17207

15116

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.

Marks

1. Attempt any NINE of the following : **18**

a) Define –

(i) Uniform linear velocity.

(ii) Angular velocity.

b) State equations of angular motion. (Any two)

c) State Newton's law of motion (Any two)

d) State law of conservation of momentum.

e) Define –

(i) Work

(ii) Efficiency of a pump

f) Define –

(i) Projectile motion

(ii) Angle of projection

P.T.O.

Marks

g) Define –

(i) Time of flight

(ii) Frequency

h) Define –

(i) Reverberation

(ii) Luminous flux

i) Define –

(i) Utilization factor

(ii) Threshold frequency

j) State laws of illumination. (Any two)

k) State factors affecting indoor lighting.

l) A car has initial velocity of 6 m/sec. It accelerates for 12 seconds at the rate of 3.5 m/sec^2. Determine the final velocity and distance travelled during this time.

2. Attempt any FOUR of the following : **16**

a) State advantages of non-destructive testing over destructive testing.

b) Give comparison between liquid penetrating testing and ultrasonic testing.

c) Two vehicles A and B are moving in the same direction at a speed of 15 m/sec. But car B is ahead of car A by 300 meters. If vehicle A is accelerated by 3 m/sec^2 and vehicle B has same speed as that of earlier, find at what distance vehicle A and B meet each other.

d) State factors affecting acoustical planning of an auditorium and explain any one of them.

e) State any four applications of photoelectric cell.

f) State any four uses of X-rays.

Marks

3. Attempt any FOUR of the following : **16**

a) The photoelectric work function of certain metal is 3×10^{-19} Joules. Calculate it's threshold frequency.

Plank's constant (h) = 6.62×10^{-34} J.sec.

b) Define –

(i) Impulse

(ii) Stopping potential

(iii) Photoelectric work function

(iv) Power

c) What is a photometer ? Explain Bunsen's grease spot photometer.

d) Obtain the formula for distance travelled by a body in n^{th} second along a straight line.

e) A hall of volume 5000 m^3 has reverberation time of 2 seconds. If the absorbing surface in the hall amounts to 3320 m^2, determine to coefficient of absorption.

f) State any four properties of ultrasonic waves.

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