

SEMESTER-TWO

PHYSICS

Class X

Sample Paper—2

Max. Marks: 50

Time Allowed: 90 minutes

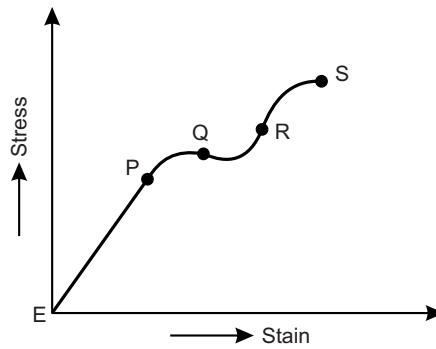
General Instructions:

- (i) This question paper consists of 40 questions in 4 sections.
- (ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- (iii) Section A consists of 10 Objective type questions carrying 1 mark each.
- (iv) Section B consists of 10 Fill in the blanks type questions carrying 1 mark each.
- (v) Section C consists of 10 True or False statement type questions carrying 1 mark each.
- (vi) Section D consists of 10 Short answer and Numerical type questions carrying 2 marks each.

Section A

Select and write one most appropriate option out of the four options given for each of the questions 1 – 10.

1. What is the range of laboratory thermometer; in degree Celsius?
 - (a) 15 to 65
 - (b) 52 to 65
 - (c) -10 to 110
 - (d) 35 to 42
2. Figure shows the stress-strain graph of a certain substance. Over which region of the graph is Hooke's law obeyed?
 - (a) EP
 - (b) PQ
 - (c) QR
 - (d) RS



Stress-strain graph

3. What transfers from a nylon carpet to you to give you a static electric shock?
 - (a) Electrons
 - (b) Protons
 - (c) Neutrons
 - (d) none of these
4. The maximum and minimum temperatures of a day are measured with a
 - (a) celsius thermometer
 - (b) fahrenheit thermometer
 - (c) maximum-minimum thermometer
 - (d) kelvin thermometer
5. Which of the following is a good conductor of electricity?
 - (a) Copper
 - (b) Rubber
 - (c) Chalk
 - (d) Coal
6. What charge does an object have if it gains electrons?
 - (a) negative
 - (b) positive
 - (c) neutral
 - (d) none of these
7. The unit of measurement of temperature is
 - (a) meter
 - (b) kilogram
 - (c) degree Celsius
 - (d) second
8. Quantisation of charge implies that
 - (a) charge does not exist
 - (b) charge exists on particles
 - (c) there is minimum permissible magnitude of charge
 - (d) charge can't be created

9. A metal disc has a hole in it. When the disc is heated the size of hole will
- (a) not change (b) increase
(c) decrease (d) first increase then decrease
10. Which of the following solid has highest melting point?
- (a) Gold (b) Iron
(c) Tungsten (d) Copper

Section B

Fill in the blanks with a suitable word for each of the questions 11 – 20.

11. Electric potential at a point in an electric field is measured as the _____ done in bringing a unit positive test charge from infinity to that point.
12. The hotness of an object is determined by its _____.
13. Boyle's law states that the product of pressure and its corresponding _____ is always constant at constant temperature.
14. In a charge-free region, electric field lines can be taken to be _____ curves without any breaks.
15. Liquid's resistance to flow is called _____ .
16. Human body temperature is measured in degree _____.
17. _____ is the smallest particle of matter.
18. Linear expansion depends upon rise in _____ and _____ of the solid.
19. Theoretically speaking, the electric field extends upto _____ .
20. _____ measures a solid's ability to be beaten into thin sheets.

Section C

State whether the following statements are true or false for each of the questions 21–30.

21. Diffusion is faster in gases than in solids or liquids.
22. Thermal expansion is the phenomena observed in solids, liquids and gases.
23. No work is done in moving a test charge between two points at different potentials.
24. The flow of heat from the hotter body to the colder body will stop when the temperatures of the two bodies become equal.

25. Diamond is the hardest natural substance found in nature.
26. The constant quantity of Boyle's law is only mass of a gas.
27. Gases cannot be compressed.
28. Mercury-in-glass thermometer is more sensitive than alcohol-in-glass thermometer.
29. The equivalent capacitance of the capacitors joined in series is equal to the sum of their individual capacitances.
30. To minimize being struck by lightning in an open ground, you should make yourself the lowest thing around by laying down on the ground.

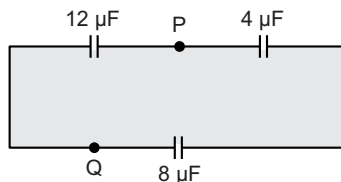
Section D

Answer each of the questions 31 – 40.

31. Explain the difference between heat and temperature.

or

What is the equivalent capacitance between the points P and Q in the combination shown in Fig.?



32. What do you mean by diffusion? Write some application of diffusion.
33. Explain the principle of charge conservation.
34. A newly designed thermometer has its lower fixed point and upper fixed point marked 5 and 95 respectively. Compute the temperature on this scale corresponding to $50\ ^\circ\text{C}$.

or

When the bulb of a constant volume gas thermometer is surrounded by melting ice, the level of mercury in the open tube is 5 cm below the level in the closed tube. When the bulb is placed inside oil, the level in the open tube is 65 cm higher. Find the temperature of oil bath, if atmospheric pressure = 75 cm of Hg column.

35. Steel rod of length 1.0 m and radius 10 mm has been stretched along its length by a force of 100 kN. Calculate (a) stress, (b) elongation and (c) strain on the rod. The Young's modulus of steel is $2.0 \times 10^{11}\ \text{N m}^{-2}$.
36. State Charle's law.
37. Discuss different uses of capacitor briefly.

38. State the simple kinetic theory of matter.

or

A wire 50 cm long and 1.0 Sq. mm in cross section has Young's modulus $Y = 2 \times 10^{10} \text{ Nm}^{-2}$. How much work is done in stretching the wire through 1 mm?

- 39.** A potential difference of 450 volts is applied across the plates of a capacitor of capacity 20 pF. What is the value of charge on the plates of the capacitor?
- 40.** When a beam of sunlight enters a room through a window, we can see tiny particles X suspended in a gas (or rather a mixture of gases) Y which are moving rapidly in a very haphazard manner.
- What could particles X be?
 - Name the gas (or mixture of gases) Y.
 - What is causing the movement of particles X?
 - What conclusion does the existence of this phenomenon give us about the nature of matter?