

Time: 1 Hour 30 Minutes

Max. Marks: 40

Instructions:

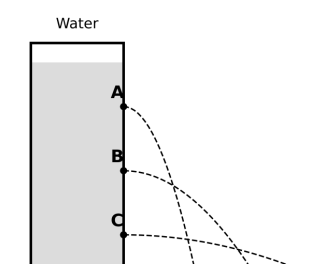
1. The question paper has 4 sections and 17 questions. Answer all the questions.
2. Section A: 10 multiple choice questions of 1 mark each.
3. Section B: 3 questions of 2 marks each. Section C: 2 questions of 4 marks each.
4. Section D: 2 questions of 8 marks each, with internal choice.
5. Draw diagrams wherever necessary and show all steps in numerical problems.

SECTION – A

10 × 1 = 10

Choose the correct answer and write its letter.

1. A push or a pull on an object is called
A) energy B) force C) pressure D) work
2. Which of the following is a non-contact force?
A) muscular force
B) friction
C) magnetic force
D) the force of a hand pushing a door
3. The SI unit of force is
A) kilogram B) newton C) pascal D) joule
4. The weight of an object on the Moon is about _____ of its weight on the Earth.
A) one-half B) one-sixth C) six times D) the same
5. The SI unit of pressure is
A) newton B) joule C) pascal D) watt
6. Water comes out of the three holes A, B and C of the bottle shown. The water from which hole reaches the farthest?



- A) A
 - B) B
 - C) C
 - D) All reach the same distance
7. Wind blows from
A) a low-pressure area to a high-pressure area
B) a high-pressure area to a low-pressure area
C) the land to the sea only

D) the sea to the land only

8. Which of these appliances works on the heating effect of electric current?

- A) electric bell
- B) electric iron
- C) electromagnet in a crane
- D) magnetic compass

9. A fuse wire in a circuit melts when

- A) a very large current flows
- B) the switch is off
- C) the cell is new
- D) the bulb is removed

10. The particles are most closely packed in

- A) solids
- B) liquids
- C) gases
- D) all three equally

SECTION – B

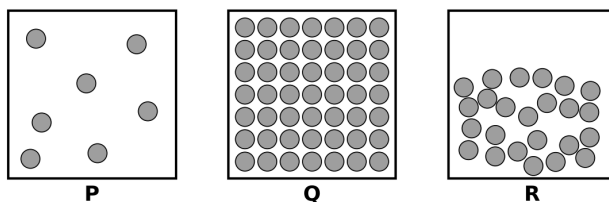
3 × 2 = 6

11. Two forces act on a box as shown. Find the net force on the box and its direction.



12. Why are the walls of a dam made thicker at the bottom than at the top?

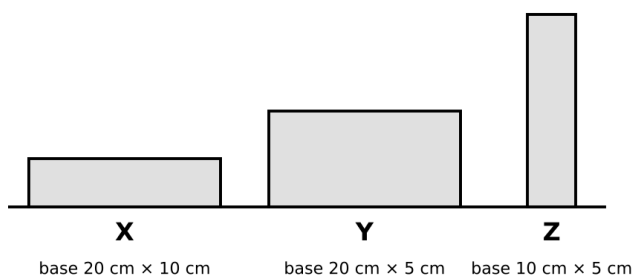
13. The boxes P, Q and R show the arrangement of particles in three states of matter. Identify the state shown in each box and give one reason for any one of them.



SECTION – C

2 × 4 = 8

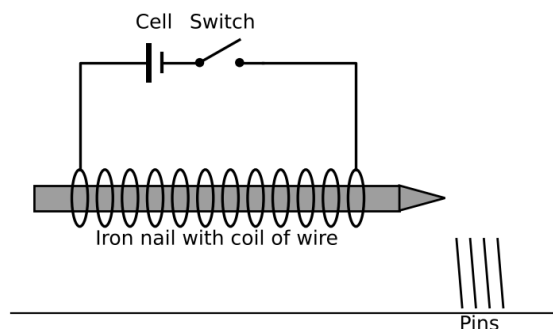
14. A brick weighs 30 N. It is kept on the ground in three different ways X, Y and Z as shown.



(i) Find the pressure exerted on the ground in each case. ($1 \text{ cm}^2 = 1/10000 \text{ m}^2$)

(ii) In which position is the pressure the greatest? Why?

15. Look at the set-up shown.



- (i) What happens to the pins when the switch is closed? (ii) What happens when the switch is opened again?
(iii) Suggest two ways to make this electromagnet stronger. (iv) Write one use of electromagnets.

SECTION – D

2 × 8 = 16

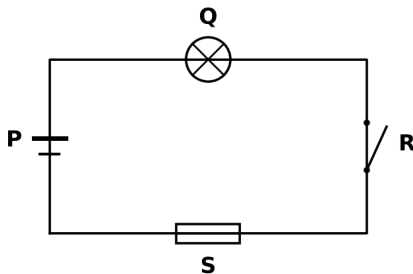
Each question has an internal choice. Answer either (A) or (B).

16. A) What are contact forces and non-contact forces? Explain each with two examples. Why does the weight of an object change on the Moon while its mass remains the same?

(OR)

- B) Describe an activity to show that (i) liquids exert pressure on the walls of their container and (ii) the pressure of a liquid increases with depth. Draw a diagram and write your observations.

17. A) Look at the circuit shown. Identify the components P, Q, R and S. Explain why a fuse is used in a circuit. Write any four safety precautions we should follow while using electricity.



(OR)

- B) Describe an activity using potassium permanganate (or sugar) and water to show that matter is made of very small particles with spaces between them. How does the smell of an incense stick spread across a room? Explain.

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