation of (A)		$\frac{8}{9}$ times the Rydberg's constant if the electron jump from
2) Both (A) and (R) are correct but (R) is not the correct explanation of (A)		1) $n = 3$ to $n = 1$ 2) $n = 10$ to $n = 1$ 3) $n = 9$ to $n = 1$ 4) $n = 2$ to $n = 1$
3) (A) is correct and (R) is wrong		76. The ionisation potential of hydrogen atom is 13.6 eV. The energy required to remove an electron from $n = 2$ state of hydrogen atom is
4) (a) is wrong and (R) is correct		1) 27.2 eV 2) 13.6 eV 3) 6.8 eV 4) 3.4 eV
70. Which one of the following corresponds to a photon of highest energy ?		77. Ionisation energy of He^+ is 19.6×10^{-18} J atom $^{-1}$. The energy of the first stationary state ($n = 1$) of Li^{2+} is
1) $\lambda = 300$ nm 2) $v = 3 \times 10^8$ s $^{-1}$		1) 8.82×10^{-17} J atom $^{-1}$ 2) 4.41×10^{-16} J atom $^{-1}$
3) $\bar{v} = 30$ cm $^{-1}$ 4) $E = 6.626 \times 10^{-27}$ J		3) -4.41×10^{-17} J atom $^{-1}$ 4) -2.2×10^{-15} J atom $^{-1}$
71. In the hydrogen atomic spectrum, the emission of the least energetic photon takes place during the transition from $n = 6$ energy level to $n = \dots$ energy level.		
1) 1 2) 3 3) 5 4) 4		
72. If the shortest wavelength in Lyman series of hydrogen atom is A , then the longest wavelength in Paschen series of He^+ is		
1) $\frac{5A}{9}$ 2) $\frac{36A}{5}$ 3) $\frac{36A}{7}$ 4) $\frac{9A}{5}$		

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78. According to Bohr's theory, the angular momentum for an electron in 5th orbit is
- $2.5 h/\pi$
 - $5 h/\pi$
 - $25 h/\pi$
 - $5\pi/2h$
79. Uncertainty principle is valid for
- Proton
 - Methane
 - Both (1) and (2)
 - 1 mm sized platinum particles
80. The de Broglie wavelength of a ball of mass 10 g moving with a velocity of 10 ms⁻¹ is ($h = 6.626 \times 10^{-34}$ Js)
- 6.626×10^{-33} m
 - 6.626×10^{-29} m
 - 6.626×10^{-31} m
 - 6.626×10^{-36} m
81. If the de Broglie wavelength of a particle of mass m is 100 times its velocity, then its value in terms of its mass (m) and Planck's constant (h) is
- $\frac{1}{10} \sqrt{\frac{m}{h}}$
 - $10 \sqrt{\frac{h}{m}}$
 - $\frac{1}{10} \sqrt{\frac{h}{m}}$
 - $10 \sqrt{\frac{m}{h}}$
82. In an atom, an electron is moving with a speed 600 m/s with an accuracy of 0.005% uncertainty with which the position of the electron can be located is ($h = 6.6 \times 10^{-34}$ kg m² s⁻¹, mass of electron, $e_m = 9.1 \times 10^{-31}$ kg)
- 1.52×10^{-4} m
 - 5.10×10^{-3} m
 - 1.92×10^{-3} m
 - 3.84×10^{-3} m

83. Which one of the following decides the shapes of orbitals in an energy shell ?
- Magnetic quantum number
 - Principal quantum number
 - Azimuthal quantum number
 - Spin quantum number
84. Which of the following pairs is not correctly matched ?
- Hund's rule : In orbitals of equivalent energy electron spins remain unpaired if possible
 - Pauli's : No two electrons can have all the four quantum numbers identical
 - Zeeman effect : The effect of magnetic field on the atomic spectra
 - Uncertainty : It is impossible to determine the position of an electron
85. Identify the correct statement.
- Quantum numbers (n, l, m, s) are obtained arbitrarily
 - All the quantum numbers (n, l, m, s) for any pair of electrons in an atom can be identical under special circumstance
 - All the quantum numbers (n, l, m, s) may not be required to describe an electron of an atom completely
 - All the quantum numbers (n, l, m, s) are required to describe an electron of an atom completely
86. Impossible orbital among the following is
- 2s
 - 3f
 - 2p
 - 4d

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87. Which one of the following sets of quantum numbers represents the highest energy level in an atom?

