SEMESTER-TWO

PHYSICS

Class X

Sample Paper—1

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. Which instrument is used for measuring heat?

(a) Thermometer (b) Seismograph

(c) Anemometer (d) Calorimeter

2. Viscosity is the internal property of the liquid and gases. It is more closely related to

(a) Friction (b) Inertia

(c) Elasticity (d) All of these

3. What charge does an object have if it loses electrons?

(a) neutral (b) positive

(c) negative (d) none of these

4. Two iron spheres of same size, one solid and the other hollow, are heated through the same temperature range. Then,

(a) both the spheres will expand equally

(b) hollow sphere will expand more than solid sphere

(c) solid sphere will expand more than the hollow sphere

(d) there will no effect on their size.

5. The force between atoms and molecules is

(a) Electric (b) Magnetic

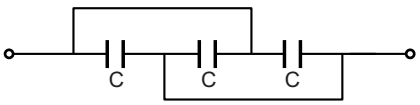
(c) Gravitational (d) None of these

6. Which material is normally filled inside conventional thermometer?

(a) Silver (b) Halogen

(c) Sodium (d) Mercury

7. What is the equivalent capacitance of the combination show in figure given below.



(a) 3C (b) C/2

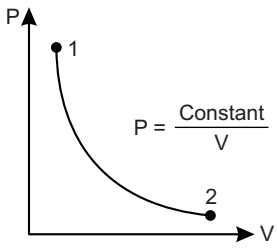
(c) C (d) infinity

8. Which of the following solids is malleable?

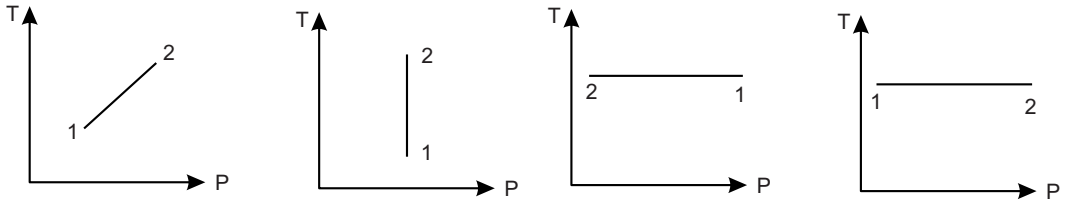
(a) Rubber (b) Gold

(c) Glass (d) Ceramic

9. Consider P – V diagram for in ideal gas shown in figure below.



Out of the following diagrams, which represents the T – P diagram?



(a) (b) (c) (d)

10. Work done in moving a unit positive test charge from one point to other inside an electric field is called

(a) potential (b) field

(c) field intensity (d) potential difference

Section B

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

11. To induce the charge on object just by bringing another charged object close, is called charging by _____.

12. The space between the conductors may be filled by vacuum or with insulating material known as a _____ .

13. Temperature of boiling water cannot be measured by a _____ thermometer.

14. Within elastic limit, stress is proportional to _____ .

15. Charle's law states that the volume of a gas is directly proportional to the _____ provided pressure is constant.

16. The total charge of an isolated system is always _____.

17. The process of dispersion of different particles among each other, so that they become mixed uniformly is called _____ .

18. The coefficient of area expansion is _____ its coefficient of linear expansion.

19. Two or more than two atoms combine to form a _____ .

20. _____ prevents mercury level from falling on its own in a clinical thermometer.

Section C

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

21. The breaking stress of a wire depends on length of the wire.

22. Mercury is a toxic substance.

23. Cars are a safe place to be in a lightning storm because of the rubber tyres.

24. Atom is the smallest particle of matter.

25. The ratio between the coefficient of linear, area and volume expansions i.e. $\alpha : \beta : \gamma = 1 : 2 : 3$.

26. Electrostatics deals with the phenomenon and properties of moving electric charges.

27. When a solute is added to a liquid its boiling point decreases.

28. A capacitor is a two-terminal electrical device that possesses the ability to store energy in the form of an electric charge.

