Full Marks: 80 Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer All questions 2 x 10
   a. Write down the SI units of work, angular velocity, electric potential and acceleration
   b. What are ultrasonics?
   c. State laws of reflection.
   d. What is the condition for maximum horizontal range?
   e. State Newton's law of gravitation.

   f. State Lenz's law.
   g. Define specific heat.
   h. State Fleming's right hand thumb rule.
   i. Write down the properties of LASER.
   j. If two capacitors with capacities 2 farad and 3 farad are connected in series connection then, find out the total capacity.

2. Answer Any Six Questions 5X6

   a. Differentiate between **G** & **g** with example

   b. State Laws of limiting friction.

   c. State Kepler's laws of planetary motion.

   d. Define critical angle and total internal reflection with a diagram.

   e. Distinguish between longitudinal and transverse wave.

   f. State and explain Coloumb's Law of electrostatic

   g Define lines of force and write down its properties.

3 A projectile fired with an initial velocity 'u' by making an angle 'θ' with the horizontal. Derive expressions for equation of trajectory, maximum height, horizontal range and time of flight. 10

4 Derive an expression for force acting on a current carrying conductor placed in a uniform magnetic field. Distinguish between Fleming's left hand rule & Fleming's right hand rule. 10

5 Find expressions for displacement, velocity and acceleration of a particle executing in S.H.M 10

6 Calculate the total amount of heat required to convert 2.5 Kg of ice from -30°C, to a steam at 200°C. 10

7 State Kirchoff's laws. Apply it to find out balanced condition of the wheatstone bridge. 10