- 1) $n = 4, l = 0, m = 0, s = +\frac{1}{2}$

2) $n = 3, l = 1, m = 1, s = +\frac{1}{2}$

3) $n = 3, l = 2, m = -2, s = +\frac{1}{2}$

4) $n = 3, l = 0, m = 0, s = +\frac{1}{2}$

88. The total number of orbitals associated with the principal quantum number $n = 3$, is

89. Which law represents the pairing of electron in a sub-shell after each orbital is filled with one electron ?

- 1) Pauli's exclusion principle
 - 2) Hund's rule
 - 3) Heisenberg's principle
 - 4) Hess's law

90. Which of the following sets of quantum number is correct?

- 1) $n = 5, l = 4, m = 0, s = +\frac{1}{2}$
 - 2) $n = 3, l = 3, m = +3, s = +\frac{1}{2}$
 - 3) $n = 6, l = 0, m = +1, s = -\frac{1}{2} *$
 - 4) $n = 4, l = 2, m = +2, s = 0$

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SECTION 'C' BIOLOGY

91. Match column I (containing fungus name) with column II (common name) and choose the correct options.

Column-I (Fungus name)	Column-II (Commonly called)
a <i>Puccinia</i>	i Yeast
b <i>Ustilago</i>	ii Mushroom
c <i>Agaricus</i>	iii Smut fungus
d <i>Saccharomyces</i>	iv Rust fungus

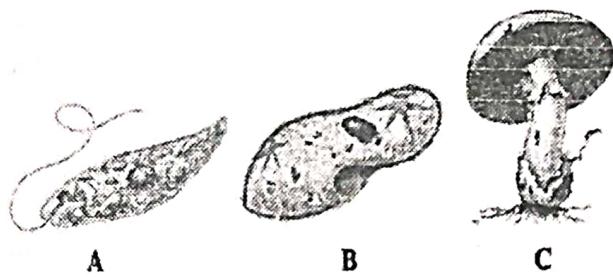
1) a-i, b-ii, c-iii, d-iv 2) a-ii, b-iii, c-iv, d-i

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

92. Which of the following groups of protozoan is not correctly matched with its feature?

- | | |
|----------------|--|
| 1) Amoeboid | - Marine forms have silica shells on their surface. |
| 2) Flagellated | - Either free living or parasitic. |
| 3) Ciliated | - Actively moving organisms due to presence of Cilia. |
| 4) Sporozoans | - Move and capture their prey with the help of false feet. |

93. 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*

94. T. O. Diener discovered a new infectious agent that was smaller than viruses and have the following characteristics.

- (i) It causes potato spindle tuber disease.
- (ii) It has free RNA.
- (iii) Molecular weight of RNA is low.

Identify the infectious agent.

- 1) Prions
- 2) Viroids
- 3) Lichens
- 4) Mycoplasma

95. Match the column I and II

Column-I	Column-II
a Edible delicacies	i <i>Pencillium</i> , <i>Streptomyces</i>
b Experimental genetics	ii <i>Neurospora crassa</i>
c Source of antibiotics	iii <i>Puccinia</i> , <i>Ustilago</i>
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

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

- Tapetum nourishes the developing pollen grains.
 - Hilum represents the junction between ovule and funicle.
 - In aquatic plants such as water hyacinth and water lily, pollination occurs by water.
 - The primary endosperm nucleus is triploid.
- 1) i and ii are correct but iii and iv are incorrect.
 - 2) i, ii and iv are correct but iii is incorrect.
 - 3) ii, iii and iv are correct but i is incorrect.
 - 4) i and iv are correct but ii and iii are incorrect.

97. Read the following statements :

- In a normal flower which opens and exposes the anthers and the stigma, complete autogamy is rather rare
- Viola, Oxalis and Commelina produce both cleistogamous as well as chasmogamous flowers ✓
- Cleistogamous flowers produce assured seed set even in the absence of pollinators
- Majority of the plants use abiotic agents for pollination
- Xenogamy does not produce any variation in the progenies after fertilization

Which of the following is/are correct ?

