

# NEET GRAVITATION — GRAVITATIONAL FIELD AND POTENTIAL — PYQS

Max. Marks: 36

Questions: 9

## Section A (MCQ) — 9 questions

- Q.1** Two bodies of mass  $m$  and  $9m$  are placed at a distance  $R$ . The gravitational potential on the line joining the bodies where the gravitational field equals zero, will be ( $G$  = gravitational constant) :

[NEET (UG) 2023]

- (1)  $-\frac{12Gm}{R}$  (2)  $-\frac{16Gm}{R}$   
 (3)  $-\frac{20Gm}{R}$  (4)  $-\frac{8Gm}{R}$

Scan or tap for the full solution



- Q.2** A body of mass  $60\text{ g}$  experiences a gravitational force of  $3.0\text{ N}$ , when placed at a particular point. The magnitude of the gravitational field intensity at that point is

[NEET (UG) 2022]

- (1)  $0.05\text{ N/kg}$  (2)  $50\text{ N/kg}$   
 (3)  $20\text{ N/kg}$  (4)  $180\text{ N/kg}$

Scan or tap for the full solution



- Q.3** In a gravitational field, the gravitational potential is given by,  $V = -\frac{K}{x}$  ( $\text{J/Kg}$ ). The gravitational field intensity at point  $(2, 0, 3)\text{ m}$  is

[NEET (UG) 2022 (Phase 2)]

- (1)  $+\frac{K}{4}$  (2)  $+\frac{K}{2}$  (3)  $-\frac{K}{2}$  (4)  $-\frac{K}{4}$

Scan or tap for the full solution



- Q.4** At what height from the surface of earth the gravitation potential and the value of  $g$  are  $-5.4 \times 10^7\text{ J kg}^{-1}$  and  $6.0\text{ m s}^{-2}$  respectively? Take the radius of earth as  $6400\text{ km}$ .

[NEET 2016 (Phase 1)]

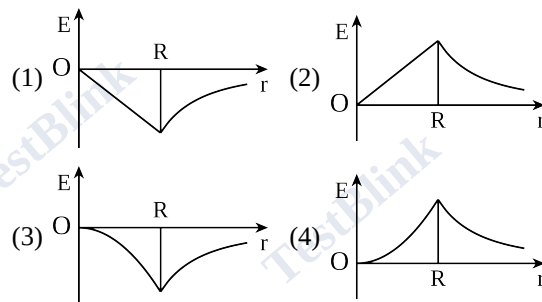
- (1)  $1400\text{ km}$  (2)  $2000\text{ km}$   
 (3)  $2600\text{ km}$  (4)  $1600\text{ km}$

Scan or tap for the full solution



- Q.5** Dependence of intensity of gravitational field ( $E$ ) of earth with distance ( $r$ ) from centre of earth is correctly represented by

[AIPMT 2014]



Scan or tap for the full solution



- Q.6** Infinite number of bodies, each of mass  $2\text{ kg}$  are situated on  $x$ -axis at distance  $1\text{ m}$ ,  $2\text{ m}$ ,  $4\text{ m}$ ,  $8\text{ m}$ , ... , respectively, from the origin. The resulting gravitational potential due to this system at the origin will be

[NEET 2013]

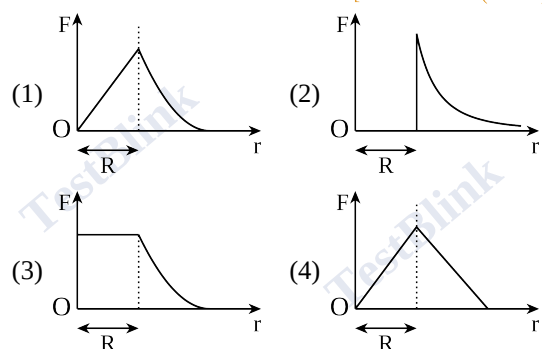
- (1)  $-\frac{4}{3}G$  (2)  $-4G$  (3)  $-G$  (4)  $-\frac{8}{3}G$

Scan or tap for the full solution



- Q.7** Which one of the following plots represents the variation of gravitational field on a particle with distance  $r$  due to a thin spherical shell of radius  $R$ ? ( $r$  is measured from the centre of the spherical shell)

[AIPMT 2012 (Mains)]



Scan or tap for the full solution



- Q.8** A particle of mass  $M$  is situated at the centre of a spherical shell of same mass and radius  $a$ . The magnitude of the gravitational potential at a point situated at  $\frac{a}{2}$  distance from the centre, will be :

[AIPMT 2011 (Mains)]

- (1)  $\frac{GM}{a}$  (2)  $\frac{2GM}{a}$  (3)  $\frac{3GM}{a}$  (4)  $\frac{4GM}{a}$

Scan or tap for the  
full solution



**Q.9** A particle of mass  $M$  is situated at the centre of a spherical shell of same mass and radius  $a$ . The magnitude of the gravitational potential at a point situated at  $a/2$  distance from the centre, will be :

[AIPMT 2010 (Prelims)]

- (1)  $\frac{GM}{a}$  (2)  $\frac{2GM}{a}$  (3)  $\frac{3GM}{a}$  (4)  $\frac{4GM}{a}$

Scan or tap for the  
full solution



### ANSWER KEY

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