Std: X
Sci-1(Phy.)
16.02.22

ARYA VIDYA MANDIR GROUP OF SCHOOLS
PRELIMINARY REVIEW – February 2022

SCIENCE PAPER -1 (PHYSICS)

Marks: 40
Time: 1 1/2 hrs

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 reading the question paper.
The time given at the head of this paper is the time allowed for writing the answers.

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*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 [ ].
*This paper consists of **5** printed pages*

SECTION A

(Attempt **all** questions.)

Question 1:

Choose the correct options from the following:

a) The S.I. unit of heat capacity is
i) J kg^{-1} ii) J K^{-1}
iii) J K^{-1} kg^{-1} iv) cal C

b) The atoms of the same element, having the same atomic number, but different mass number are called_____.
i) Isotopes ii) Isobar
iii)Isotones iv) Iso Quartz

c) Higher the current rating, _____is the fuse wire.
i)Shorter ii) Thicker
iii) Thinner iv) Longer

d) When a cell is in use _____energy is converted to _____ energy.
i) Electric , Chemical ii)Chemical , Electrical
iii) Heat , kinetic iv) kinetic , potential

e) Slope of the I-V graph represents _____.
i) resistance ii) conductance
iii) resistivity iv) conductivity

f) Which of the following statement is correct:
i) Switch wire is connected to neutral wire.
ii) Tungsten has a low melting point so it is used in the filament of the bulb.
iii) Color coding for earth wire is green or yellow.
iv) High tension wires are thin wires.

g) 'The relation between the electromotive force of a cell and the terminal voltage when the current flows through the circuit is as follows:
i) electromotive force <terminal voltage ii) electromotive force = terminal voltage
iii) electromotive force > terminal voltage iv) electromotive force not equal to terminal voltage

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h) Identify the incorrect statement from the following statements:
h) In our houses, we have an electric supply of 50 Hz.
ii) It is easy to change a.c. into d.c.
iii) It is cheaper and easy to generate d.c. than a.c.
iv) The efficiency of an a.c generator is higher than that of a d.c. generator.

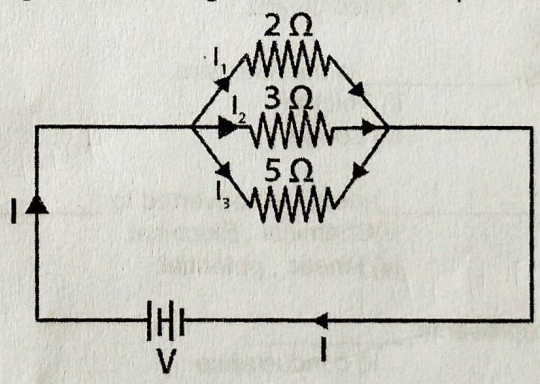
i) The factor that determines the pitch of a note is _____.
i) wavelength
ii) frequency
iii) amplitude
iv) waveform

j) In resonance, the frequency of driving force is _____ to the natural frequency of the driven force.
i) Less than
ii) more than
iii) equal to
iv) none of the above

Section B
(Attempt **any three** questions from this Section.)

Question 2:

a) Three resistors of values 2 ohm , 3ohm and 5 ohm are arranged as given in the diagram. [3]
i) Calculate the total resistance across the circuit.
ii) State one advantage of connecting the resistors in the parallel circuit.



b) i) State one point of difference between Heat Capacity and Specific Heat Capacity. [3]
ii) In cold countries water in lakes and ponds does not freeze all at once.Give reason.

c) The diagram in the figure shows a small magnet placed near a solenoid AB with its north pole N near the end A. Current is switched on in the solenoid by pressing the key K. [4]
i) State the polarity at points A and B.
ii)Will the magnet get attracted or repel.Give reason for your answer.

