## Sample MHT CET 2025 Question Paper

Instructions:

- Time: 180 minutes (3 hours) This is a typical duration, but confirm with official sources.
- Total Marks: 200 (or as specified in the official exam pattern). The distribution of marks per section can vary.
- Each question carries 1 mark. This is typical, but confirm with official sources.
- There is no negative marking. This is typical, but confirm with official sources.
- Use of calculators or any electronic devices is generally prohibited. Confirm with official exam rules.

## Sample Questions:

Physics:

- 1. A body is projected vertically upwards with a velocity of 20 m/s. The maximum height reached by the body is  $(g = 10 \text{ m/s}^2) \text{ a}) 10 \text{ m b}) 20 \text{ m c}) 40 \text{ m d}) 80 \text{ m}$
- 2. The resistance of a wire is R. If the length of the wire is doubled keeping the volume constant, then the new resistance will be: a) R/2 b) R c) 2R d) 4R
- Which of the following represents the dimensional formula for surface tension? a) ML<sup>-1</sup>T<sup>-2</sup> b) MLT<sup>-2</sup> c) ML<sup>2</sup>T<sup>-2</sup> d) ML<sup>0</sup>T<sup>-2</sup>
- 4. A car is moving with a velocity of 20 m/s and applies brakes which produce a retardation of 5 m/s<sup>2</sup>. The distance travelled by the car before it comes to rest is: a) 20 m b) 40 m c)
  60 m d) 80 m
- 5. Two wires of the same material have lengths in the ratio 1:2 and radii in the ratio 2:1. The ratio of their resistances is: a) 1:2 b) 2:1 c) 1:8 d) 8:1
- 6. The work done in moving a charge of 5 C between two points having a potential difference of 10 V is: a) 2 J b) 5 J c) 50 J d) 100 J
- Which of the following electromagnetic radiations has the shortest wavelength? a) Radio waves b) Microwaves c) Infrared rays d) Ultraviolet rays
- A lens forms an image of an object placed at a distance of 20 cm from it. If the image is virtual and erect and magnified two times, the focal length of the lens is: a) -20 cm b) -10 cm c) 10 cm d) 20 cm.

- 9. A body is dropped from a height of 19.6 m. The time taken by the body to reach the ground is (g = 9.8 m/s<sup>2</sup>): a) 1 s b) 2 s c) 3 s d) 4 s
- 10. Two capacitors of capacitances 2  $\mu$ F and 4  $\mu$ F are connected in series. The equivalent capacitance of the combination is: a) 6  $\mu$ F b) 3  $\mu$ F c) 4/3  $\mu$ F d) 3/4  $\mu$ F
- 11. The magnetic field at the center of a circular coil carrying current I is directly proportional to: a) The radius of the coil b) The square of the radius of the coil c) The current flowing through the coil d) The square of the current flowing through the coil
- 12. Which of the following represents the dimensional formula for power? a)  $ML^{2}T^{-2}$  b)  $ML^{2}T^{-3}$  c)  $MLT^{-2}$  d)  $MLT^{-3}$
- Young's modulus of a material is Y. If the length of a wire of this material is doubled and the cross-sectional area is halved, then Young's modulus will become: a) Y/2 b) Y c) 2Y d) 4Y

Chemistry:

- 1. The IUPAC name of the compound CH<sub>3</sub>CH(OH)CH<sub>2</sub>CH<sub>3</sub> is: a) Butan-2-ol b) 2-Methylpropan-1-ol c) Butan-1-ol d) 2-Methylpropan-2-ol
- 2. Which of the following is an example of a lyophobic colloid? a) Starch solution b) Protein solution c) Gold sol d) Gum solution
- 3. The pH of a solution is 3. The concentration of hydrogen ions in the solution is: a)  $10^{-3}$  M b)  $10^{3}$  M c)  $10^{-11}$  M d)  $10^{11}$  M
- Which of the following is a colligative property? a) Boiling point b) Freezing point depression c) Surface tension d) Viscosity
- 5. The number of moles of solute present in 1 kg of a solvent is known as its: a) Molarity b) Molality c) Normality d) Formality
- 6. Which of the following is the strongest acid? a) HCl b) HBr c) HI d) HF
- The general electronic configuration of transition elements is: a) (n-1)d<sup>1-10</sup>ns<sup>0-2</sup> b) ns<sup>2</sup>np<sup>5</sup>
   c) ns<sup>2</sup>(n-1)d<sup>1-5</sup> d) ns<sup>2</sup>np<sup>6</sup>
- 8. Which of the following is a biodegradable polymer? a) Polyethylene b) Polystyrene c) Nylon d) Cellulose
- 9. Which of the following is an example of a Lewis acid? a) NH<sub>3</sub> b) H<sub>2</sub>O c) BF<sub>3</sub> d) OH<sup>-</sup>

10. The oxidation state of sulfur in  $H_2SO_4$  is: a) +2 b) +4 c) +6 d) +8

- 11. Which of the following elements exhibits allotropy? a) Oxygen b) Nitrogen c) Carbon d) Hydrogen
- 12. The rate of a reaction doubles when the concentration of the reactant is doubled. The order of the reaction is: a) Zero b) First c) Second d) Third
- 13. Which of the following is a natural polymer? a) Polyethylene b) PVC c) Starch d) Teflon

Mathematics:

- 1. The value of sin 30° + cos 60° is: a) 0 b) 1/2 c) 1 d)  $\sqrt{3/2}$
- 2. If A = [[1, 2], [3, 4]], then the determinant of A is: a) -2 b) 2 c) 10 d) -10
- 3. The equation of the straight line passing through the points (1, 2) and (2, 3) is: a) y = x + 1 b) y = 2x c) y = x 1 d) y = 3x 1
- 4. The derivative of  $x^2 + 2x + 1$  is: a) 2x + 2 b) x + 1 c) 2x + 1 d)  $x^2 + 2$
- 5. If  $f(x) = x^2 4x + 5$ , then the minimum value of f(x) is: a) 1 b) 2 c) 3 d) 4
- The integral of sin 2x is: a) cos 2x + C b) -cos 2x + C c) (1/2)cos 2x + C d) -(1/2)cos 2x + C
- 7. The area of the triangle with vertices (1, 0), (0, 1), and (0, 0) is: a) 1/2 b) 1 c) 2 d) 4
- 8. The value of lim  $(x \rightarrow 0) \sin x / x \text{ is: } a) 0 b) 1 c) \infty d) -1$
- 9. If the mean and variance of a binomial distribution are 6 and 4 respectively, then the number of trials is: a) 9 b) 10 c) 12 d) 15
- 10. If A = [[1, 2], [3, 4]] and B = [[5, 6], [7, 8]], then A + B is: a) [[6, 8], [10, 12]] b) [[6, 7], [8, 9]] c) [[1, 7], [3, 11]] d) [[5, 2], [7, 4]]
- 11. The equation of the circle with center (2, -3) and radius 4 is: a)  $(x 2)^2 + (y + 3)^2 = 4$  b)  $(x + 2)^2 + (y 3)^2 = 16$  c)  $(x 2)^2 + (y + 3)^2 = 16$  d)  $(x + 2)^2 + (y 3)^2 = 4$
- 12. The value of cos 120° is: a) 1/2 b) -1/2 c)  $\sqrt{3/2}$  d) - $\sqrt{3/2}$
- 13. The derivative of ln x is: a) x b) 1/x c) e<sup>x</sup> d) ln x
- 14. The probability of getting at least one head when three coins are tossed is: a) 1/8 b) 3/8 c) 7/8 d) 1