JEE (Main) QUESTION PAPER 2024

29th January Shift 2

Time : 3 Hours **Total Marks : 300**

General Instructions : *Same as 27th Jan Shift 1 2024.*

Physics

Section A

Q. 1. If the distance between object and its two times magnified virtual image produced by a curved mirror is 15 cm, the focal length of the mirror must be:

(1) $\frac{10}{3}$ cm **(2)** –12 cm

(3) –10 cm **(4)** 15 cm

Q. 2. Two particles X and Y having equal charges are being accelerated through the same potential difference. Thereafter they enter normally in a region of uniform magnetic field and describes circular paths of radii R_1 and R_2 respectively. The mass ratio of X and Y is:

(1) $\left(\frac{R_1}{R_2}\right)$ **(2)** $\left(\frac{R_2}{R_1}\right)$

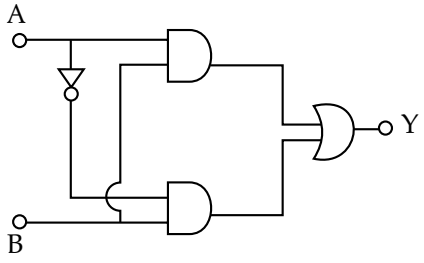
(3) $\left(\frac{R_2}{R_1}\right)^2$ **(4)** $\left(\frac{R_1}{R_2}\right)^2$

Q. 3. The temperature of a gas having 2.0×10^{25} molecules per cubic meter at 1.38 atm: (Given, $k = 1.38 \times 10^{-23}$ JK^{-1}) is :

(1) 300 K **(2)** 500 K

(3) 100 K **(4)** 200 K

Q. 4. The truth table for this given circuit is:



(1)

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

(2)

A	B	Y
0	0	1
0	1	0
1	0	1
1	1	0

(3)

A	B	Y
0	0	0
0	1	1
1	0	0
1	1	1

(4)

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

Q. 5. In an a.c. circuit, voltage and current are given by:

$V = 100 \sin (100\, t)$ V and

$I = 100 \sin \left(100t + \frac{\pi}{3}\right)$ mA respectively.

The average power dissipated in one cycle is:

(1) 10 W **(2)** 2.5 W

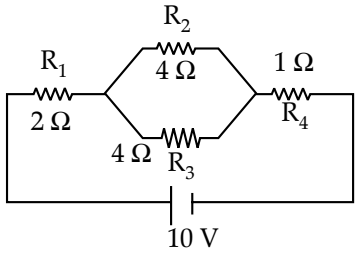
(3) 25 W **(4)** 6 W

Q. 6. A stone of mass 900 g is tied to a string and moved in a vertical circle of radius 1 m making 10 rpm. The tension in the string, when the stone is at the lowest point is (if $\pi^2 = 9.8$ and g = 9.8 m /s):

(1) 17.8 N **(2)** 8.82 N

(3) 97 N **(4)** 9.8 N

Q. 7. In the given circuit, the current in resistance R_3 is:



(1) 2.5 A **(2)** 1 A

(3) 1.5 A **(4)** 2 A

Q. 8. A particle is moving in a straight line. The variation of position 'x' as a function of time 't' is given as $x = (t^3 - 6t^2 + 20t + 15)m$. The velocity of the body when its acceleration becomes zero is:

(1) 6 m/s **(2)** 10 m/s

(3) 8 m/s **(4)** 4 m/s

PURCHASE

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WITH DETAILED SOLUTIONS