Worksheet: Gravitation

ISC · Class 11 · Physics · 10 questions · 31 marks

Name: _____ Date: _____ Score: _____ / 31

Q1. Two masses of 10 kg and 20 kg are placed 1.0 m apart. Find the gravitational force between them. *[2 marks]*

Q2. Find g at a height equal to R above Earth's surface. *[2 marks]*

Q3. Why is g zero at the centre of the Earth? *[2 marks]*

Q4. At what depth below the Earth's surface does g fall to half its surface value? Take R = 6400 km. *[3 marks]*

Q5. Find the orbital velocity of a satellite at 300 km height (R = 6400 km, M = 6e24 kg). *[3 marks]*

Q6. Calculate the escape velocity on the Moon (g = 1.62 m/s^2, R = 1740 km). *[3 marks]*

Q7. If Earth's period is 1 year at orbital radius R, find the period of a planet at radius 4R. *[3 marks]*

Q8. Find the gravitational potential energy of a 100 kg satellite at a height of 3600 km above the Earth's surface (R = 6400 km, M = 6e24 kg). *[3 marks]*

Q9. A 200 kg satellite orbits at a height of 400 km (R = 6400 km, M = 6e24 kg). Find its total energy, and the extra energy needed to make it escape. *[5 marks]*

Q10. A body is projected vertically from the Earth's surface with a speed equal to half the escape speed. Find the maximum height it reaches, in terms of the Earth's radius R. *[5 marks]*