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Term Examination

2026 – 2027

Grade: 8 **Subject:** Physics

Time: 2½ hours **Maximum Marks:** 80

Section A

1. **Choose the correct answers to the questions from the given options. (Do not copy the questions, write the correct answers only.)**

(i) Which expression correctly gives the electrical energy supplied by a source when current I flows for time t at potential difference V? [1]

(a) W = V × I / t
(b) W = V × t / I
(c) W = V × I × t
(d) W = I × t / V

(ii) Boiling is the process in which: [1]

(a) A liquid changes to vapour from its surface at all temperatures
(b) A solid changes directly to vapour at a single fixed temperature value
(c) A liquid changes to vapour throughout its bulk at a fixed temperature
(d) A vapour suddenly changes back to a liquid as it is cooled rapidly

(iii) When you stand on loose sand, your feet sink deeply, but when you lie on the same sand, you do not sink as much. Why? [1]

(a) Standing exerts a greater thrust on the sand
(b) Larger contact area gives greater pressure value
(c) Smaller contact area gives greater pressure value
(d) The total thrust is shared with the sand particles

(iv) The condensation point of steam is: [1]

(a) 0°C
(b) 55°C
(c) 100°C
(d) 78.3°C

(v) When a ray of light of a single colour passes through a glass prism, it: [1]

(a) Passes straight through without deviation in its direction
(b) Is bent away from the base of the prism after refraction
(c) Is bent towards the base of the prism after refraction
(d) Splits into the seven colours of the visible spectrum

(vi) What does the amplitude of a sound wave represent? [1]

(a) The number of waves passing a fixed point in one second of time
(b) The maximum displacement of a particle from its mean rest position
(c) The total time taken by a particle to complete one full vibration
(d) The total distance covered by a wave in one full time period of vibration

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(vii) Two coolies, A and B, lift the same load to the same height. Coolie A does it in 1 minute and coolie B does it in 2 minutes. Which of the following is true? [1]

(a) A and B do the same amount of work, but A spends twice the power of B because A takes less time

(b) A does double the work but spends the same power as B because the load that is lifted is the same

(c) A and B do the same work and spend the same power because the load and the height are identical

(d) B does more work than A because B takes much longer, and B also spends more power than A does

(viii) An electric oven of 3 kW is used for 4 hours daily. If the cost of electricity is Rs 6.25 per kWh, what is the cost for one day? [1]

(a) Rs 25

(b) Rs 50

(c) Rs 75

(d) Rs 100

(ix) The S.I. unit of thrust is the same as that of: [1]

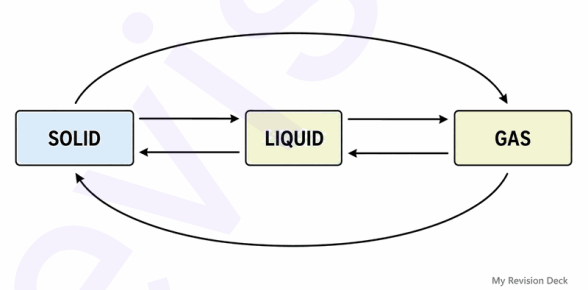
(a) Pressure

(b) Force

(c) Mass

(d) Area

(x) Observe the diagram showing the changes of state of matter between solid, liquid and gas, with an arrow for each process. Which of the given options best names the process shown by the arrow that goes from the solid directly to the gas state? [1]



