



# JEE (MAIN) 2026

## MEMORY BASED QUESTIONS & TEXT SOLUTION

### SHIFT-1

**DATE & DAY:** 21<sup>st</sup> January 2026 & Wednesday

### PAPER-1

**Duration:** 3 Hrs.

**Time:** 09:00 – 12:00 IST

### SUBJECT: PHYSICS

Selections in JEE (Advanced)/  
IIT-JEE Since 2002

**52979**

Classroom: 35901 | Distance: 17078

Selections in JEE (Main)/  
AIEEE Since 2009

**262693**

Classroom: 194471 | Distance: 68222

Selections in NEET (UG)/  
AIPMT/AIIMS Since 2012

**22733**

Classroom: 15409 | Distance: 7324

### Admission Open for 2026-27

**Target:** JEE (Advanced) | JEE (Main) | NEET (UG) | PCCP (Class V to X)

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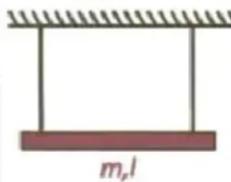
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1. A rod of mass  $m$  and length  $l$  is attached to two ideal strings. Find tension in left string just after right string is cut.



(1)  $\frac{mg}{2}$

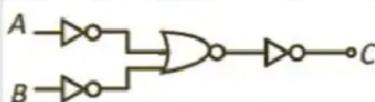
(2)  $\frac{mg}{4}$

(3)  $\frac{2}{3}mg$

(4)  $\frac{mg}{5}$

**Ans. 2**

2. Which logic gate is given in the figure?



(1) XOR

(2) NOR

(3) NAND

(4) OR

**Ans. 3**

3. Find dimensions of  $\frac{A}{B}$  if  $\left(P + \frac{AB^2}{B}\right) + \frac{1}{2}\rho V^2 = \text{constant}$ , where  $P \rightarrow \text{pressure}$ ,  $\rho \rightarrow \text{density}$ ,  $V \rightarrow \text{speed}$ .

(1)  $\text{ML}^1 \text{T}^{-4}$

(2)  $\text{ML}^{-1} \text{T}^{-4}$

(3)  $\text{ML}^2 \text{T}^{-4}$

(4)  $\text{ML}^{-1} \text{T}^{-2}$

**Ans. 2**

4. An  $\alpha$ -particle having kinetic energy 7.7 MeV is approaching fixed gold nucleus (atomic number is 79). Find distance of closest approach.

(1) 1.72 nm

(2) 6.2 nm

(3) 16.8 nm

(4) 0.2 nm

**Ans. 1**

5. An air filled capacitor of capacitance  $C$  filled with dielectric ( $k = 3$ ) of width  $d/3$ , where  $d$  is separation between plates. The new capacitance is

(1)  $\frac{9}{5}C$

(2)  $\frac{5}{4}C$

(3)  $\frac{4}{3}C$

(4)  $\frac{9}{7}C$

**Ans. 4**

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6. Find the moment of inertia of system formed using two identical rods about the given axis of rotation as shown.



(1)  $\frac{17}{12}ML^2$

(2)  $\frac{13}{12}ML^2$

(3)  $\frac{2}{3}ML^2$

(4)  $\frac{3}{4}ML^2$

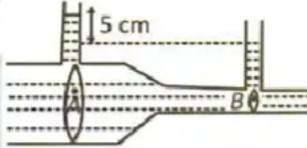
**Ans. 1**

7. If electric field of EM wave is given by  $60[\sin 2\pi(3 \times 10^{11}t) + \sin 2\pi(12 \times 10^{11}t)]$  at  $x = 0$  falls on a photo sensitive material having work function 2.8 eV. Find the maximum kinetic energy (M eV) of ejected electrons.

(1) 2.52eV (2) 2.16eV (3) 2.00eV (4) 2.34eV

**Ans. 2**

8. Find volume flow rate in the venturi meter given below in which water is flowing. [Cross-section area at A & B is &  $a, \frac{A}{a} = 2$ .  $A = \sqrt{3} \text{ m}^2$ .  $P = 1000 \text{ kg/m}^3$ .]



(1) 1 (2)  $\sqrt{3}$  (3)  $2\sqrt{3}$  (4)  $\sqrt{2}$

**Ans. 1**

9. Wave propagates whose electric field is given by  $\vec{E} = 69 \sin(\omega t - kx) \hat{j}$ , find the direction of magnetic field

(1)  $\hat{k}$  (2)  $-\hat{k}$  (3)  $\frac{\hat{t} + \hat{j}}{\sqrt{2}}$  (4)  $\frac{\hat{t} - \hat{j}}{\sqrt{2}}$

**Ans. 1**

10. Two rods of equal length of 60 cm each are joined together end to end. Coefficient of linear expansions of the rods are  $2.4 \times 10^{-6} \text{ C}^{-1}$  and  $1.2 \times 10^{-5} \text{ C}^{-1}$ . Their temperatures are same and equal to  $30^\circ \text{C}$  which is increased to  $100^\circ \text{C}$ . Find final length of the combination (in cm)

(1) 120.1321 (2) 120.1123 (3) 120.1512 (4) 120.1084

**Ans. 3**

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11. Find change in internal energy of gas if its temperature changes by 10 K. Number of moles of gas is  $10, C_p$  (specific heat at constant pressure of the gas is  $7 \text{ cal/K/mol}$ ) and  $R$  (gas constant) =  $2 \text{ cal/K}$ .

(1) 1500 cal (2) 500 cal (3) 250 cal (4) 100 cal

**Ans. 2**

12. Two mechanical wave on strings of equal length ( $L$ ) tension ( $T$ ) having linear mass density  $\frac{\mu_1}{\mu_2} = \frac{1}{2}$ . Find the ratio of time taken for a wave pulse to travel from one end to the other in both strings. (ignore gravity)

(1)  $\frac{1}{\sqrt{5}}$  (2)  $\frac{1}{\sqrt{2}}$  (3)  $\sqrt{2}$  (4)  $\sqrt{5}$

**Ans. 2**

13. A satellite is revolving around a planet in orbit radius of  $1.5 R$ . Additional minimum energy required to transfer the satellite to new orbit radius of  $3R$  is ( and  $M$  are mass of satellite & planet)  $\frac{GMm}{\lambda R}$  then  $X$  is \_\_\_

**Ans. 6**

14. There are two springs of spring constants  $k_1 = (20 \pm 0.2) \text{ N/m}$  and  $k_2 = (30 \pm 0.3) \text{ N/m}$ . If they are connected in parallel then percentage error in equivalent spring constant of combination is \_\_\_ %.

**Ans. 1**

15. In a YDSE set up, a slab of width  $t$  is inserted in front of one of slit. The interference pattern shifts by 0.2 cm on the screen. If the refractive index of slab is 1.5 than  $t$  is  $N\mu\text{m}$  (screen distance 50 cm and slits separation 1 mm) then  $N$  is

**Ans: 8**

16. A conducting circular loop of area  $1.0 \text{ m}^2$  is placed perpendicular to a magnetic field which varies as  $B = \sin(100t)$  tesla. If the resistance of the loop is  $100\Omega$  then average thermal energy dissipated in the loop in one period is

**Ans. 1**

17. Focal length of objective lens and eyepiece lens are 1.25 cm and 5 cm and tube length is 26 cm. Find magnification of compound microscope in normal adjustment.

**Ans:** 104

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