Scheme – G

Sample Test Paper - I

Course Name : Civil Engineering Group

Course Code : CE/CS/CR/ CV

Semester : Second **17207**

Subject Title : Applied Science (Physics)

Marks : 25 **Time:1 Hour**

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q.1) Answer any FOUR **08 Marks**

a. State equations of rectilinear motion with meanings of symbols used.

b. State equation of law of conservation of momentum, hence state equation of recoil velocity of gun.

c. Define projectile motion with suitable example.

d. State any two disadvantages of N.D.T.

e. State any two criteria to select NDT method.

f. A Bicycle wheel has dia 80 cm. It rotates with ang. Acceleration of 4 rad/s^2, find its linear acceleration.

Q.2) Answer any THREE **09 Marks**

a. A car covers 50 m in 4^{th} sec and 80 m in 6^{th} sec during its motion. Calculate acceleration and distance traveled in 10^{th} sec.

b. State law of inertia, law of action and reaction with suitable example

c. A water tank of capacity 800 litre is to be filled in 12 minute by a pump. Water is required to be lifted through a height of 15 m. If efficiency of the pump is 90%. Find power of pump.

d. State applications of Ultrasonic Testing.

Q.3) Answer any TWO **08 Marks**

a. Explain production of ultrasonic waves by piezoelectric method.

b. Explain principle and procedure of LPT.

c. A bullet is fired with a velocity of 280 m/s in the direction making an angle of 40°with the horizontal calculate maximum height reached and range of flight.

Scheme – G

Sample Test Paper - II

Course Name : Civil Engineering Group

Course Code : CE/CS/CR/ CV

Semester : Second **17207**

Subject Title : Applied Science (Physics)

Marks : 25 **Time:1 Hour**

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q.1) Answer any FOUR **08 Marks**

a. Define echo and reverberation.

b. State Inverse square law.

c. State Sabine's formula with symbol meaning.

d. State any two properties of photon.

e. State any two requirements of good acoustics.

f. An X ray tube works on 40 kv. What will be the wavelength of X rays emitted in it.

Q.2) Answer any THREE **09 Marks**

a. Explain Planck's hypothesis..

b. State any six applications of X rays.

c. A concrete hall of volume 2000 m^3 has total absorption of 200. Find the reverberation time.

d. Two sources of equal illumination power are placed at a distance of 1.8 m from one another. Where should a screen be placed between two sources so that the intensity of illumination on one of the surface be 4 times on the other.

Q.3) Answer any TWO **08 Marks**

a. State four factors affecting indoor lighting system and explain any two.

b. Explain production of X rays using Coolidge's tube.

c. The photo electric work function of certain metal is 3 X 10^{-19} joules. Calculate it's threshold frequency if Planck's constant is 6.625 X 10^{-34}Js

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Scheme – G

Sample Question Paper

Course Name : Civil Engineering Group

Course Code : CE/CS/CR/ CV

Semester : Second **17207**

Subject Title : Applied Science (Physics)

Marks : 50 **Time: 2 Hours**

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q.1) Attempt any NINE. **18 Marks**

a) State two equations of angular motion with meaning of symbol.

b) Define angular displacement and state its S.I. unit.

c) State any four properties of Ultra sonic waves..

d) State any two points of criteria for selection of N.D.T. method

e) State any two properties of X rays.

f) State inverse square law of photometry.

g) What is photoelectric effect.

h) State any two medical applications of X rays.

i) State work energy principle.

j) State any two factors affecting Indoor lighting.

k) The energy of photoelectron is 2.8 eV. What is its frequency?

l) 100 litres of water is pumped to a height of 30 m. Calculate the work done by the pump.

Q.2) Attempt any FOUR **16 Marks**

a) Distinguish between centripetal force and centrifugal force.

b) A bullet of mass 60 gm is fired with muzzle velocity of 200 m/s from a gun of mass 6 kg Calculate recoil velocity of gun.

c) Explain production of ultrasonic by Piezoelectric method.

d) A train crosses a tunnel in 20 seconds. At the entry of the tunnel, its velocity is 36 km/hr and at exit of tunnel its velocity is 54 km/hr. Find the length of the tunnel.

e) State four applications of ultrasonic testing.

f) Explain LPT method with the help of principle and experimental procedure.

Q.3) Attempt any FOUR **16 Marks**

a) State requirements of good acoustics of building (any four points)

b) Explain Bunsen's photometer with the help of ray diagram.

c) State four characteristics of photoelectric effect.

d) Find the minimum wavelength and frequency of X ray produced by an X ray tube working on 50 kV (h = 6.634 X 10^{-34} JS, velocity of light = 3 X 10^{8} m/s e = 1.6 X 10^{-19} C)

e) A hall of dimensions 20m X 10 m X 3m has average absorption coefficient for sound is 0.1 o.w.u. Calculate the reverberation time.

f) The frequency of rotation of fan changes from 3 rev/s to 6 rev/s in 6 s. Find the angular acceleration.