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(a) Melting

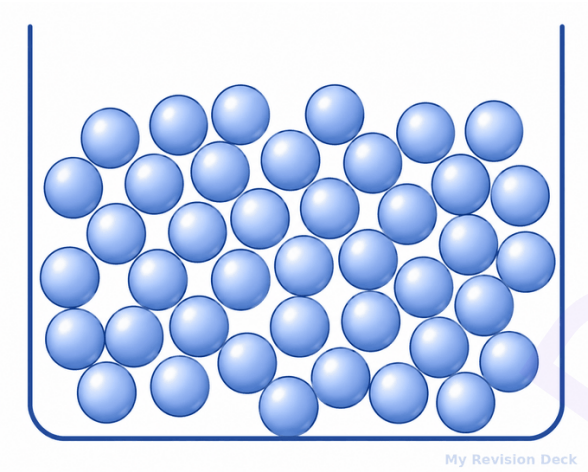
(b) Condensation

(c) Vaporization

(d) Sublimation

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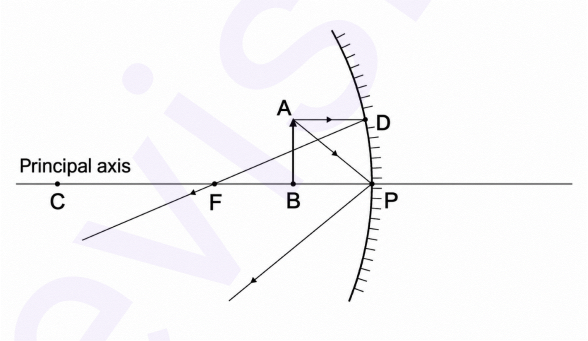
(xi) Observe the diagram. Which of the given options best describes the arrangement of molecules shown? [1]



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(a) Molecules are less closely packed and can move within the vessel boundary
(b) Molecules are in fixed positions and very tightly packed
(c) Molecules are very wide apart with extremely weak forces of attraction
(d) Molecules are arranged in a rigid, fixed and orderly pattern

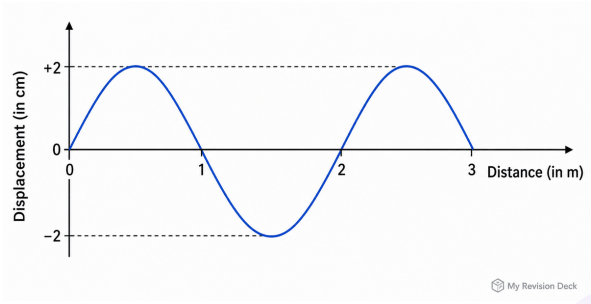
(xii) Observe the diagram showing two rays from the tip A of an object AB placed between the principal focus F and the pole P of a concave mirror, and the rays after reflection. Which of the given options best describes the image of AB formed by the mirror? [1]



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(a) Real, inverted and smaller than the object placed in front of the mirror
(b) Virtual, erect and larger than the object placed in front of the mirror
(c) Virtual, inverted and smaller than the object placed in front of the mirror
(d) Real, erect and of the same size as the object in front of the mirror

(xiii) Observe the graph shown in the image. Which of the given options names the two physical quantities of the wave that can be obtained directly from this graph? [1]



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(a) The frequency of the wave and the time period of the wave from one peak to next

(b) The intensity of the wave and the speed of the wave through the air around the source

(c) The loudness of the wave and the pitch of the wave produced by the source vibrating

(d) The wavelength of the wave and the amplitude of the vibrating particle of the medium

(xiv) Assertion (A): When a person pushes a heavy stationary wall, no work is said to be done in the scientific sense. [1]
Reason (R): Although a force is applied on the wall, the wall does not move and so no motion is produced in the direction of the applied force.

(a) Both A and R are true and R is the correct explanation of A

(b) Both A and R are true but R is not the correct explanation of A

(c) A is true but R is false

(d) A is false but R is true

(xv) Assertion (A): A lightning conductor protects a tall building from being damaged by lightning. [1]
Reason (R): When a charged cloud passes over the building, an opposite charge induced on the spikes flows safely down through the copper rod to the earth.

(a) Both A and R are true and R is the correct explanation of A

(b) Both A and R are true but R is not the correct explanation of A

(c) A is true but R is false

(d) A is false but R is true

2. **(i) Complete the following by choosing the correct answers from the bracket:**

(a) In charging by induction, the near end of the conductor acquires a charge _____ in nature to that on the charging body. [opposite / similar] [1]

(b) The moment of a force is equal to the _____ of the force and its perpendicular distance from the pivoted point. [sum / product] [1]

(c) Hydrogen and oxygen are examples of _____ molecules. [diatomic / polyatomic] [1]

(d) The S.I. unit of heat is the _____. [joule / kelvin] [1]

(e) The apparent weight of a body floating on a liquid is _____. [zero / equal to the body's actual weight] [1]

