



ICSE SEMESTER 2 EXAMINATION

1st Preliminary Assessment, 2021-22

PHYSICS

Science Paper 1

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25-2-22

Maximum Marks: 40 ✓

Time allowed: One and a half hours

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

You will not be allowed to write during the first 10 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.

Attempt **all** questions from **Section A** and **any three** questions from **Section B**.
The intended marks for questions or parts of questions are given in brackets [].

Section A (10 Marks)

(Attempt **all** questions from this section)

Question 1. Choose the correct answers to the question from the given options [1x10=10]

Density of air higher at?

- | | |
|-------------------------------------|------------------|
| i) Rarefaction | b) Compression |
| c) Compression and rarefaction both | d) All of these. |

ii) Unit of electric power may also be expressed as

- | | |
|----------------|------------------|
| a) volt ampere | b) kilowatt hour |
| c) watt second | d) joule second |

iii) What are the commercial units of electrical energy?

- | | |
|------------------|-------------------|
| a) Watt second | b) watt hour |
| c) kilowatt-hour | d) Both b) and c) |

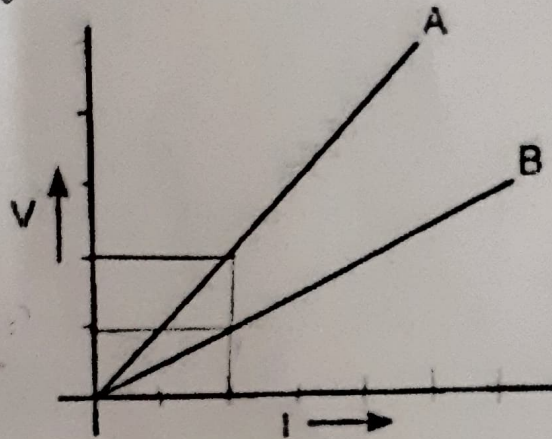
iv) An electric iron draws a current of 4 A when connected to a 220 V main. Its resistance must be

- | | |
|------------------|------------------|
| a) 1000 Ω | b) 55 Ω |
| c) 44 Ω | d) None of these |

v) Lenz's law is a consequence of the law of conservation of

- a) Charge
- b) Mass
- c) Energy
- d) Momentum

vi) V-I graph for two wires A and B are shown in the figure. If both wires are of same length and same thickness, which of the two has high resistance



- a) Wire A
- b) Wire B
- c) Both A and B
- d) None of these

vii) No force acts on a current carrying conductor when it is placed-

- a) perpendicular to the magnetic field
- b) parallel to the magnetic field
- c) far away from the magnetic field
- d) inside a magnetic field

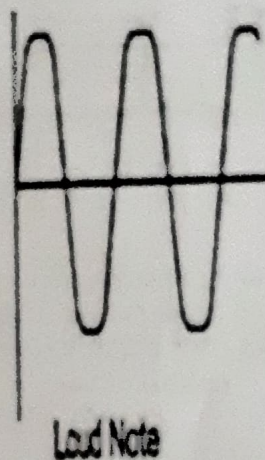
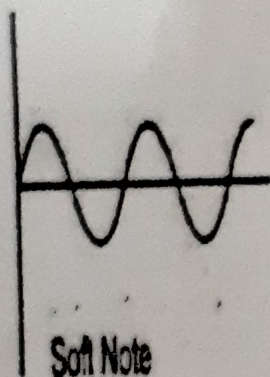
viii) **Statement A:** During winter, a farmer waters his crops during the evening, to prevent damage to the crop from frost. **Statement B:** Water has high specific heat capacity. State which statement/s is true.

- a) Both A and B are true
- b) A is true but B is false.
- c) A is false but B is true
- d) Both A and B are false

ix) The nuclear radiation which gets deflected towards positively charged plate in an electric field is:

- a) Alpha
- b) Beta
- c) Gamma
- d) infrared

x) From the figure below, Displacement-Time graph of two waves indicates:



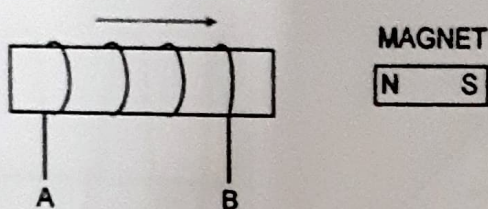
- a) Loudness depends on softness of sound
- b) Loudness depends on amplitude
- c) Loudness depends on frequency
- d) Loudness depends on pitch of sound

Section B (30 Marks)

(Attempt any three questions from this section)

Question 2.

