REVISION TEST
STD-X
PHYSICS

F.M.-40   TIME- 1hour 30min

SEC-A(compulsory)

Q.1.   [10]

I. Two bodies having different heat content has same temperature because
   a. The materials are same
   b. The masses are same
   c. The masses are different
   d. None of these

II. Resonance occurs when the
   a. Forced vibration becomes equal to the natural vibration
   b. Free vibration becomes equal to damped vibration
   c. Damped vibration becomes equal to forced vibration
   d. None of these

III. What is represented by the following equation?
   $_6C^{14} \rightarrow {_7}N^{14} + {_{-1}}e^0$
   a. Gamma emission
   b. Carbon dating
   c. Nitrogen dating
   d. Alpha emission

IV. Which of the following is not a source of background radiation?
   a. K-40
   b. Radon-222
   c. Cosmic rays
   d. N-15

V. Can hydrogen atom emit an alpha particle?
   a. Yes
   b. No
   c. Tritium can but protium cannot
   d. Only deuterium can

VI. A radioactive substance emits radiations:
   a. α, β and γ simultaneously
   b. in the order α, β and γ one by one
   c. X- rays and γ- rays
   d. α or β

VII. Copper is used to make the calorimeter because
   a. It has high specific capacity
   b. It has low specific heat capacity
   c. It has high specific resistance
   d. It has low specific resistance

VIII. The ratio of amplitudes of two waves is 4:9. What is the ratio of their intensities?
   a. 4:9
   b. 16:81
   c. 2:3
   d. 1:1

IX. Melting point is same as
   a. Evaporation point
   b. Boiling point
   c. Constant point
   d. Freezing point

X. A simple pendulum oscillating in air executes which kind of vibration?
   a. Free vibration
   b. Damped vibration
   c. Forced vibration
   d. Resonance

SEC-B (any four)

Q. 2.
   a. (i) State principle of calorimetry.
   (ii) What another name is given to this principal?
   (iii) Name the law on which the principle is based. [4]
   b. Name the factor that determines:
      (i) Loudness
      (ii) Pitch [2]
   c. In a laboratory experiment to measure specific heat capacity of copper 0.02kg of water at 70 ^{0}C was poured into a copper calorimeter with a stirrer of mass 0.16kg initially at 15 ^{0}C. after stirring the final temperature reached to 45 ^{0}C. Specific heat capacity of water is taken 4200 J/kg K.
      (i) What is the quantity of heat released per kg of water per 1K fall in temperature?
      (ii) Calculate the heat energy released by water in the experiment while cooling down from 70 ^{0}C to 45 ^{0}C.
      (iii) Assuming that the heat released by water is entirely used to raise the temperature of calorimeter from 15 ^{0}C to 45 ^{0}C, calculate the specific heat capacity of copper. [4]

Q.3.
   a. 1 kg of water is contained in 25 ^{0}C in a 1.25 kW kettle. Assuming the specific heat capacity of water as 4200 J/kg K, calculate the time taken for the temperature of water to rise from 25 ^{0}C to its boiling point. [2]
   b. What factors affects the heat content of a body and how? [3]
   c. State two ways by which the frequency of transverse vibration of a stretched string can be increased. [2]
   d. What are the safety precautions to be taken while establishing a nuclear powerplant? [3]

Q.4.
   a. Define specific latent heat of fusion of ice. State the value of specific latent heat of fusion of ice in SI unit. [2]
   b. Under what condition resonance will occur? [2]
   c. A refrigerator converts 100g of water at 20 ^{0}C to ice at -10 ^{0}C in 35mins. Calculate the average rate of heat extraction in watt.
   [Take specific heat capacity of ice= 2.1 J/g K
   Specific heat capacity of water= 4.2 J/g K
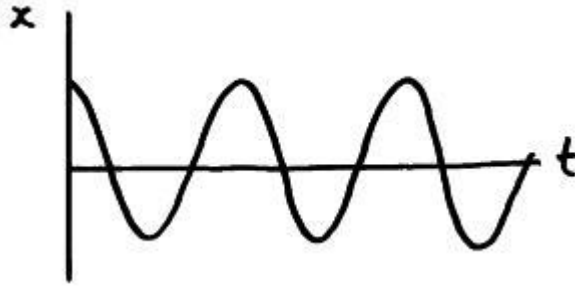
Specific latent heat of fusion of ice= 336 J/g]   [3]

d. What is background radiation? Name two internal sources of it.   [3]

Q.5.

a. The following displacement time graph shows a kind of vibration.

(i) Name the vibrations taking place in the above case.

(ii) Define the vibration named by you in (i).

(iii) Give an example of the above vibration.   [3]

b. Soldiers are asked to break their steps while walking on a suspension bridge. Why?

                                                                            [2]

c. Arrange alpha, beta and gamma in ascending order of

   (i) Ionisation potential

   (ii) Penetrating power.   [2]

d. Write the difference between heat capacity and specific heat capacity. [3]

Q. 6.

a. What are isobars? Give two examples of it.   [3]

b. Define forced vibration and give one example of it.   [3]

c. 50g of metal piece at 27 ^{0}C requires 2400 J of heat energy so as to attain a temperature of 327 ^{0}C. Calculate the specific heat capacity of the metal.   [2]

d. Define loudness and state its SI unit.   [2]