(f) A mirage is sometimes seen in _____. [deserts / forests] [1]

(ii) **Match the following:** [3]

Column A	Column B
(a) 1 mL	(i) Density of water
(b) 1000 kg m^{-3}	(ii) Same volume as 1 cm^3
(c) kg m^{-3}	(iii) SI unit of density

(iii) Define one joule of work. [1]

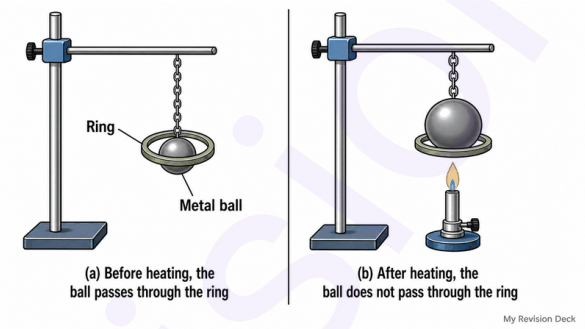
3. (i) An electric fuse is the simplest safety device used in a household circuit.

(a) Of which alloy is the wire of an ordinary household fuse made and what is its melting point? [1]

(b) In which wire of a household circuit is a fuse always connected and why? [1]

(ii) The weight of object A is 4 kgf and the weight of object B is 60 N. Which object is heavier, and by how much (in newton)? [2]

(iii) Study the diagram of the experimental set-up and answer the questions that follow.



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(a) What does the experiment shown in the diagram demonstrate? [1]

(b) On the basis of molecular motion, explain what happens inside the metal ball when it is heated by the burner. [1]

(iv) How much heat is released when 3 kg of water at 0 °C freezes into ice at 0 °C? (Specific latent heat of fusion of ice = 336 × 10^3 J kg^{-1}) [2]

(v) Draw a neat labelled diagram showing the dispersion of white light by a glass prism. Label the colours of the spectrum obtained on the screen in their correct order. [2]

(vi) A piece of iron of mass 195 g is immersed in water taken in a Eureka can. It displaces 25 mL of water. Find the density of iron in kg m^{-3}. [3]

(vii) Draw two displacement-time wave forms — one labelled A for a soft sound and one labelled B for a loud sound — with the same frequency. Mark the amplitudes clearly. [2]

Section B

(Attempt any 4 questions out of 5)

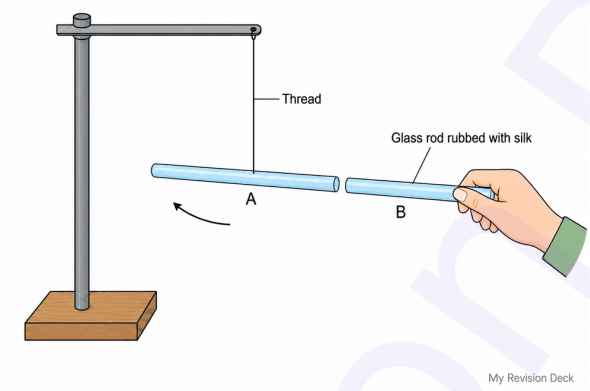
4. (i) A concave mirror has a focal length of 7 cm. Calculate its radius of curvature. A second concave mirror has a radius of curvature of 50 cm. Calculate its focal length. [3]

(ii) Different metals have different coefficients of linear expansion, leading to different practical uses.

(a) Name the alloy used in the pendulum of a precision clock and the metals from which it is made. [1]

(b) Why is the alloy named in the previous part especially suited for making the pendulum of a precision clock? [2]

(iii) Study the diagram showing two charged glass rods being brought close to each other and answer the questions that follow.



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(a) Describe what is observed in the diagram and the reason for this observation. [2]

(b) What would have been observed if one of the glass rods had been replaced by an ebonite rod rubbed with fur? Justify your answer. [2]

5. (i) Describe an activity in which water is added to a long test tube and air is blown across its open end. Explain how the pitch of the sound changes as more water is added. [3]

(ii) Change of state is an important concept in the study of matter.

(a) Why is the heat absorbed or released during a change of state called 'latent heat'? [1]

(b) Define change of state and name the six change-of-state processes. [2]

(iii) The kinetic energy of a body is closely connected to its mass and its speed.

