

17207

15162

2 Hours / 50 Marks

Seat No.

--	--	--	--	--	--	--	--

- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Use of Non-programmable Electronic Pocket Calculator is permissible.
(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any NINE of the following:

18

- a) Define the term:
 - (i) Retardation
 - (ii) Velocity time graph
- b) Define one newton and one watt.
- c) Define:
 - (i) Time of flight
 - (ii) Horizontal range
- d) Define ultrasonic wave.
- e) Name any four non destructive testing method.
- f) Explain the term:
 - (i) Reverberation
 - (ii) Reverberation time
- g) Intensity of sound produced by thunder is 0.2 wm^{-2} . Calculate the level in decibel.

P.T.O.

- h) State the principle of photometry.
- i) Define threshold frequency and stopping potential.
- j) State the range of wavelength of x-ray.
- k) State photoelectric effect.
- l) State Newton's third law motion with equation.

2. Attempt any FOUR of the following:

16

- a) State the equation of K.E. of body:
 - (i) at rest
 - (ii) when its velocity is doubled
- b) Distinguish between centripetal force and centrifugal force.
- c) Describe piezoelectric method for their production.
- d) A hall of volume 5000 m^3 has a reverberation time of 3 sec. The surface area of sound absorbing surface 3500 m^2 . Calculate the average coefficient of absorption.
- e) Explain the working of Bunsen's photometer with help of a neat ray diagram.
- f) Find minimum wave length and maximum frequency of X-ray production by an X-ray tube work on 50 kV
 $h = 6.62 \times 10^{-34} \text{ Js}$, $c = 3 \times 10^8 \text{ m/s}$, $e = 1.6 \times 10^{-19} \text{ C}$

3. Attempt any FOUR of the following:

16

- a) A flywheel starting from rest is subjected to an acceleration of 150 rpm^2 . Find its angular displacement during the 10^{th} sec.
 - b) A train weighing 300 kN is moving with a velocity of 60 km/hr. The velocity is reduced to 40 km/hr in a second by applying the brakes, find the braking force assuming it is to be uniform.
 - c) State the principle of LPT and explain its experimental procedure.
 - d) A lamp of 300 candela is at a distance of 10 m from a wall. Find the illuminance of the wall.
 - e) Derive Einstein photoelectric equation.
 - f) Explain the production of X-ray using Coolidge's X-ray tube.
-