- 1) (i), (ii) and (iii)
- 2) (ii), (iii), (iv) and (v)
- 3) (i), (iv) and (v)
- 4) (v) only

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98. A particular species of plant produces light, non-sticky pollen in large numbers and its stigmas are long and feathery. These modifications facilitate pollination by
 1) insects 2) water
 3) wind 4) animals

99. The pollen grains of rice and wheat lose their viability in _____ minutes of their release.
 • 1) 30 2) 10
 3) 60 4) 90

100. A dicotyledonous plant bears flowers but never produces fruits and seeds. The most probable cause for the above situation is :

- 1) Plant is dioecious and bears only pistillate flowers
- 2) Plant is dioecious and bears both pistillate and staminate flowers
- 3) Plant is monoecious
- 4) Plant is dioecious and bears only staminate flowers

101. Assertion (A) : Parthenium or carrot grass causes pollen allergy.

Reason (R): Parthenium came to India as a contaminant with imported wheat.

- 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

102. Select the correct option regarding the ploidy level of different structures of an angiospermous ovule.

Nucellus	MMC	Functional megaspore
1. n	$2n$	$2n$
2. $2n$	n	n
3. $2n$	$2n$	n
4. n	$2n$	n

103. When pollens are transferred from anther of a flower to stigma of another flower of the same plant, pollination is referred to as:

- 1) Geitonogamy 2) Allogamy
- 3) Xenogamy 4) Siphonogamy

104. Read the following statements :

- i) The Yucca plant and the moth cannot complete their life cycles without each other
- ii) In some insect species, the floral reward for pollination is the safe place to lay eggs in the flower
- iii) Insect robbers consume pollens or nectar without bringing about pollination
- iv) Majority of the flowering plants produce hermaphrodite flowers
- v) Continued cross-pollination results in inbreeding depression

Which of the above statements are correct ?

- 1) (i), (ii), (iii) and (iv)
- 2) (i), (ii), (iii), (iv) and (v)
- 3) (i), (ii) and (v)
- 4) (ii), (iii) and (v) ✓

105. The flowers pollinated by flies and beetles :

- 1) Completely lack nectar
- 2) Give out foul odours
- 3) Are microscopic
- 4) Cannot be pollinated by other insects

106. Pollination by water is quite rare in flowering plants and is limited to about _____ genera, mostly _____.

- 1) 30, monocots 2) 60, monocots
- 3) 30, dicots 4) 60, dicots

107. How many meiotic divisions are required for the formation of 100 functional pollen grains and 100 functional megasporangia respectively ?

- 1) 25, 100 2) 100, 25
- 3) 100, 100 4) 25, 25

108. Geitonogamy involves

- 1) Pollination of a flower by the pollen from another flower of the same plant
- 2) Pollination of a flower by the pollen from the same flower
- 3) Pollination of a flower by the pollen from a flower of another plant in the same population
- 4) Pollination of a flower by the pollen from a flower of another plant belonging to a distant population

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

 - 1) Pollen grains are rich in nutrients and they are used in the form of tablets and syrups
 - 2) Pollen grains of some plants cause severe allergies and bronchial afflictions in some people
 - 3) The flowers pollinated by flies and beetles secrete foul odour to attract them
 - 4) Honey is made by bees by digesting pollen collected from flowers

110. Read the given statements.

 - i. Outer exine is made up of sporopollenin.
 - ii. Inner intine is pecto-cellulosic in nature.
 - iii. Generative cell is bigger and contains abundant food reserve.
 - iv. Vegetative cell is small and floats in the cytoplasm of the generative cell.

Which of the given statements are not true regarding structure of pollen grain?

1) i and ii 2) ii and iii
3) iii and iv 4) i and iv

111. Consider the following features seen in a plant:

 - I. Male and female reproductive organs are generally found in separate flowers.
 - II. The male flowers having a number of long filaments terminating in exposed stamens.
 - III. The female flowers having long, featherlike stigmas.

The flowers of this plant would most likely be pollinated by:

1) Wind 2) Water
3) Bees 4) Birds

112. Assertion (A) : Geitonogamy is genetically similar to autogamy.
Reason (R) : In geitonogamy, pollen grains come from the same plant.

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

- 113.** Study the following and find correct statement(s).

