

MHT CET 22 April Shift 2 PCM Question Paper

Time Allowed :1 Hour 30 Mins	Maximum Marks :120	Total Questions :120
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General Instructions

1. The question paper consists of three sections: Mathematics, Physics, and Chemistry. You must attempt all sections. No section can be skipped.
2. All questions are Multiple Choice Questions (MCQs). Each question has four answer options, of which only one is correct.
3. Marking Scheme:
Mathematics: 2 marks for each correct answer
Physics & Chemistry: 1 mark for each correct answer
No negative marking for wrong or unattempted answers.
4. The medium of the question paper is English. Questions will appear only in the language selected during application.
5. The total duration of the examination is 90 minutes. The timer will start once you click on "Start Test".
6. You may navigate between questions and sections at any time. Use the Next, Previous, and Question Palette options to move through the paper.
7. A question can be marked for review. Questions marked for review will be saved but not considered final unless a response is selected.
8. You must click Save & Next after selecting an answer. Answers not saved will not be recorded.
9. Rough sheets are provided for calculations. They must be returned to the invigilator before leaving.
10. Do not attempt to use any prohibited items. Calculators, mobile phones, smart-watches, written notes, or communication devices are strictly not allowed.
11. You must remain seated until the invigilator announces the end of the session. Leaving the hall before the scheduled time is not permitted.
12. In case of any technical issue, raise your hand immediately. Do not attempt to fix the system yourself.
13. The test will automatically submit when the time ends. You may also submit earlier by clicking the Submit button, after which no changes can be made.

1. A ball is thrown vertically upwards with an initial velocity of 20 m/s. How high will the ball rise? (Take $g = 10 \text{ m/s}^2$)

- (A) 20 m
 - (B) 40 m
 - (C) 10 m
 - (D) 25 m
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2. What is the resistance of a wire of length $L = 2 \text{ m}$ and cross-sectional area $A = 1 \times 10^{-6} \text{ m}^2$ made of a material with resistivity $\rho = 1.5 \times 10^{-7} \Omega \text{ m}$?

- (A) $3 \times 10^{-7} \Omega$
 - (B) $3 \times 10^{-6} \Omega$
 - (C) $2 \times 10^{-7} \Omega$
 - (D) $5 \times 10^{-6} \Omega$
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3. A lens has focal length $f = 20 \text{ cm}$. What is the power of the lens?

- (A) +5 D
 - (B) +10 D
 - (C) -5 D
 - (D) -10 D
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4. A sound wave has a frequency of 440 Hz. What is its time period?

- (A) 0.00227 s
 - (B) 0.002 s
 - (C) 0.0025 s
 - (D) 0.004 s
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5. What is the kinetic energy of a body of mass 2 kg moving with a velocity of 5 m/s?

- (A) 25 J
 - (B) 10 J
 - (C) 50 J
 - (D) 5 J
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6. A capacitor has a capacitance of $5 \mu\text{F}$ and a potential difference of 10 V is applied across it. What is the charge on the capacitor?

- (A) $5 \times 10^{-5} \text{ C}$
- (B) $5 \times 10^{-6} \text{ C}$
- (C) $5 \times 10^{-7} \text{ C}$
- (D) $5 \times 10^{-8} \text{ C}$

7. A stone is thrown horizontally from the top of a tower with a speed of 10 m/s. If the height of the tower is 45 m, how much time will the stone take to reach the ground?

- (A) 3 s
- (B) 4 s
- (C) 5 s
- (D) 2 s

8. A current of 2 A flows through a conductor for 10 minutes. What is the total charge that flows through the conductor?

- (A) 1200 C
- (B) 1000 C
- (C) 200 C
- (D) 1500 C

9. An object is placed at a distance of 10 cm from a concave mirror of focal length 15 cm. What is the image distance?

- (A) 30 cm
- (B) 20 cm
- (C) 50 cm
- (D) 60 cm

10. What is the molecular mass of Na_2SO_4 ?

- (A) 142 g/mol
- (B) 120 g/mol
- (C) 158 g/mol
- (D) 98 g/mol

11. Which of the following is the correct IUPAC name for $\text{CH}_3\text{CH}_2\text{OH}$?

- (A) Ethanol
- (B) Methanol
- (C) Propanol
- (D) Butanol

12. What is the pH of a 0.01 M solution of HCl?

- (A) 2
- (B) 4
- (C) 1

(D) 3

13. What is the empirical formula of C_6H_6 ?

- (A) CH
 - (B) C_2H_3
 - (C) C_3H_3
 - (D) C_6H_6
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14. Which of the following ions will have the highest lattice energy?

- (A) NaCl
 - (B) MgO
 - (C) KCl
 - (D) LiF
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15. The oxidation number of chlorine in Cl_2O is:

- (A) +1
 - (B) -1
 - (C) 0
 - (D) +3
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16. What is the molar concentration of hydrogen ions in a solution of 0.1 M HCl?

- (A) 0.1 M
 - (B) 0.05 M
 - (C) 0.2 M
 - (D) 1 M
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17. Which of the following gases has the highest density at STP?

- (A) CO_2
 - (B) O_2
 - (C) N_2
 - (D) CH_4
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18. If $x = 2$, what is the value of $3x^2 - 5x + 7$?

- (A) 9
 - (B) 7
 - (C) 8
 - (D) 10
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19. Find the sum of the roots of the quadratic equation $2x^2 - 5x + 3 = 0$.

- (1) $\frac{5}{2}$
 - (2) $\frac{3}{2}$
 - (3) $\frac{7}{2}$
 - (4) $\frac{1}{2}$
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20. Find the area of a triangle with base 8 cm and height 6 cm.

- (1) 24 cm^2
 - (2) 28 cm^2
 - (3) 48 cm^2
 - (4) 36 cm^2
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21. If $f(x) = 2x^2 - 3x + 5$, find $f(3)$.

- (1) 16
 - (2) 18
 - (3) 20
 - (4) 19
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22. Solve for x in the equation $2x - 3 = 5x + 12$.

- (1) $x = -5$
 - (2) $x = 5$
 - (3) $x = -6$
 - (4) $x = 6$
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23. Find the area of a circle with radius 7 cm.

- (1) 154 cm^2
 - (2) 49 cm^2
 - (3) 22 cm^2
 - (4) 44 cm^2
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