(a) Define kinetic energy and give two examples of bodies that possess kinetic energy. [2]

(b) State the expression for the kinetic energy of a body and explain how the KE changes if the speed of the body is reduced to half its original value (with mass unchanged). [2]

6. (i) A force of 600 N acts normally on one face of a box. The area of this face is 0.3 m². Calculate the pressure exerted on the face in pascal, and express this pressure in kilopascal. [3]

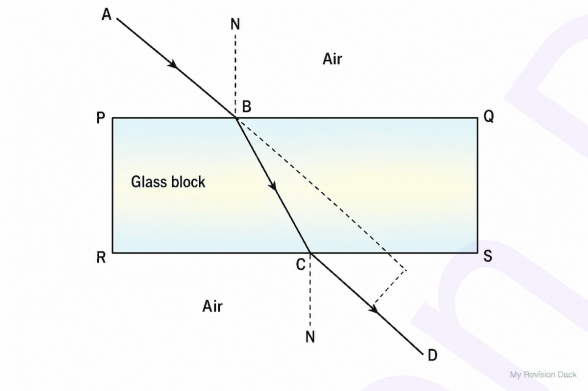
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(ii) The relative density of a liquid is measured using a density bottle.

(a) By what alternative name is relative density also known, and in terms of masses, write the equivalent expression for the relative density of a substance. [1]

(b) Explain why relative density has no unit, and why it is numerically equal to the density of the substance when expressed in g cm^{-3}. [2]

(iii) Study the diagram of refraction through a rectangular glass block and answer the questions that follow.



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(a) With reference to the diagram, explain how the ray bends at each of the two surfaces of the glass block. [2]

(b) With reference to the diagram, define the lateral displacement of the emergent ray. [2]

7. (i) Describe what icebergs are, how much of an iceberg lies below the surface of sea water, and why icebergs are a danger to ships. [3]

(ii) The molecules of matter exert forces of attraction on one another.

(a) Why is the inter-molecular force of attraction described as an electrostatic force? [1]

(b) Differentiate between the force of cohesion and the force of adhesion, and name two properties of liquids that result from them. [2]

(iii) Sound is a form of energy that is produced by a vibrating body and travels through a material medium.

(a) Why is sound said to be a form of energy? [2]

(b) Compare the speed of sound in iron, water and air, giving its approximate value in each. [2]

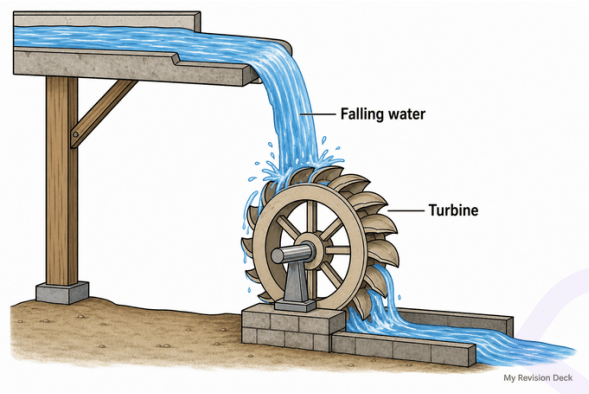
8. (i) An aluminium sphere has a volume of 100 cm^3 at 0 °C. Calculate its volume at 50 °C. (Coefficient of linear expansion of aluminium = 24×10^{-6} /°C) [3]

(ii) A liquid exerts pressure within itself and on any body immersed in it.

(a) What is meant by the hydrostatic paradox? [1]

(b) Explain how a buoyant force acts on a body immersed in a liquid. [2]

(iii) Study the diagram of a water mill turbine driven by falling water and answer the questions that follow.



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(a) Describe the energy transformations that take place from the water held above the turbine to the rotation of the turbine. [2]

(b) If the turbine is connected to a dynamo, what further energy conversion occurs, and where is such a setup commonly used? [2]

********** End of paper **********

Portions covered in this paper: Matter, Physical Quantities & Measurements, Force & Pressure, Energy, Heat Transfer, Light Energy, Sound, Electricity

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