Section-B
(Short Answer)

Note: Answer any EIGHT of the following questions. Each question carries 05 marks.

Q.2 Find the work done in moving an object along a vector $\vec{r} = 3i + 2j - 5k$ if the applied force is $\vec{F} = 2i - j - k$

Q.3 Show that expression $v_f^2 = v_i^2 - 2aS$ is dimensionally correct

Q.4 Write the advantages and disadvantages of friction

Q.5 Under what conditions torque acting on a body will be zero?

Q.6 Would there be any effect on "g" If the value of "G" is doubled?

Q.7 In a sonometer by what change in linear density of wire its velocity becomes double? Keeping tension of wire constant.

Q.8 Determine the position, size and nature of image formed by convex lens at three different position of object. Illustrate the ray diagram.

Q.9 If r_1 and r_2 are the position vectors (Both lies in X, Y plane) making an angles 45° and 75° with +ve x-axix measured counter clockwise, estimate their cross product if $|r_1| = 10cm$ and $|r_2| = 16cm$.

Q.10 A 2000 Kg truck travelling at 54 km/hr on the application of break it comes to rest by covering 37.5 meters. Calculate average retarding force of break.

Q.11 What is the take off speed of a locust if its launch angle is 55o and its range is 0.8 m?

Q.12 What do you mean by plane polarized light? How does the phenmoena decide that light waves are transverse?

Q.13 A Galilean telescope has an objective of 120 mm focal length and an eye piece of 50 mm focal length. If image seen by a eey place is 300 mm fro the eye place what is its angular magnification

Section-C Descriptive Answer)

Note: Answer any TWO of the following question.

Q.14(a) Write the assumptions of projectile motion, deduce the formula for range of projectile. At what elevations projectile having same range?

(b) Prove that the work doen in gravitational field is indepent of path following by a body

Q.15(a) Define Simple Pendulum. Show that the motion of Pendulum is simple harmonic and calculate its time period.

(b) Derive an expression for acceleration fo a body moving down on inclined plane.

Q.16. (a) Write the notes on any TWO of the following:

(i) Dot product of two vectros with properties
(ii) Newton's laws of motion
(iii) Michelson interferometer
(iv) Compound microscope