

NEET SYSTEM OF PARTICLES AND ROTATIONAL MOTION — CENTRE OF MASS — PYQs

Max. Marks: 24

Questions: 6

Section A (MCQ) — 6 questions

- Q.1** Two objects of mass 10 kg and 20 kg respectively are connected to the two ends of a rigid rod of length 10 m with negligible mass. The distance of the center of mass of the system from the 10 kg mass is : [NEET (UG) 2022]

(1) $\frac{10}{3}$ m (2) $\frac{20}{3}$ m (3) 10 m (4) 5 m

Scan or tap for the full solution



- Q.2** Two particles of mass 5 kg and 10 kg respectively are attached to the two ends of a rigid rod of length 1 m with negligible mass. The centre of mass of the system from the 5 kg particle is nearly at a distance of : [NEET (UG) 2020]
- (1) 50 cm (2) 67 cm (3) 80 cm (4) 33 cm

Scan or tap for the full solution



- Q.3** Three masses are placed on the x-axis : 300 g at origin, 500 g at $x = 40$ cm and 400 g at $x = 70$ cm. The distance of the centre of mass from the origin is : [AIPMT 2012 (Mains)]
- (1) 40 cm (2) 45 cm (3) 50 cm (4) 30 cm

Scan or tap for the full solution



- Q.4** Two bodies of mass 1 kg and 3 kg have position vectors $\hat{i} + 2\hat{j} + \hat{k}$ and $-3\hat{i} - 2\hat{j} + \hat{k}$, respectively. The centre of mass of this system has a position vector : [AIPMT 2009]

(1) $-2\hat{i} - \hat{j} + \hat{k}$ (2) $2\hat{i} - \hat{j} - 2\hat{k}$
 (3) $-\hat{i} + \hat{j} + \hat{k}$ (4) $-2\hat{i} + 2\hat{k}$

Scan or tap for the full solution



- Q.5** Consider a system of two particles having masses m_1 and m_2 . If the particle of mass m_1 is pushed towards the mass centre of particles through a distance d , by what distance would the particle of mass m_2 move so as to keep the mass centre of particles at the original position? [AIPMT 2004]

(1) $\frac{m_1}{m_1 + m_2}d$

(2) $\frac{m_1}{m_2}d$

(3) d

(4) $\frac{m_2}{m_1}d$

Scan or tap for the full solution



- Q.6** A rod of length 3 m and its mass acting per unit length is directly proportional to distance x from one of its end then its centre of gravity from that end will be at : [AIPMT 2002]

(1) 1.5 m (2) 2 m (3) 2.5 m (4) 3.0 m

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5	6					
Ans.	2	2	1	1	2	2					