 - Pollination by water is quite rare in flowering plants and is limited to about 50 genera, mostly monocotyledons.
 - Water is a regular mode of transport for the male gametes among higher plant groups.
 - Distribution of bryophytes and pteridophytes are limited because of the need of water for transport of male gametes and fertilisation.

1) Only I 2) II and III
 • 3) Only III 4) Only II

114. Match the following columns.

Column-I	Column-II
a. Antipodal	i. $3n$
b. Central cell	ii. $2n$
c. MMC	iii. $(n + n)$
d. Endosperm	iv. n

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

115. Assertion (A) : Distribution of some bryophytes & pteridophytes is limited.
 Reason (R) : Transport of male gamete in bryophytes & pteridophyte is dependent on water.

 - (A) and (R) are correct but (R) is correct explanation for a
 - (A) and (R) are correct but (R) is not correct explanation for (A)
 - Both (A) and (R) are incorrect
 - (A) is correct but (R) is incorrect

116. Choose the correct statements for pollination in sea grasses-

 - Female flower reach surface of water.
 - Female flower remain submerged.
 - Pollen released on water surface.
 - Pollen release inside water. ✓
 - Pollen grains are carried passively by water.
 - Pollen grains are carried actively in water.
 - Most of the pollen reach stigma.
 - Some of the pollen reach stigma.

1) (i), (iii), (v), (vii) 2) (ii), (iv), (vi), (vii)
 3) (ii), (iv), (v), (vii) 4) (ii), (iv), (v), (viii)

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QUESTION BOOKLET VERSION : 11**117. 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

118. From among the situations given below, choose the one that prevents both autogamy and geitonogamy.

- 1) Monoecious plant bearing unisexual flowers
- 2) Dioecious plant bearing only male or female flowers
- 3) Monoecious plant with bisexual flowers
- 4) Dioecious plant with bisexual flowers

119. Read the given statements-

- i) Autogamy cannot occur in open flower or is very rare.

- ii) Geitonogamy cannot occur in closed flower.

Choose the appropriate answer

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- 1) (i) is correct but (ii) is wrong
- 2) (i) is wrong but (ii) is correct
- 3) (i) and (ii) are both correct
- 4) (i) and (ii) are both wrong

120. Read the following statements and choose the correct ones.

- I. Non-essential floral organs in a flower are sepals and petals.

- II. Stamens represent microsporophylls.

- III. A dithecius anther consists of four microsporangia two in each lobe.

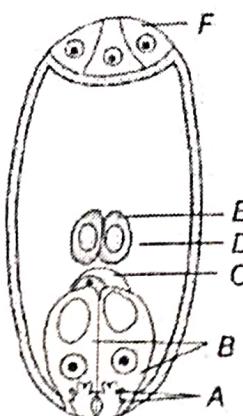
- IV. The anther wall has middle layer lying between endothecium and tapetum.

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

121. Assertion (A) Cleistogamous flowers produce assured seed set in the absence of pollinators.

Reason (R) Cleistogamous flowers do not open at all.

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

122. Identify A to F in the diagram given below.

- 1) A-Egg, B-Filiform apparatus, C-Synergid, D-Antipodals, E-Polar nuclei, F-Central cell
- 2) A-Egg, B-Synergid, C-Filiform apparatus, D-Antipodals, E-Central cell, F-Polar nuclei
- 3) A-Central cell, B-Egg, C-Synergid, D-Antipodals, E-Filiform apparatus, F-Polar nuclei
- A) A-Filiform apparatus, B-Synergid, C-Egg, D-Central cell, E-Polar nuclei, F-Antipodals

123. Read the following statements :

- i. The Yucca plant and the moth *Pronuba yuccasella* cannot complete their life cycles without each other.
- ii. In some insect species, the floral reward for pollination is the safe place to lay eggs in the flower.
- iii. Insect robbers consume pollens or nectar without bringing about pollination.
- iv. Majority of the flowering plants produce hermaphrodite flowers
- v. Continued cross-pollination results in inbreeding depression

Which of the above statements are correct?