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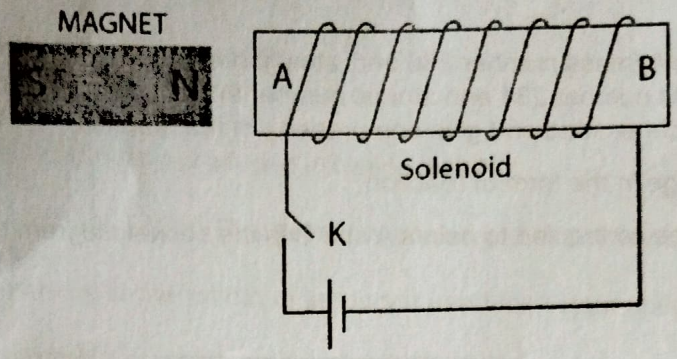
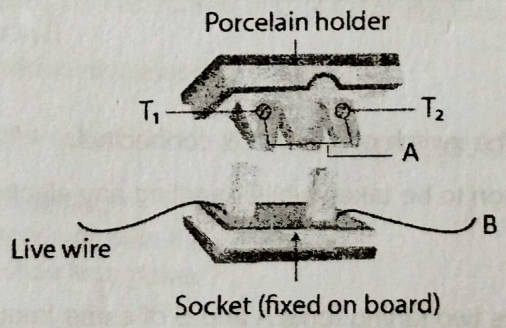


Question 3:

a) 1 kg of ice at 0^0 C is heated at a constant rate and its temperature is recorded after every 30 seconds till steam is formed at 100^0 C. Draw a temperature-time graph to represent the change of phases. [3]

b) i) In the diagram below, Identify the wire A. [3]

ii) State two characteristics of wire A.



c) An electric heater of power 750 W raises the temperature of 5.0 kg of a liquid from 25^0C to 35^0C in 100 s. Calculate: [4]

(i) the heat capacity of 5.0 kg of liquid, and

(ii) the specific heat capacity of liquid.

Question 4:

a)i) State the Right hand thumb rule. [3]

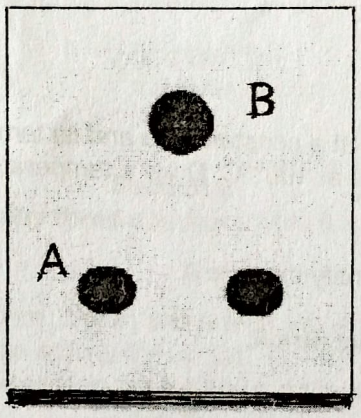
ii)State the two factors affecting the magnitude of induced e.m.f.

b)A certain nucleus A (mass number 238 and atomic number 92) is radioactive and becomes a nucleus B (mass number 234 and atomic number 90) by the emission of a particle. [3]

i) Name the particle emitted and give one property of that particle.

ii) State the change in the form of reaction.

c) i) Identify the wires connected to points A and B in the socket diagram given below. [4]

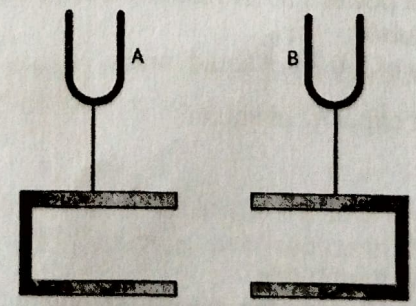


ii) Name the wire to which the switch of a circuit is connected.

iii) Give one safety precaution to be taken while handling any electrical device.

Question 5:

a) The figure given below shows two tuning forks A and B of same frequency mounted on two separate sound boxes with their open ends facing each other.The fork B is set into vibration. [3]



i) Name the type of vibrations created in :
1] sound box of tuning fork B
2] Tuning fork A
ii) Define the type of vibration produced in tuning fork A.

b) A geyser is rated 1000W, 230 V. This geyser is connected to 230 V mains. Calculate: [3]
i) the current drawn
ii) the energy consumed in the month of january if used for 1 hour daily.

c) i) A thick copper utensil is used for cooking food. Give reason for your answer. [4]
ii) A radioactive source emits three types of radiation.
1] Name the radiation with zero mass.
2] Name the radiation which has the lowest penetrating power.

Question 6:

a) A radioactive source is kept at the center of an evacuated spherical vessel made of wood. [3]
i) Out of alpha, beta and gamma radiations, name the radiations which are safe? Why?
ii) Does evacuation of vessel help in safety?

b) A tuning fork of frequency 256 Hz is struck and placed in front of the microphone and a note of frequency 256 Hz is produced by a guitar in front of the microphone. [3]
i) Will the traces obtained on the screen of C.R.O for the two cases be the same or different?
ii) Justify your answer in i)
iii) Define the phenomenon discussed in i)

c) Two devices A and B are rated 100 W, 220 V and 50 W,220 V respectively. They are connected. [4]
across 220V sources in series.
i) Compare the resistances of both the devices.
ii) Which device consumes less power?

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