

Answers to this Paper must be written on the paper provided separately.

You will not be allowed to write during first 15 minutes.

This time is to be spent in reading the question paper.

The time given at the head of this Paper is the time allowed for writing the answers.

Section A is compulsory. Attempt any four questions from Section B.

The intended marks for questions or parts of questions are given in brackets [].

Section-A [40 marks]

(Attempt all questions from this Section)

1. Choose the correct answers to the questions from the given options: [15]

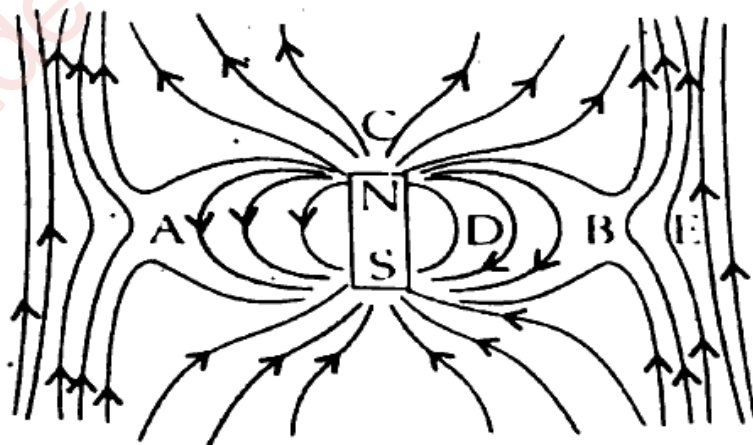
i) SONAR uses

- a) Infrasonic sound b) Sonic sound
c) Ultrasonic sound d) All of these

ii) Action and reaction act on the:

- a) Same body in opposite directions
b) Different bodies in opposite directions
c) Different bodies, but in same direction
d) Same body and same direction

iii) At which point the magnetic field strength is zero?



- a) Point A b) Point E
c) Point D d) Point C

- iv) Two plane mirrors are placed making an angle 60° between them for an object placed in between the mirrors the number of images formed will be
- a) 3 b) 6 c) 5 d) infinite
- v) Least count of a vernier may be obtained by
- a) Multiplying the value of one division of main scale by the total number of divisions on vernier scale.
- b) Dividing the value of one division of main scale by the total number of divisions on vernier scale.
- c) Dividing total number of divisions on vernier scale by the value of one division of main scale.
- d) None of the above
- vi) A body will experience minimum upthrust when it is completely emerged in
- a) turpentine b) water
- c) glycerine d) mercury
- vii) The area of an acceleration - time graph represents
- a) Change in velocity b) Change in displacement
- c) Change in distance d) Change an acceleration
- viii) A body is projected vertically upward with an initial velocity u . If acceleration due to gravity is g , the time for which it remains in air, is:
- a) u/g b) ug c) $2u/g$ d) $u/2g$
- ix) $1 \text{ kgf} = \dots\dots\dots \text{ N}$
- a) 1 N b) 9.8 N c) 981 N d) $1/9.8 \text{ N}$
- x) Value of universal gravitational; constant is
- a) $6.67 \times 10^{-11} \text{ Nm}^2\text{kg}^{-2}$ b) $6.67 \times 10^{11} \text{ Nmkg}^{-2}$
- c) $6.67 \times 10^{-11} \text{ Nm}^{-2}\text{kg}^2$ d) $6.67 \times 10^{11} \text{ Nm}^{-2}\text{kg}^{-2}$
- xi) Which of the following statement is true?
- a) Non-conventional energy sources are renewable.
- b) Non-conventional energy sources are non-renewable.
- c) Conventional energy sources are renewable.
- d) Both conventional and non-conventional energy sources are non-renewable.
- xii) Electromagnets are made up of:
- a) steel b) copper c) soft iron d) aluminium

- xiii) Pressure is a quantity
- a) Scalar b) Vector c) Both d) None
- xiv) The unit of potential difference is :
- a) ampere b) volt c) ohm d) coulomb.
- xv) The device which directly indicates the altitude in meters instead of the atmospheric pressure is
- a) Speedometer b) Altimeter
c) Manometer d) Mercury barometer
2. a) State any three factors on which the resistance of a wire depends. [3]
- b) A body is dropped freely under gravity from the top of a tower of height 122.5 m. find the time taken by the body to reach the ground. (Take $g = 9.8 \text{ ms}^{-2}$) [2]
- c) State Archimedes' principle. [2]
- d) Write the unit of the following fundamental quantities in S.I. system: [2]
- i) power ii) luminous intensity
- e) State two properties of magnetic field lines. [2]
- f) Define current . State its S.I unit [2]
- g) A bulb draws current 1.5A at 6.0 v. Find the resistance of filament of bulb while glowing. [2]
3. a) A audible range of frequencies is 20 Hz - 20000 Hz. Find the range of wavelengths corresponding to this range of frequencies. Consider velocity of sound to be 330 m/s. [2]
- b) State two factors on which the speed of a sound in a medium depends. [2]
- c) Calculate the pressure due to a liquid column of height 50 m and density $2 \times 10^3 \text{ kgm}^{-3}$. (Take $g = 9.8 \text{ ms}^{-2}$) [2]
- d) What do you understand by the term neutral points? [2]
- e) What is meant by lateral inversion of an image in a plane mirror? [2]

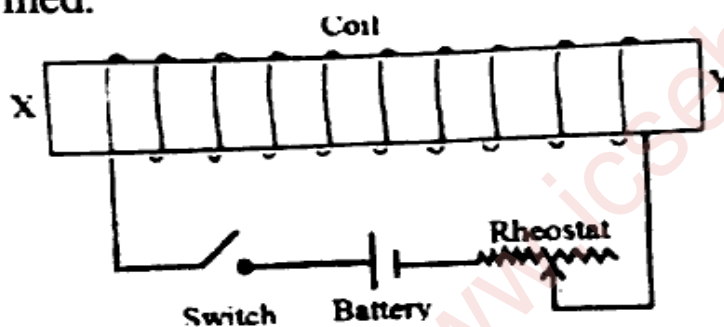
Section-B

(Attempt any four questions from this Section)

4. a) A force acts for 0.1 s on a body of mass 2.0 kg initially at rest. The force is then withdrawn and the body moves with a velocity of 2 ms^{-1} . Find the magnitude of force. [3]

(P.T.O.)

8. a) A body of volume 100 cm^3 weighs 1 kgf in air. Find:
- Its weight in water
 - Its relative density
- b) State the principle of floatation.
- c) Draw a ray diagram to show the formation of image by a concave mirror for an object placed between its pole and focus. State three characteristics of the image. [4]
9. a) The figure given below shows a coil wound around a soft iron bar XY.
- State the polarity at the ends X and Y as the switch is pressed.
 - Suggest one way of increasing the strength of the electromagnet so formed. [3]



- b) Prove that upthrust is equal to the weight of liquid displaced by the submerged part of the body. [3]
- c) The following table represents the velocity of a moving body at different intervals of time: [4]

Times (s)	0	5	10	15	20	25	30
Velocity (m/s)	10	15	20	20	30	15	0

Draw the velocity-time graph and answer the following:

- For which interval of time the body has a uniform motion?
- For which interval of time the body has the accelerated motion? Find the acceleration.
- For which interval of time, the body has retardation? Find the retardation.