- 1) i, ii, iii and iv
- 2) i, ii, iii, iv and v
- 3) i, ii and v
- 4) ii, iii and v

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137. A state of heart when it is not pumping blood effectively enough to meet the needs of the body. The disorder is:

- 1) Angina pectoris
- 2) Hypertension
- 3) Heart failure
- 4) Coronary artery disease

138. Match Column-I with Column-II.

Column-I	Column-II
a) Cardiac arrest	i) Heart not pumping blood effectively
b) Heart failure	ii) Heart muscle is suddenly damaged
c) Heart attack	iii) Acute chest pain
d) Angina	iv) Heart stops beating
1) a-i, b-ii, c-iii, d-iv	
2) a-iv, b-ii, c-i, d-iii	
3) a-iv, b-i, c-ii, d-iii	
4) a-ii, b-iii, c-i, d-iv	

139. Atherosclerosis caused by deposition of which substance in coronary vessels:

- 1) Calcium and Fat
- 2) Cholesterol and fibrous tissue
- 3) Both 1) and 2)
- 4) Calcium and polysaccharides

140. Normal pumping and resting blood pressure is respectively in a healthy individual is:

- 1) 120 mmHg and 80 mmHg
- 2) 80 mmHg and 120 mmHg
- 3) 140 mmHg and 110 mmHg
- 4) 60 mmHg and 40 mmHg

141. Statement I: In amphibians and reptiles, the right atrium receives oxygenated blood from the gills/lungs/skin and the left atrium gets the deoxygenated blood from other body parts.

Statement II: In birds and mammals, oxygenated and deoxygenated blood received by the left and right atria respectively passes on to the ventricles of the same sides.

- 1) Only statement I is correct
- 2) Only statement II is correct
- 3) Both statements I and II are correct
- 4) Both statements I and II are incorrect

142. Which one of the following is a correct matching pair?

- 1) Joint systole-Time duration 0.8 sec
- 2) Lub - First heart sound
- 3) Pulsation of the artery - Ventricular diastole
- 4) Platelets - Anti-clotting property

143. Statement I: Heart, the mesodermally derived organ having the size of a clenched fist, is situated in the thoracic cavity, in between the two lungs, slightly tilted to the left.

Statement II: The atrium and the ventricle of the same side are separated by a thick fibrous tissue called the atrio-ventricular septum.

- 1) Only statement I is correct
- 2) Only statement II is correct
- 3) Both statements I and II are correct
- 4) Both statements I and II are incorrect

144. Identify the option which includes correct statements from the following:

- I) Stroke volume = End systolic volume - End diastolic volume
- II) Human heart is myogenic ✓
- III SA node - pacemaker of the heart-
- IV) Conduction of impulse is slowest at A.V. node
- 1) (I) and (III) ~ 2) (I), (II) and (IV)
- 3) (III) and (IV) ▶ 4) (II), (III), and (IV)

145. Statement I: ECG is a graphical representation of the electrical activity of the heart during a cardiac cycle.

Statement II: In ECG, the contraction that starts shortly after T-wave marks the beginning of the systole.

- 1) Only statement I is correct
- 2) Only statement II is correct
- 3) Both statements I and II are correct
- 4) Both statements I and II are incorrect

146. Which is not true in the following?

- 1) Annelids and chordates have a closed circulatory system.
- 2) Vertebrates have a Neurogenic heart.
- 3) The sino-atrial node can generate the maximum number of the action potential.
- 4) Normal heartbeat 70-75/min

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147. The value of blood pressure will be maximum in:

- 1) renal vein 2) pulmonary vein
3) pulmonary artery 4) hepatic vein

148. Identify the correct value of blood pressure which shows hypertension.

- 1) 140/90 2) 130/80
3) 120/80 4) 90/60

149. Which are not correctly matched?

- I) Normal blood pressure = 80/120 mm Hg ✓
II) Stroke volume = 70 ml ✓
III) Cardiac output = 5000 ml ✓
IV) Breathing rate = 44-46 times/min. ✓
V) Heart beat rate = 72 times/min. ✓
VI) Duration of a cardiac cycle = 0.8 sec ✓

1) I, II, IV, VI ✗ 2) II, III, V ✗
3) I, IV 4) Only IV

150. To obtain a standard ECG, a patient is connected to the machine with leads at:

- 1) both wrists and left ankle
 - 2) left wrist and both ankle
 - 3) both wrists and both ankle
 - 4) both wrists and right ankle P

