Engineering physics (2017)

Q1. Choose the correct answer in the following questions :

(i) Which of the following is not a unit of time ?

(a) Second (b) month
(c) year (d) light year

Ans. (d)

(ii) Steel is preferred for making springs over copper. Why?

(a) Steel is cheaper
(b) Young's modulus of steel is more than that of copper
(c) Young's modulus of copper is more than that of steel
(d) Steel is less likely to be oxidised

Ans. (b)

(iii) The surface tension does not depend upon

(a) nature of the liquid (b) temperature
(c) Presence of impurities (d) atmospheric pressure

Ans. (c)

(iv) Viscosity is exhibited by

(a) solids, liquids and gases (b) only solids & liquids
(c) only liquids & gases (d) only gases & solids

Ans. (b)

(v) The equation for the adiabatic change in a gas is $PV^{\gamma} = a$ constant, where r stands for { where Cp and Cv represent the principal specific heats of the gas }

(a) Cv/ Cp (b) Cp - Cv (c) Cp . Cv (d) Cp/Cv

Ans. Out of syllabus

(vi) Thrmal conductivity of a material depends upon

(a) temperature difference (b) area
(c) thickness (d) None of the above

Ans. (a)

(vii) When light travels from air to glass, which of the following properties does not change ?

(a) Frequency (b) velocity
(c) Amplitude (d) Wavelength

Ans. out of syllabus

(viii) When a stone is dropped on the surface of the still water the wave produce are

(a) transverse (b) longitudinal
(c) stationary (d) None of the above

Ans. (d)

(ix) Laser light is produced by

(a) Spontaneous emission (b) stimulated emission
(c) Stimulated absorption (d) spontaneous absorption

Ans. out of syllabus

(x) Who discovered X - rays ?

(a) Lave (b) Moseley
(c) Compton (d) Roentgen

Ans. Out of syllabus

Q2. (a) Define the terms - accuracy, precision and error. Explain absolute error, relative error & percentage error. What are significant figure ?

Ans. Refers to chapter 1 Q. no. 7, 9 & 10

Q2.(b) What do you understand by Modulus of Elasticity ? Explain young's Modulus, Bulk Modulus & Modulus of rigidity. Also write the relation between them.

Ans. Refers to chapter 5.1 Q.no. 5

Q3. (a) Define surface tension. Explain the phenomenon of surface tension on the basis of molecular theory. What is the effect of impurity on surface tension ?

Ans. Refers to chapter 5.2 Q.no. 3 & 2

Q3.(b) What do you mean by viscosity ? Define coefficient of viscosity and give its S.I. unit. Also explain the terms streamline flow, turbulent flow & critial velocity.

Ans. Refers to chapter 5.3 Q.no. 1 & 5 .

Q4. Explain dispersion and diffraction of light along with ray diagram. What is polarization ?

Ans. Out of syllabus.

Q5. What do you understand by fundamental and derived quantities ? Give examples.

Ans. Refers to chapter 1 Q.no. 3

Q6. Explain the modes of transmission of heat .

Ans. Refers to chapter 6 Q.no. 1

OR

A gas at 30°C is heated at constant pressure till its volume doubled. Calculate the final temperature of the gas.

Ans. Out of syllabus

Q7. state Einstein photoelectric equation and write the properties of photon. Find maximum kinetic energy of photoelectrons ejected from surface of metal when light of frequency 1×10^{15} Hz (given threshold wave - length for metal = 4500 A) is incident on it .

Ans. Out of syllabus.

Q8. What is the difference between free vibration forced vibration and resonance ? Give one example of each case.

Ans. Refers to chapter 7.1 Q.no. 5 & 6

Q9. A tunning fork of frequency 480 Hz resonates with air columm of length 16 cm, the end correction is 5mm. calculate the velocity of sound in air.

Ans. Refers to chapter 7.1 (Solved Example - 1)

Q10. Give the full form of LASER. Describe spontaneous emission, stimulated emission and population inversion in case of laser.

Ans. Out of syllabus.

OR

What are X- rays ? Explain the production fo X- Rays using Coolidge tube ?

Ans. Out of syllabus.