LILAVATIBAI PODAR HIGH SCHOOL , ISC
PRELIMINARY EXAMINATION – II – 2021-2022

Subject :- Physics | Grade :- 10

Points :- 40 | Time :- 1 Hr. 30 mins.

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

You will not be allowed to write for 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 to write the answers.

Attempt **ALL** questions from **section A** and **any THREE** from **Section B**

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

SECTION A
(Attempt **ALL** questions)

Question 1

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

(i) The frequency of a note with high pitch is greater than the frequency of a note with a low pitch. Which of the following statement about the high pitch is correct ? [1]

(a) it has smaller wavelength. (b) it has larger wavelength.
(c) it has greater speed. (d) it has lower speed.

(ii) With reference to the series connections , which of the following statements is true ? [1]

(a) potential difference across all the resistors is same.
(b) current flowing through all resistors is same.
(c) the equivalent resistor is less than the individual resistors.
(d) the equivalent resistor is equal to the individual resistor.

(iii) In a three pin plug the live pin is :- [1]

(a) thin and is towards right (b) thick and towards the right
(c) thin and is towards left (d) thick and is towards left

(iv) On reversing the direction of current in a wire , the magnetic field produced by it :- [1]

(a) gets reversed in direction
(b) increases in strength.
(c) decreases in strength
(d) remains same in strength and direction.

(v) The direction of a current in a conductor can be obtained by :- [1]

(a) Flemings left hand rule
(b) Flemings's right hand rule
(c) Right Hand Thumb Rule
(d) Clock rule.

(vi) A solid of mass 0.15 kg is heated from 10°C to 90°C. If the specific heat capacity of the solid is 390 J kg^{-1} K^{-1} , then the heat absorbed by the solid will be :- [1]

(a) 6280 J
(b) 4280 J
(c) 4680 J
(d) 5740 J

(vii) The amount of heat energy required to melt a given mass of substance at it's melting point without any rise in temperature is called :- [1]

(a) specific heat capacity
(b) specific latent heat of fusion
(c) latent heat of fusion
(d) specific latent heat of freezing

(viii) Which of the following radiations is most ionizing ? [1]

(a) α – rays
(b) γ – rays
(c) β – rays
(d) X – rays

(ix) The amplitude of a sound wave is increased from 1 mm to 2 mm. The loudness of the sound will :- [1]

(a) increases by four times
(b) increases by double
(c) decreases by two times
(d) remains same.

(x) During the α – emission :- [1]

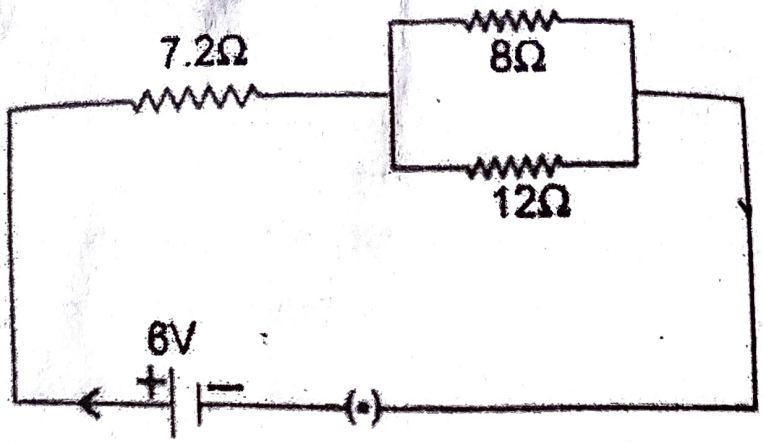
(a) the mass number and atomic number decreases by 2
(b) the mass number decreases by 2 and atomic number decreases by 4
(c) mass number remains same and atomic number increases by 1
(d) atomic number decreases by 2 and mass number decreases by 4.

SECTION B

(Attempt **any three** questions from this section)

Question 2

(i) Three resistors are connected to a 6 V battery as shown in the diagram below. [3]



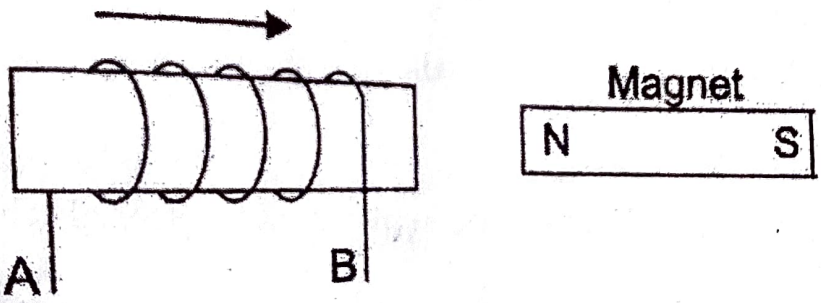
Calculate :- (a) the equivalent resistance in the circuit.

