MHT CET 2025 11 April Shift 1 PCB Question Paper

General Instructions

Read the following instructions very carefully and strictly follow them:

- 1. This question booklet contains 150 Multiple Choice Questions (MCQs).
- Section-A: Physics & Chemistry 50 Questions each and Section-B: Biology 50 Questions.
- 3. Choice and sequence for attempting questions will be as per the convenience of the candidate.
- 4. Read each question carefully.
- 5. Determine the one correct answer out of the four available options given for each question.
- 6. Physics and Chemistry have 1 mark for each question, and Bio have 2 marks for every question. There shall be no negative marking.
- 7. No mark shall be granted for marking two or more answers of the same question, scratching, or overwriting.
- 8. Duration of the paper is 3 Hours.

1. Combination of foreign DNA and vector DNA are together called as

- (A) Recombinant DNA
- (B) Plasmid DNA
- (C) DNA ligase
- (D) Transformation DNA

2. What will be the corresponding mRNA sequence based on the given DNA template strand?

- (A) 5'-AUGCGA-3'
- (B) 3'-TACGCT-5'
- (C) 5'-ATGCGT-3'
- (D) 3'-ATGCGT-5'

3. Which of the following pair of cells are haploid?

- A. Nucellus and antipodals
- B. Polar nuclei and Nucellus
- C. Egg cell and antipodals
- D. Etc

4. Which hormone converts into amino acid?

- A. Glycine
- B. Thyroxine
- C. Valine
- D. Leucine

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6. What is Transcription?

7. A solution is formed by mixing chloroform (CHCl3) and acetone (CH3COCH3).

Which of the following is true regarding the nature of this solution?

- A. It shows positive deviation from Raoult's law due to weak intermolecular forces
- B. It shows negative deviation due to strong dipole-dipole interactions
- C. It obeys Raoult's law over the entire range of composition
- D. It forms an ideal solution with no enthalpy change

8. IUPAC name of the chemical compound Ni(PPh₃)₂Cl₂ 2+?

9. Which of the following drug classes is primarily used to manage elevated LDL

cholesterol levels in patients with cardiovascular risk?

- (a) Beta-blockers
- (b) Statins
- (c) Antacids
- (d) Antihistamines

10. Which of the following enzymes is directly inhibited by statins to reduce cholesterol biosynthesis in the liver?

- (a) Lipase
- (b) HMG-CoA reductase
- (c) Amylase
- (d) Pepsin

11. Which condition is most commonly treated using cholesterol-lowering agents such

as statins?

- (a) Diabetes mellitus
- (b) Atherosclerosis
- (c) Anemia
- (d) Asthma

12. Which of the following lifestyle changes complements the action of statins in managing high cholesterol?

- (a) High-fat diet
- (b) Sedentary lifestyle
- (c) Regular exercise and a fiber-rich diet
- (d) Smoking

13. A car starts from rest and accelerates uniformly at 3 m/s². What will be its velocity after 5 seconds?

- (a) 10 m/s
- (b) 15 m/s
- (c) 20 m/s
- (d) 30 m/s

14. A block of mass 2 kg is acted upon by a net force of 10 N. What is its acceleration?

- (a) 2 m/s^2
- (b) 5 m/s^2
- (c) 10 m/s^2
- (d) 20 m/s^2

15. A body of mass 4 kg is lifted to a height of 5 meters. What is the potential energy gained by the body? (Take $g = 9.8 \text{ m/s}^2$) (a) 20 J

- (u) 20 J
- (b) 49 J
- (c) 98 J
- (d) 196 J

16. A 10 kg box is pulled with a horizontal force of 50 N on a surface offering a frictional force of 20 N. What is the net acceleration of the box? (Take $g = 10 \text{ m/s}^2$)

(a) 2 m/s²
(b) 3 m/s²

- (c) 5 m/s^2
- (d) 7 m/s^2

17. What is the gravitational force between two 5 kg masses placed 2 meters apart? (Take $G = 6.67 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$) (a) $4.17 \times 10^{-10} \text{ N}$ (b) $8.34 \times 10^{-10} \text{ N}$ (c) $1.67 \times 10^{-10} \text{ N}$ (d) $2.50 \times 10^{-11} \text{ N}$

18. A particle is moving in a circle of radius 2 m with a constant speed of 4 m/s. What is the centripetal acceleration?

- (a) 2 m/s^2
- (b) 4 m/s^2
- (c) 8 m/s^2
- (d) 16 m/s²

19. Which of the following elements has the highest electronegativity?

- (a) Oxygen
- (b) Nitrogen
- (c) Fluorine
- (d) Chlorine

20. Which of the following compounds contains a coordinate (dative) covalent bond?

- (a) HCl
- (b) NH₃
- (c) H_2O
- (d) NH_4^+

21. What is the pH of a solution with a hydrogen ion concentration of 1×10^{-4} mol/L?

(a) 3

(b) 4

- (c) 5
- (d) 6

22. In the reaction:

 $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$

Which substance is oxidized?

(a) Zn

(b) CuSO₄

(c) ZnSO₄

(d) Cu

23. Which of the following quantum numbers determines the shape of an orbital?

- (a) Principal quantum number (n)
- (b) Azimuthal quantum number (l)
- (c) Magnetic quantum number (m)
- (d) Spin quantum number (s)

24. What is the enthalpy change (ΔH) for an exothermic reaction?

- (a) Positive
- (b) Negative
- (c) Zero
- (d) Infinite

25. Which of the following is an example of an alkene?

(a) Ethane

(b) Ethene

(c) Ethyne

(d) Benzene

26. What is the molarity of a solution that contains 0.5 mol of NaCl in 250 mL of

solution?

(a) 1 M

(b) 2 M

- (c) 0.5 M
- (d) 0.25 M