151. Match the following.

Column-I	Column-II
a) Pacesetter	i) Tissue Fluid
b) Pacemaker	ii) Ventricles
c) Lymph	iii) AV node
d) Papillary muscles	iv) SA node
1) a-iii, b-iv, c-i, d-ii	2) a-iii, b-i, c-ii, d-iv
3) a-iv, b-iii, c-i, d-ii	4) a-i, b-iii, c-ii, d-iv

152. Which statement in the given question is correct?

- 1) For a detailed evaluation of the heart's function, multiple leads are attached to the chest region.
 - 2) To obtain standard ECG, multiple leads are attached to the chest region.
 - 3) QRS complex represents repolarization of the ventricle.
 - 4) pip_pip_peeeee sound in electrocardiogram shows that person goes in heart failure.

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153. Read the following four statements (1-IV):

- I) Serum without clotting factors is called plasma.

II) Coagulation factors are present in plasma in active form.

III) Formed elements constitute nearly 55% of blood.

IV) Rh antigen is observed on the surface of RBCs in Rh +ve.

How many of the above statements are right?

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

154. Which system of blood vessels is present in our body exclusively for the circulation of blood to and from the cardiac musculature?

- 1) Hepatic portal system
 - 2) Systemic circulation
 - 3) Pulmonary circulation
 - 4) Coronary circulation

155. Which one of the following is not true about blood platelet?

- 1) Nonnucleated cytoplasmic fragment
 - 2) Found in mammals only
 - 3) If the platelet count falls below 40,000/mm³ then it is called the critical count of the platelet.
 - 4) Amoeboid in shape

156. Which of the following is correct during each cardiac cycle?

- 1) The volume of blood pumped out by the right and left ventricles is the same.
 - 2) The volume of blood pumped out by the right and left ventricles is different
 - 3) The volume of blood received by each atrium is different.
 - 4) The volume of blood received by the aorta and pulmonary artery is different.

157. Cardiac activity could be moderated by the autonomous neural system. Select the correct answer.

- 1) The parasympathetic system stimulates the heart rate and stroke volume.
 - 2) The sympathetic system stimulates the heart rate and stroke volume.
 - 1) The parasympathetic system decreases the heart rate but increases stroke volume.
 - 4) The sympathetic system decreases the heart rate but increases stroke volume.

