

JEE Main 2024 Physics Question Paper Feb 1 Shift 2 (B.E./B.Tech)

JEE Main Physics Questions

Ques 1. Two trains run on North-South parallel tracks. Train A moves with velocity 20 m/s towards North and train B moves with velocity 30 m/s towards South. Then find the velocity of train B with respect to train A.

Ans. 50 m/s

Ques 2. A body of mass of 4kg experiences two forces

$$\vec{F}_1 = 5\hat{i} + 8\hat{j} +$$

$$7\hat{k}, \text{ \& } \vec{F}_2 = 3\hat{i} - 4\hat{j} - 3\hat{k}$$

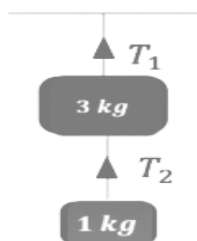
then acceleration acting on the body R

Ans. $\sqrt{6}$

Ques 3. A source produced electromagnetic wave of frequency 60MHz. Find the wavelength of this wave in air.

Ans. 5 m

Ques 4. In the figure shown, find the ratio of tensions in the strings, T_1/T_2



A. $\frac{1}{4}$

- B. $\frac{1}{2}$
- C. $\frac{1}{3}$
- D. 4

Ans. D

Ques 5. A Big drop is formed by coalescing 1000 small droplets of water. The surface water. The surface energy will become.

Ans. $\frac{1}{10}$.

Ques 6. A solid sphere is rolling purely with speed v on horizontal surface. It rolls up an incline surface and stops at height h . Then height h is [g is the acceleration due to gravity]:

- A. $\frac{3v^2}{10g}$
- B. $\frac{7v^2}{10g}$
- C. $\frac{5v^2}{7g}$
- D. $\frac{7v^2}{5g}$

Ans. B

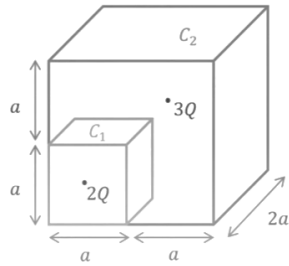
Ques 7. If the power of a light source is P and frequency of photons emitted is f .

Find number photons emitted in time t .

- A. $\frac{Pt}{2hf}$
- B. $\frac{Pt}{hf}$
- C. $\frac{1pf}{2ht}$
- D. $\frac{Pf}{ht}$

Ans. B

Ques 8. There are two cubical Gaussian surface carrying charges as shown. Find ratio of fluxes through surface C_1 and C_2 :



- A. 1:1
- B. 2:5
- C. 5:2
- D. 2:3

Ans. B

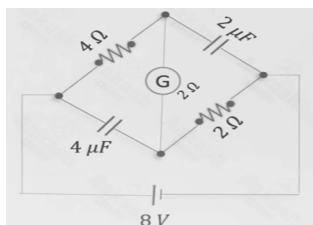
Ques 9. Find the number of significant digits in the value 10.05 :

Ans. 4

Ques 10. A ball of mass 120 g moving with initial velocity 25 m/s is stopped by an external force F in 0.15 sec. Find value of F in newton :

Ans. 20

Ques 11. Find the ratio of the charge on $4\ \mu\text{F}$ to that on $2\ \mu\text{F}$ in steady state.



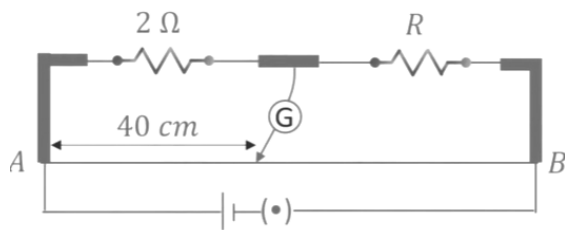
Ans. 3

Ques 12. If the rms velocity of hydrogen gas molecules is V_0 , find the rms velocity of oxygen molecules at same temperature :

- A. V_0
- B. $V_0/2$
- C. $V_0/4$
- D. $V_0/3$

Ans. C

Ques 13. In the meter bridge shown below, the null point is at 40 cm from A. If R is shunted by 22, find the distance of new balance point from A



- A. 22.7 cm
- B. 60 cm
- C. 62.5 cm
- D. 60.5 cm

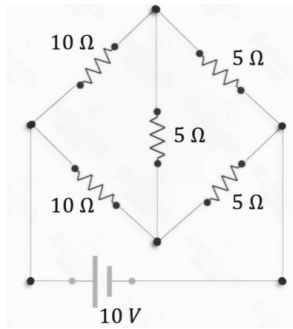
Ans. C

Ques 14. A particle is moving in circular path of radius r speed v such that speed is proportional to radius as $V \propto r^{3/2}$. Then how does time period of revolution depends on r i.e $T \propto r^n$ then n is.

- A. $-1/2$
- B. $5/2$
- C. $-5/2$
- D. $1/2$

Ans. B

Ques 15. In the given circuit, find electric current drawn from battery:
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- A. $\frac{3}{4}$ A
- B. $\frac{4}{3}$ A
- C. $\frac{4}{5}$ A
- D. $\frac{5}{4}$ A

Ans. B