

Name: _____						
Subject: Physics		Class: 9 <sup>th</sup>	Time: 80 minutes	Total Marks:	40	
Chapter No.		MJDexpert.com			Obtained marks	

**Note:** Please attempt any 10 short questions from Question 2. Also, attempt both parts (a and b) of Question 3. Cutting and removal of any content is strictly prohibited.

**Q.1:** Tick (✓) the correct answer.

- The approximate mass of Earth is:  
A)  $6.0 \times 10^{24}$  kg    B)  $5.98 \times 10^{24}$  kg    C)  $4.5 \times 10^{24}$  kg    D)  $7.4 \times 10^{24}$  kg
- The height of a geostationary satellite is approximately:  
A) 850 km    B) 1000 km    C) 42300 km    D) 6400 km
- The velocity of a geostationary satellite with respect to Earth is:  
A) Zero    B) 42300 km/h    C) 3070 km/h    D) None
- The total number of satellites in the Global Positioning System (GPS) is:  
A) 3    B) 20    C) 22    D) 24
- The value of 'g' at sea level is \_\_\_\_\_ than on a hill.  
A) Less    B) Greater    C) Equal    D) Half
- The value of 'g' at the surface of the moon is:  
A)  $1.06 \text{ m/s}^2$     B)  $1.62 \text{ m/s}^2$     C)  $1.6 \text{ m/s}^2$     D)  $0.16 \text{ m/s}^2$
- The concept of gravity was first put forward by:  
A) Einstein    B) Galileo    C) Hook    D) Newton
- The value of the universal gravitational constant is:  
A)  $6.67 \times 10^{-11} \text{ N(m/kg)}^2$     B)  $9.81 \text{ m/s}^2$     C)  $3.00 \times 10^8 \text{ m/s}$     D)  $1.38 \times 10^{-23} \text{ J/K}$
- Earth's gravitational force of attraction vanishes at:  
A) 6400 km    B) Infinity    C) 42300 km    D) 1000 km
- The orbital speed of a low orbit satellite is:  
A) 80 m/s    B) 8 m/s    C) 800 m/s    D) 8000 m/s

Write short answers to any ten (10) of the following questions.

- Why are communication satellites placed in geostationary orbits?
- Define orbital velocity and write its formula.
- What is a field force? Define gravitational field strength.
- How can the mass of the Earth be found using the law of gravitation?
- On what factors does the orbital speed of a satellite depend?
- What is the force of gravitation? Give one example.
- What is the difference between 'g' and 'G'?
- Why does the value of 'g' vary from place to place?
- What do you know about the gravitational constant (G)? Also, state its value.
- Differentiate between artificial and natural satellites.
- Why can't we feel the gravitational force around us?
- Write the equation to determine the mass of Earth.

Answer the following questions.

- State Newton's law of gravitation and derive its equation.
- How can the mass of Earth be determined using the law of gravitation?