

LIONS SCHOOL, MIRZAPUR

UNIT TEST – II, 2020-21

CLASS- XI

TIME-50 Min

SUB-Physics

M.M-25

General instruction- Attempt all questions, all are compulsory.

Marks for each is given next to it.

- 1 Explain the term precession in terms of motion. 1
- 2 Find the scalar product if vectors,  $A=3i-2j+3k$  and  $B=2i+3j-5k$ . 1
- 3 What are elastomers. 1
- 4 Define binding energy of a satellite. 1
  
- 5 A copper wire of length 2.2 m and a steel wire of length 1.6m, both of diameter 3.0 mm, are connected end to end. When stretched by a load, the net elongation is found to be 0.70 mm. Obtain the load applied. If young's modulus of copper and steel is  $1.1 \times (10)^{11}$  and  $2.0 \times (10)^{11}$  N/m<sup>2</sup> respectively. 2
- 6 Derive an expression for bulk modulus of elasticity. 2
- 7 Find the center of mass of three particles at the vertices of an equilateral triangle . The masses of the particles are 200g, 300g and 400g. Each side is 0.5 m long. 2
- 8 Show that moment of a couple does not depend on the point about which you take the moments. 2
- 9 Give the statement of theorem of parallel and perpendicular axis. 2
- 10 Give two important points about gravitational force. 2
- 11 Derive an expression for torque in cartesian system. 3
  
- 12 Derive an expression for gravitational potential energy. 3
- 13 A Saturn year is 29.5 times the earth year. How far is the Saturn from the sun if the earth is  $1.50 \times 10^8$  km away from the sun. 3