- (i) The diagram below shows a coil of several turns of copper wire near a magnet NS. The coil is moved in the direction of arrow shown in the diagram. [3]



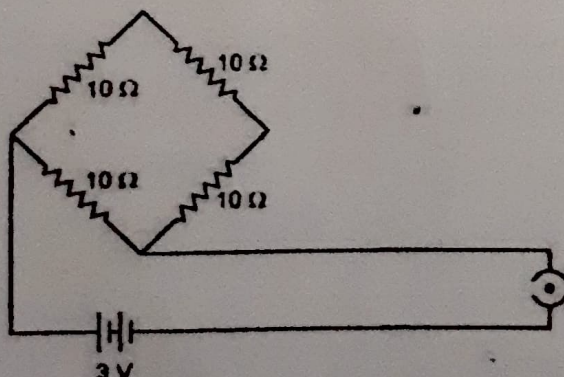
- (a) In what direction does the induced current flow in the coil?
(b) Name the law used to arrive at the conclusion in part (a).
(c) How would the current in coil be altered if the coil has twice the number of turns,

(ii)

- (a) Name the material of which calorimeter is made of.
(b) Give two reasons for using the material stated by you.

(iii)

- In the network of four resistors shown below
(a) Calculate the equivalent resistance in the circuit.
(b) Find the current drawn from the battery of 3V joined in the circuit.



[3]

[3]

[4]

[3]

[3]

[4]

Question 3.

(i)

A solid of mass 80 g at 80°C is dropped in 400 g of water at 10°C . If final temperature of mixture is 30°C , find the specific heat capacity of the solid.

(ii)

(a) At what voltage is the electric power from the generating station transmitted? Give reason.

(b) What is the nature of current transmitted from the power station?

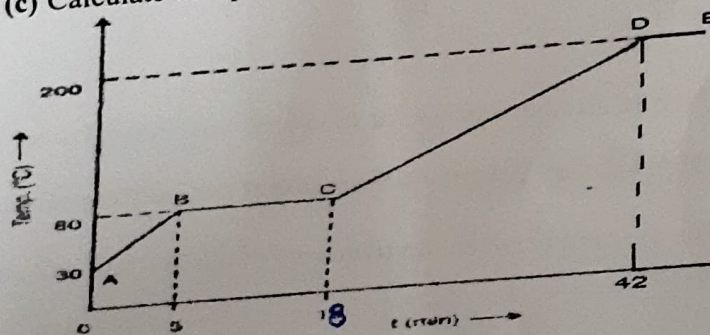
(iii)

A solid of mass 100 g is heated with a burner which is supplying heat at the rate of 100 J/s . The graph in figure shows the changes that take place.

(a) What is the melting point of the substance?

(b) What is the boiling point of the substance?

(c) Calculate the specific heat capacity of the solid.



Question 4.

(i)

(a) What do you understand by free vibrations of a body?

(b) Draw a displacement-time graph to represent free vibrations. Give one example of free vibration.

(ii)

(a) What is Fleming's left hand rule?

(b) Write two uses of electromagnet.

(iii)

A radioactive source emits three types of radiations

(a) Name the radiation of zero mass.

(b) Name the radiation which has the highest ionizing power.

(c) Which is the highly energetic electromagnetic radiation?

(d) Which radiation is of mass equal to the mass of electron?

Question.5

(i).

When a tuning fork, struck by a rubber pad is held over a length of air column in a tube. It produces a loud sound for a fixed length of the air column.

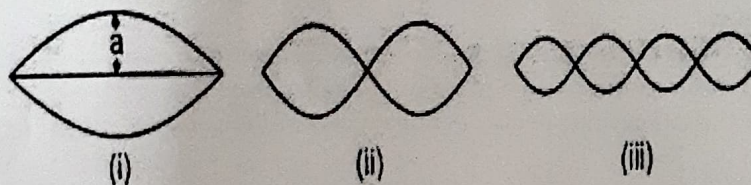
[3]

- Name the above phenomena.
- How does the frequency of the loud sound compare with that of the tuning fork?
- State the unit for measuring loudness.

(ii)

The diagram below shows three ways in which the string of an instrument can vibrate.

[3]



- Which of the above diagrams shows the fundamental note?
- Which has the frequency 4 times that of the fundamental?
- State the ratio between the frequency of the first and second vibration.

(iii)

(a) Write one factor which affects the internal resistance of a cell.

[4]

(b) A cell of e.m.f. \mathcal{E} and internal resistance r sends current 1.0 A when it is connected to an external resistance 1.9 Ω . But it sends current 0.5 A when it is connected to an external resistance of 3.9 Ω . Calculate the values of \mathcal{E} and r .

Question.6

(i)

(a) State two factors on which the magnitude of induced e.m.f in a coil depends.

[3]

(b) What kind of energy change takes place when a magnet is moved towards a coil having a galvanometer between its ends.

(ii)

(a) Write two safety precautions for plug and socket.

[3]

(b) Draw a labeled diagram of a three pin plug.

[Type text]

[4]

(iii)

(a) When ice in a frozen lake starts melting, its surrounding becomes very cold. Explain

(b) How does the (i) average kinetic energy (ii) average potential energy of molecules of a substance change during its change in phase at a constant temperature on heating?