

PYQSide

NEET SYSTEM OF PARTICLES AND ROTATIONAL MOTION — THEOREMS OF PARALLEL AND PERPENDICULAR AXES — PYQS

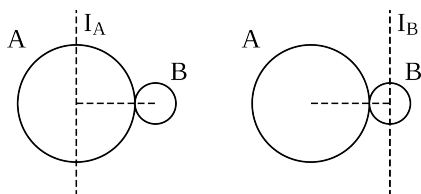
Max. Marks: 40

Questions: 10

Section A (MCQ)

- Q.1** A solid sphere A of radius R and mass M is attached at a point to a smaller solid sphere B of radius $r < R$ and mass $m < M$. Assume that the line joining their centres lies along the horizontal. The moment of inertia of the system calculated about a vertical axis passing through the centre of A is I_A and that calculated about a vertical axis passing through the centre of B is I_B . The difference $I_A - I_B$ is:

[RE-NEET (UG) 2026]



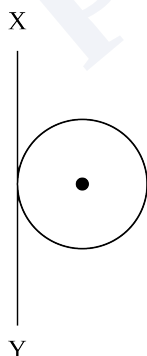
- (1) 0
(2) $(M - m)(R + r)^2$
(3) $(m - M)(R + r)^2$
(4) $(m - M)(R - r)^2$

Scan or tap for the full solution



- Q.2** The radius of gyration of a solid sphere of mass 5 kg about XY is 5 m as shown in figure. The radius of the sphere is $\frac{5x}{\sqrt{7}}$ m, then the value of x is:

[RE-NEET (UG) 2024]



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

Scan or tap for the full solution



- Q.3** From a disc of radius R and mass M , a circular hole of diameter R , whose rim passes through the centre is cut. What is the moment of inertia of the remaining part of the disc about a perpendicular axis, passing through the centre?

[NEET 2016 (Phase 1)]

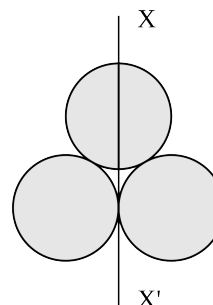
- (1) $\frac{11MR^2}{32}$
(2) $\frac{9MR^2}{32}$
(3) $\frac{15MR^2}{32}$
(4) $\frac{13MR^2}{32}$

Scan or tap for the full solution



- Q.4** Three identical spherical shells, each of mass m and radius r are placed as shown in figure. Consider an axis XX' which is touching to two shells and passing through diameter of third shell. Moment of inertia of the system consisting of these three spherical shells about XX' axis is

[AIPMT 2015 (Cancelled)]



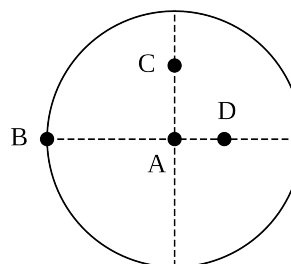
- (1) $\frac{16}{5}mr^2$
(2) $4mr^2$
(3) $\frac{11}{5}mr^2$
(4) $3mr^2$

Scan or tap for the full solution



- Q.5** The moment of inertia of a uniform circular disc is maximum about an axis perpendicular to the disc and passing through

[AIPMT 2012 (Mains)]



- (1) B (2) C (3) D (4) A

Scan or tap for the
full solution



- Q.6** The moment of inertia of a thin uniform rod of mass M and length L about an axis passing through its midpoint and perpendicular to its length is I_0 . Its moment of inertia about an axis passing through one of its ends and perpendicular to its length is

[AIPMT 2011 (Prelims)]

- (1) $I_0 + ML^2/2$ (2) $I_0 + ML^2/4$
(3) $I_0 + 2ML^2$ (4) $I_0 + ML^2$

Scan or tap for the
full solution



- Q.7** Four identical thin rods each of mass M and length l , form a square frame. Moment of inertia of this frame about an axis through the centre of the square and perpendicular to its plane is

[AIPMT 2009]

- (1) $\frac{2}{3}Ml^2$ (2) $\frac{13}{3}Ml^2$ (3) $\frac{1}{3}Ml^2$ (4) $\frac{4}{3}Ml^2$

Scan or tap for the
full solution



- Q.8** The moment of inertia of a uniform circular disc of radius R and mass M about an axis touching the disc at its diameter and normal to the disc

[AIPMT 2006]

- (1) $\frac{1}{2}MR^2$ (2) MR^2 (3) $\frac{2}{5}MR^2$ (4) $\frac{3}{2}MR^2$

Scan or tap for the
full solution



- Q.9** The moment of inertia of a uniform circular disc of radius R and mass M about an axis passing through the edge of the disc and normal to the disc is

[AIPMT 2005]

- (1) MR^2 (2) $\frac{1}{2}MR^2$ (3) $\frac{3}{2}MR^2$ (4) $\frac{7}{2}MR^2$

Scan or tap for the
full solution



- Q.10** The ratio of the radii of gyration of a circular disc about a tangential axis in the plane of the disc and of a circular ring of the same radius about a tangential axis in the plane of the ring is

[AIPMT 2004]

- (1) 2:3 (2) 2:1
(3) $\sqrt{5} : \sqrt{6}$ (4) $1 : \sqrt{2}$

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	
Ans.	3	4	4	2	1	2	4	4	3	3	