

# MHT CET 2024 Question Paper

## May 9 Shift 1 & 2 PCM

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### Mathematics

**Ques 1.** The length of the perpendicular drawn from the point (1, 2, 3) to the line  $(z - 6)/3 = (y - 7)/2 = (z - 7)/- 2$

- A. 4 units
- B. 5 units
- C. 6 units
- D. 7 units

**Ans. D**

**Ques 2.** If  $|a| = \sqrt{3}$ ;  $|b|=5$ ;  $|b||c| = 10$ , angle between b and c is  $\pi/3$ , a is perpendicular to  $b \times c$ . Then the value of  $| a \times (b \times c) |$  is

- A. 20
- B. 30
- C. 60
- D. 40

**Ans. B**

**Ques 3.** Let X be random variable having Binomial distribution  $B(7, p)$ . If  $P[X = 3] \times 5P[X = 4]$ , then variance of X is

- A 7/6
- B 35/36
- C 77/36
- D 1/36

**Ans. B**

**Ques 4.** The particular solution of differential equation  $e^{dy/dt} = (x + 1)$ ,  $y(0) = 3$  is

**A**  $y = x \log(x) - x + 2$

**B**  $y = (x + 1) \log(x + 1) - x + 3$

**C**  $y = (x + 1) \log(x + 1) + x - 3$

**D**  $y = x \log(x) + x - 2$

**Ans. B**

$$\int_0^1 \sqrt{\frac{1-x}{1+x}} dx$$

**Ques 5.** The value of integral is

**A.**  $(\pi/2 + 1)$

**B.**  $(\pi/2 - 1)$

**C.** 1

**D.** -1

**Ans. B**

$$\int_0^2 |2x - 3| dx$$

**Ques 6.** The Value of is

**A.**  $3/10$

**B.**  $5/2$

**C.**  $10/3$

**D.**  $2/5$

**Ans. B**

**Ques 7.** If  $\alpha + \beta = \pi/2$  and  $\beta + \gamma = \alpha$  then the value of  $\tan \alpha$  is

**A**  $\tan \beta + \tan \gamma$

**B**  $2(\tan \beta + \tan \gamma)$

**C**  $\tan \beta + 2 \tan \gamma$

**D**  $2 \tan \beta + \tan \gamma$

**Ans. C**

**Ques 8.** If the mean and variance of a binomial variate  $X$  are 2 and 1 respectively, then the probability that  $X$  takes a value greater than 1, is

**A  $2/3$**

**B  $4/3$**

**C  $7/8$**

**D  $15/16$**

**Ans. D**

**Ques 9.** The sides of a triangle are  $\sin\alpha$ ,  $\cos\alpha$  and  $\sqrt{1+\sin\alpha\cos\alpha}$  for some  $0 < \alpha < \pi/2$ . Then, the greatest angle of the triangle is

**A  $60^\circ$**

**B  $90^\circ$**

**C  $120^\circ$**

**D  $150^\circ$**

**Ans. C**

**Ques 10.** If the curve  $y^2 = 6x$ ,  $9x^2 + by^2 = 16$  intersect each other at right angles, then the value of  $b$  is

**A  $9/2$**

**B 4**

**C 6**

**D  $7/2$**

**Ans.  $9/2$**

**Ques 11.** The maximum value of  $(\log x)/x$  is

**A  $2/e$**

**B  $e$**

**C 7**

**D  $1/e$**

**Ans. D**

Physics

**Ques 1. Sphere of colour black red white yellow are heated to a same temperature. The decreasing order of cooling is**

**Ans. Black > Red > Yellow > White**

**Ques 2. The ratio of shortest wavelength of Ballmer series to shortest wavelength of paschen serie**

**Ans. 4/9**

**Ques 3. What are Gyro magnetic ratio and bohr magneton**

**Ans.  $e/2m_e$  and  $eh/4\pi m$**

**Ques 4. Question on Combination of logic gates to find final output**

**Ques 5. From Current electricity To convert galvanometer into ammeter shunt is given find the resistance of Galvanometer**

**Ques 6. Question to find Magnetic field produced inside the solenoid**

**Ans.  $n \cdot N/L$**

**Ques 7. Parallel Combination of resistance given value of voltage given to find the current flowing through circuit**

**Ques 8. "A particle perform SHM. Having speed 6cm/sec at mean position and amplitude of 4cm. find the position of particle from mean position when the velocity of particle is 2cm/sec"**

**Ans. 4**

## Chemistry

**Ques 1. What is the rate law, if the rate is directly proportional to [B] square and independent on/of [A]?**

**Ans.** Rate =  $K[B]^2$

**Ques 2. When ammoniacal silver nitrate reacts with organic compounds. This test is called**

**Ans.** Tollens' test

**Ques 3. How many unpaired electrons present in the element of atomic number 27 with +2 oxidation state?**

**Ans.** 3

**Ques 4. Calculate cryoscopic constant of....**

**Ques 5. Identify the name reaction, Swarts reaction and Wittig reaction.**

**Ques 6. Which is an adiabatic process**

**Ques 7. IUPAC name and bond length of propan-1-ol and cyclobutane.**

**Ques 8. Reactivity of alkylalcohol towards haloacids**

**Ques 9. Ozonolysis of propene**

**Ans.**  $\mu = 1.73 \text{ BM}$

**Ques 10. Ratio of abundance of Cl of atomic mass 35 and 37**

**Ans.** 3:1