(b) the total current flowing in the circuit.

(ii) (a) A certain amount of heat Q will warm 1 g of material X by 3°C and 1 g of material Y by 4°C. Which material has high specific heat capacity ? [3]

(b) Why does a bottle of soft drink cools faster when surrounded by ice cubes than ice cooled water , both at 0° C ?

(iii)



In the diagram above the arrow indicates the motion of a coil towards the bar magnet. [4]

(a) State in which direction the current will flow A to B or B to A.

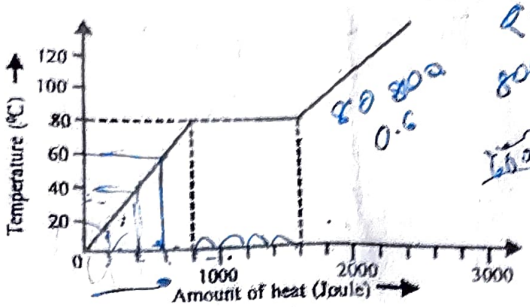
(b) Name the law used to come to conclusion for answer in (a)

(c) State the law mentioned in (b) above.

(d) State any one way of increasing the strength of magnetic field of a electromagnet.

Question 3

(i)

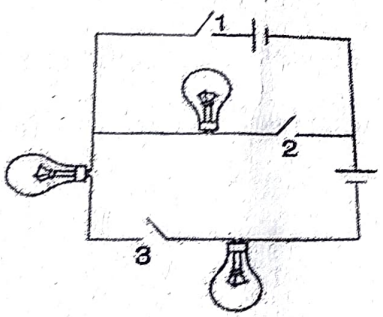


A solid initially at 0°C is provided with heat. A graph of temperature Vs heat provided is shown in the above diagram. If the specific heat capacity of the solid is 0.6 J g^{-1} K^{-1} , then from the graph calculate :- [3]

(a) mass of the solid.

(b) the specific latent heat of fusion of the solid.

(ii)



In the above diagram 3 lamps and three switches are shown connected to two cells. [3]

(a) Name the switch / switches that must be kept closed so as to light all the three bulbs.

(b) How are the lamps connected :- in series or in parallel ?

(iii) The specific heat capacity of substance A is 3.8 J g^{-1} K^{-1} and the specific heat capacity of the other substance B is 0.4 J g^{-1} K^{-1} . [4]

(a) Which of the two is a good conductor of heat ?

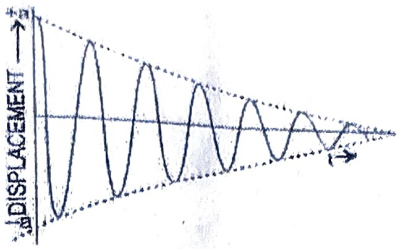
(b) Give reason for the answer given by you in (a) above ?

(c) If substance A and B are liquid then which will be useful in car radiators ?

(d) What is the principle of calorimetry ?

Question 4

(i) The diagram below shows a displacement – time graph of a vibrating body in a medium. [3]



(a) Name the type of vibrations produced in the vibrating body.

(b) Why does the amplitude of the wave gradually decrease ?

(c) What will happen to the vibrations of the body after some time ?

(ii) (a) State the Faradays laws of electromagnetic induction. [3]

(b) Name one device that works on this principle.

(iii) A certain nucleus X has mass number 14 and atomic number 6. The nucleus X changes to $^{14}Y_7$ after loss of one particle. [4]

(a) Name the particle.

(b) Represent the change in form of an equation.

(c) A radioactive substance is oxidized, what change would you expect to take place in nature of its radioactivity ? Give reason for your answer.

Question 5

(i) (a) What is a fuse ? [3]

(b) Name the principle on which it works .

(c) Name the material of which the fuse wire is made up of .

(ii) (a) Define quality of a sound wave. [3]

(b) State any two ways by which the frequency of vibrations in a string instrument can be decreased.

(iii) (a) Karthik is surprised to see water boiling at 115° C in a container. Give any two reasons as to why water will boil at the said temperature ? [4]

(b) State any one use of radio isotope in field of medicines and in industries.