29. Plot of a graph between Kelvin temperature and gas volume comes out to be a straight line.

30. SI unit of Young's modulus is N m^{-2}.

Section D

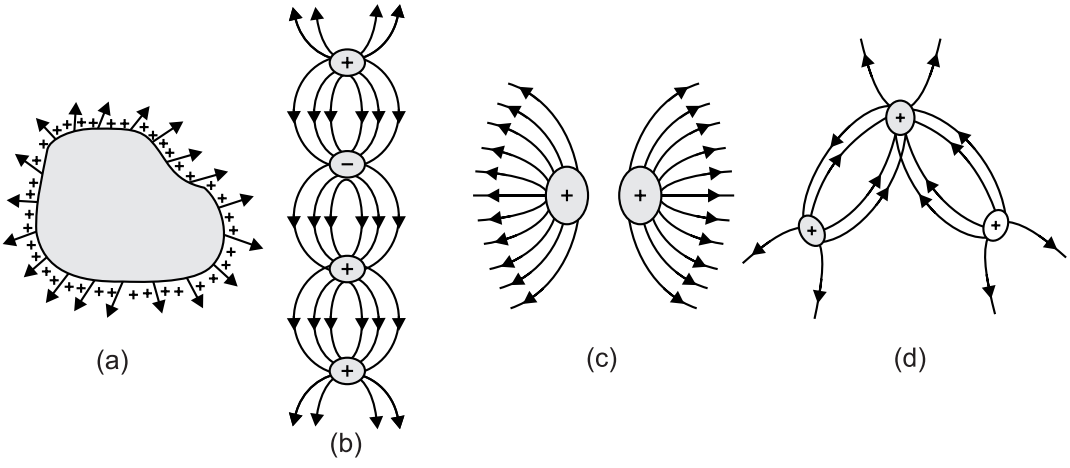
Answer each of the questions 31 – 40.

31. What do you mean by thermal expansion?

32. Describe different thermometer scales.

or

Which of the following figures cannot represent electrostatic field lines? Given reason.



33. Describe the methods of charging bodies.

or

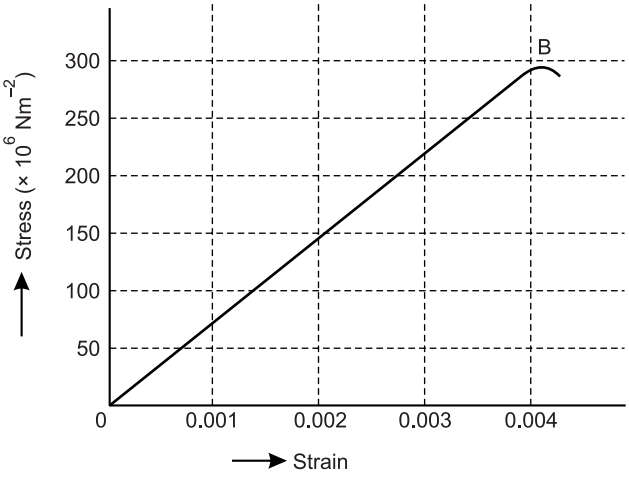
Two insulated charged copper spheres have their centres separated by a distance of 50 cm. If each sphere is having a charge of 6.5×10^{-7} C, then calculate force of repulsion between them. The radii of two spheres are negligible.

Also calculate force between two spheres if the spheres are placed in water of dielectric constant 80.

34. Distinguish between cohesion and adhesion.

or

Figure shows the strain-stress curve for a given material. What are (a) Young's modulus, and approximate yield strength for this material?



Stress-strain curve

35. The volume of a lead ball at 0 °C is 100 cm^3 and at 100 °C, it is 100.85 cm^3. Calculate the coefficient volume of expansion and linear coefficient of expansion of lead.

36. Describe field patterns for two point charges.

37. A weather balloon having 150 L volume when filled with H_2 gas had a pressure of 1.1 atmosphere. What volume the balloon would have when the balloon rises to 1000 m where the atmospheric pressure is 0.9 atm. Assume that the temperature is constant.

38. Describe the physical properties of solids.

39. A mercury drop of radius 1.0 mm breaks up into 64 droplets of equal volumes. Calculate the work done in this process. (Surface tension for mercury is 0.465 N/m).

40. What is the equivalent capacitance of the combination between P and Q, as shown in figure?