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<p>158. Mark the pair of substances among the following, which is essential for coagulation of blood.</p>	<p>163. Agranulocytes responsible for the immune response of the body are:</p>										
<p>1) Heparin and calcium ions 2) Calcium ions and platelet factors 3) Oxalates and citrates 4) Platelet factors and heparin</p>	<p>1) basophils 2) neutrophils 3) eosinophils 4) lymphocytes</p>										
<p>159. ECG depicts the depolarization and repolarization processes during the cardiac cycle. In the ECG of normal healthy individual one of the following waves is not represented.</p>	<p>164. Which of the following correctly explains a phase/event in the cardiac cycle in a standard electrocardiogram?</p>										
<p>1) Depolarization of atria 2) Repolarization of atria 3) Depolarization of ventricles 4) Repolarization of ventricles</p>	<p>1) QRS complex indicates atrial contraction. 2) QRS complex indicates ventricular contraction. 3) Time between S and T represents atrial systole. 4) P-wave indicates beginning of ventricular contraction.</p>										
<p>160. Statement I: Closed circulatory system is considered to be more advantageous as compared to open circulatory system.</p>	<p>165. Statement I: Lymph is collected from various tissues of body through an elaborate network of vessels comprising of arteries and veins.</p>										
<p>Statement II: In closed circulatory system, the flow of fluid can be more precisely regulated.</p>	<p>Statement II: Lymph is an important carrier for nutrient, hormones, etc.</p>										
<p>1) Only statement I is correct 2) Only statement II is correct 3) Both statements I and II are correct 4) Both statements I and II are incorrect</p>	<p>1) Only statement I is correct 2) Only statement II is correct 3) Both statements I and II are correct 4) Both statements I and II are incorrect</p>										
<p>161. Statement I: ECG is a graphical representation of the electrical activity of the heart during a cardiac cycle.</p>	<p>166. Which of the following statements is incorrect?</p>										
<p>Statement II: Each peak in the ECG is identified with the letter from P to Q that represents specific electrical activity of the heart.</p>	<p>1) A person of 'O' blood group has anti 'A' and anti 'B' antibodies in his blood plasma.</p>										
<p>1) Only statement I is correct 2) Only statement II is correct 3) Both statements I and II are correct 4) Both statements I and II are incorrect</p>	<p>2) A person of 'B' blood group can't donate blood to a person of 'A' blood group. 3) The blood group is designated on the basis of the presence of antibodies in the blood plasma. 4) A person of AB blood group is a universal recipient.</p>										
<p>162. The cardiac impulse is initiated and conducted further up to the ventricle. The correct sequence of conduction of impulse is:</p>	<p>167. Match the terms given under Column-I with their functions given under Column-II and select the answer from the options given below.</p>										
<p>1) S A Node → A V Node → Purkinje fibres → A V Bundle 2) S A Node → Purkinje fibres → A V Node → AV Bundle 3) S A Node → AV Node → AV Bundle → Purkinje fibres 4) S A Node → Purkinje fibres → A V Bundle → A V Node</p>	<table border="0"> <thead> <tr> <th style="text-align: center;">Column-I</th> <th style="text-align: center;">Column-II</th> </tr> </thead> <tbody> <tr> <td>a) Lymphatic System</td> <td>i) Carries oxygenated blood</td> </tr> <tr> <td>b) Pulmonary vein</td> <td>ii) Immune Response</td> </tr> <tr> <td>c) Thrombocytes</td> <td>iii) To drain back the tissue fluid to the circulatory system</td> </tr> <tr> <td>d) Lymphocytes</td> <td>iv) Coagulation of blood.</td> </tr> </tbody> </table> <p>Options:</p> <p>1) a-ii, b-i, c-iii, d-iv 2) a-iii, b-i, c-iv, d-ii 3) a-iii, b-i, c-ii, d-iv 4) a-ii, b-i, c-iii, d-iv</p>	Column-I	Column-II	a) Lymphatic System	i) Carries oxygenated blood	b) Pulmonary vein	ii) Immune Response	c) Thrombocytes	iii) To drain back the tissue fluid to the circulatory system	d) Lymphocytes	iv) Coagulation of blood.
Column-I	Column-II										
a) Lymphatic System	i) Carries oxygenated blood										
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d) Lymphocytes	iv) Coagulation of blood.										

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168. What would be the cardiac output of a person having 72 heart-beats per minute and a stroke volume of 50 ml?

- 1) 360 ml 2) 3600 ml
3) 7200 ml 4) 5000 ml

169. If a molecule of CO_2 released into the blood in your spleen is exhaled from your nose, it must be passed through all of the following except:

- 1) the pulmonary vein 2) the trachea
3) the right atrium 4) the right ventricle

170. Which statement about the human heart is true?

- 1) The walls of the right ventricle are thicker than the walls of the left ventricle.
2) The second heart sound is due to the closing of the aortic valve.
3) Blood returns to the heart from the lungs in the vena cava.
4) During systole, the aortic valve is open and the pulmonary valve is closed.

171. The pacemaker actions of cardiac muscle:

- 1) are due to opposing actions of norepinephrine and acetylcholine.
- 2) are localized in the bundle of HIS.
- 3) depend on the gap junctions between the cells that make up the atria and those that make up the ventricles.
- 4) are due to spontaneous depolarization of the plasma membranes of some cardiac muscle cells.

172. Blood flow through capillaries is slow because:

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- 1) lots of blood volume is lost from the capillaries.
2) the pressure in veins is high.
3) the total cross-sectional area of capillaries is larger than that of arterioles.
4) the osmotic pressure in capillaries is very high.

173. Blood clotting:

- 1) is impaired in patients with haemophilia because they don't produce platelets.
2) is initiated when platelets release fibrinogen.
3) involves a complex formed series of cascade processes involving a number of factors present in plasma in an inactive state.
4) requires conversion of angiotensinogen to angiotensin.

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174. Given below are four statements (A-D) regarding the human circulatory system.

- A) AV node is a pacemaker of the heart. ✓
B) Lymph is an important carrier for nutrients and hormones.
C) Pigeon possess incomplete double circulation.
D) AV valves are made up of fibrous flaps or cusps.

Which two of the above statements are correct?

