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

Max. Marks: 16 **Questions:** 4

Section A (MCQ) — 4 questions

Q.1 Given below are two statements : One is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A): When a fire cracker (rocket) explodes in mid air, its fragments fly in such a way that they continue moving in the same path, which the fire cracker would have followed, had it not exploded.

Reason (R): Explosion of cracker (rocket) occurs due to internal force only and no external force acts for this explosion.

In the light of the above statements, choose the most appropriate answer from the options given below [NEET (UG) 2022 (Phase 2)]

(1) (A) is not correct but (R) is correct

(2) Both (A) and (R) are correct and (R) is the correct explanation of (A)

(3) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(4) (A) is correct but (R) is not correct

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Q.2 Two persons of masses 55 kg and 65 kg respectively, are at the opposite ends of a boat. The length of the boat is 3.0 m and weighs 100 kg. The 55 kg man walks up to the 65 kg man and sits with him. If the boat is in still water the centre of mass of the system shifts by: [AIPMT 2012 (Prelims)]

(1) 3.0 m (2) 2.3 m (3) zero (4) 0.75 m

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Q.3 Two particles which are initially at rest, move towards each other under the action of their internal attraction. If their speeds are v and 2v at any instant, then the speed of centre of mass of the system will be : [AIPMT 2010 (Prelims)]

(1) 2v (2) zero (3) 1.5 v (4) v

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Q.4 A solid sphere of radius R is placed on smooth horizontal surface. A horizontal force F is applied at height h from the lowest point. For the maximum acceleration of centre of mass, which is correct ? [AIPMT 2002]

(1) h = R

(2) h = 2R

(3) h = 0

(4) no relation between h and R.

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ANSWER KEY

Ques.	1	2	3	4							
Ans.	**1**	**3**	**2**	**4**							