- 1) (A) and (D) ✓ 2) (A) and (B) ✓
• 3) (B) and (D) 4) (C) and (D)

175. Statement I: The valves of the heart (i.e., semilunar and atrio-ventricular valves) prevent any backward flow.

Statement II: The valves in the heart allows the flow of blood only in one direction, i.e. from the atria to the ventricles and from ventricles to the pulmonary artery or aorta.

- 1) Only statement I is correct
2) Only statement II is correct
• 3) Both statements I and II are correct
4) Both statements I and II are incorrect

176. How many of the following statements are correct regarding the lymphatic system?

- I) Lymph is a colourless fluid. ✓
II) Lymphocytes are more in number in blood, as compared to lymph. ✓
III) Exchange of nutrients, gases, etc., between the blood and the cells, never occur through the lymph.

IV) Fats are absorbed through lymph in lacteals present in the intestinal villi. ✓

- 1) Two 2) One
3) Four • 4) Three

177. Statement I: 190/110 mm Hg blood pressure may harm vital organs like brain and kidneys.

Statement II: 130/90 mm Hg blood pressure is considered as hypertension and requires treatment.

- 1) Only statement I is correct
2) Only statement II is correct
3) Both statements I and II are correct
4) Both statements I and II are incorrect

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178. An open circulatory system is characterised by:

- by.

 - 1) the absence of a heart.
 - 2) the absence of blood vessels.
 - 3) blood with a composition different from that of tissue fluid.
 - 4) the absence of capillaries.

179. Which statement about vertebrate circulatory systems is not true?

- 1) In fish, oxygenated blood from the gills returns to the heart through the left atrium.
 - 2) In mammals, deoxygenated blood leaves the heart through the pulmonary artery.
 - 3) In amphibians, deoxygenated blood enters the heart through the right atrium.
 - 4) In reptiles, the blood in the pulmonary artery has a lower oxygen content than the blood in the aorta.

180. Statement I: SAN is located on the left upper corner of right atrium.

Statement II: Stroke volume x Heart rate = Cardiac output

- 1) Only statement I is correct
 - 2) Only statement II is correct
 - 3) Both statements I and II are correct
 - 4) Both statements I and II are incorrect



Answer Key - Repeater PCB PCB Test (Solution) Date : 20-07-2025

Physics				Chemistry				Biology		
01. 2	19. 1	37. 1	55. 2	73. 4	91. 4	109.4	127.2	145.1	163	4
02. 1	20. 3	38. 1	56. 1	74. 3	92. 4	110.3	128.2	146.2	164	2
03. 3	21. 1	39. 1	57. 4	75. 1	93. 1	111.1	129.3	147.3	165	2
04. 2	22. 3	40. 1	58. 4	76. 4	94. 2	112.1	130.4	148.1	166	3
05. 2	23. 4	41. 1	59. 1	77. 3	95. 3	113.3	131.2	149.3	167	2
06. 2	24. 4	42. 1	60. 1	78. 1	96. 2	114.3	132.3	150.1	168	2
07. 3	25. 2	43. 4	61. 4	79. 3	97. 1	115.1	133.2	151.1	169	1
08. 1	26. 2	44. 3	62. 4	80. 1	98. 3	116.4	134.4	152.1	170	2
09. 4	27. 4	45. 2	63. 4	81. 2	99. 1	117.4	135.4	153.2	171	4
10. 3	28. 4	46. 1	64. 4	82. 3	100.4	118.2	136.4	154.4	172	3
11. 3	29. 1	47. 4	65. 4	83. 3	101.2	119.2	137.3	155.4	173	3
12. 2	30. 2	48. 3	66. 1	84. 4	102.3	120.4	138.3	156.1	174	3
13. 2	31. 2	49. 1	67. 4	85. 4	103.1	121.1	139.3	157.2	175	3
14. 4	32. 2	50. 2	68. 4	86. 2	104.1	122.4	140.1	158.2	176	1
15. 3	33. 1	51. 1	69. 1	87. 3	105.2	123.1	141.2	159.2	177	1
16. 4	34. 2	52. 4	70. 1	88. 1	106.1	124.2	142.2	160.3	178	4
17. 3	35. 3	53. 3	71. 3	89. 2	107.1	125.3	143.3	161.1	179	1
18. 1	36. 2	54. 3	72. 3	90. 1	108.1	126.2	144.4	162.3	180	2

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