

GREENLAWNS HIGH SCHOOL
PHYSICS FINAL EXAMINATION 2023-24

STD. 9

TIME: 2 HRS.

DATE: 12/02/2024

MARKS: 80

NOTE:

- 1] Answer to this paper must be written on the paper provided separately.
- 2] You will not be allowed to write during the first 10 minutes. This time is to be spent in reading the paper.
- 3] The time given at the head of this paper is the time allowed for writing the answers. This paper has 4 pages(7 sides).
- 4] Section A is compulsory. Attempt any 4 complete questions from Section B.
- 5] Numerical answers should be in SI unit.
- 6] The intended marks for a question or parts of questions are given in the brackets [].

SECTION A [40 MARKS]

ALL QUESTIONS IN THIS SECTION ARE COMPULSORY.

QUESTION 1

Choose the most correct answers to the questions from the given options:

[15]

- i) The energy which flows from a hot body to a cold body is called
- a) Potential energy b) fuel energy c) internal energy
d) mechanical energy
- ii) The food chain begins with
- a) respiration b) photosynthesis c) digestion d) decomposition
- iii) The ultimate source of energy is the
- a) Petrol b) Water c) Wind d) Sun

Contd.....

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iv) The increase of Carbon dioxide gas in the atmosphere will cause

- a) decrease in temperature
- b) decrease in humidity
- c) increase in temperature
- d) increase in humidity

v) The image formed by a plane mirror is

- a) erect and diminished
- b) erect and enlarged
- c) erect and of same size
- d) inverted and same size

vi) In a barber's shop, two plane mirrors are placed

- a) at an angle of 45° between them
- b) at an angle of 60° between them
- c) perpendicular to each other
- d) parallel to each other

vii) The wrong rule/s of sign convention from the rules given below is/are:

- 1) The distances measured along the principal axis in the direction of incident light are negative.
 - 2) All distances are measured from the centre of curvature of the mirror taken as origin.
 - 3) The distances above the principal axis are taken positive.
- a) 1 & 2 b) 2 & 3 c) 1 & 3 d) All three

viii) The SI unit of the wavelength is

- a) hertz
- b) lambda
- c) ampere
- d) metre

ix) The speed of ultrasound in air is

- a) equal to the speed of light
- b) less than the speed of the audible sound
- c) more than the speed of the audible sound
- d) the same as the audible sound

x) An insulator of an electricity is

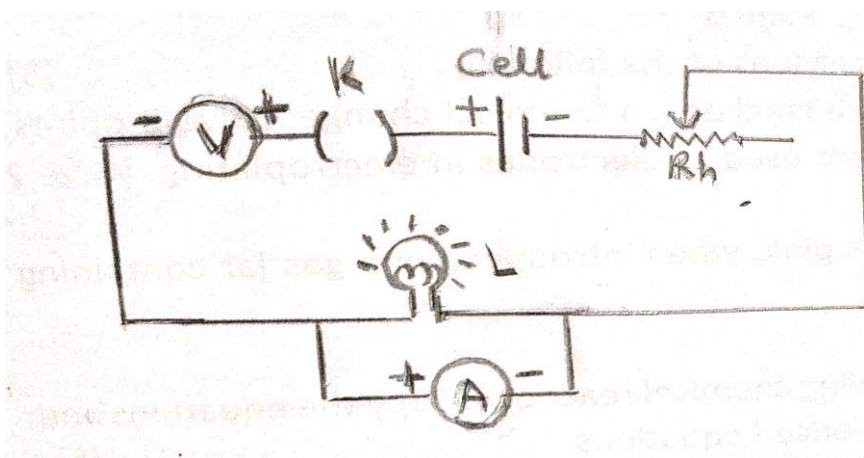
- a) Graphite
- b) impure water
- c) silk
- d) human body

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- xi) The most non-polluting and efficient lighting device is
a) CFL b) LED c) Fluorescent light d) Electric bulb
- xii) The sum of all magnetic fields adds up to zero at the
a) Equator b) Neutral points c) North pole d) South pole
- xiii) The energy conversion in a cell when it is in working condition is
a) mechanical to chemical b) chemical to electrical
c) heat to chemical d) electrical to chemical
- xiv) For sound to travel through medium, it need not
a) be rigid b) be elastic c) possess inertia d) be frictionless
- xv) For a ray incident normally on a plane mirror, the angle of reflection is
a) 0° b) 30° c) 45° d) 90°

QUESTION 2

- A] i) What does the Hope's apparatus demonstrate? [2]
ii) State one consequence of it observed in the nature. Do not describe it in detail.
- B] Find the error/s in the circuit and draw the correct circuit diagram. [2]

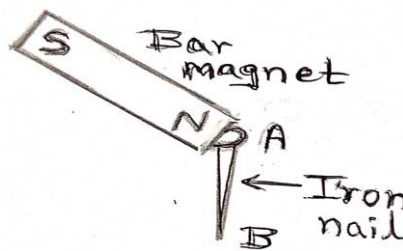


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- C] When a conductor is said to have: [2]
a) Negative potential (lower potential) b) Positive potential (higher potential)?
- D]i) When does a ray of light retraces its path after falling on the aperture [2]
of a concave mirror?
- ii) Which type of a mirror gives virtual, erect and magnified image of an object kept in front of it?
- E] State any two Policy measures to be taken to reduce the impact of [2]
global warming.
- F] The frequency of a source of sound is 50 Hz. How many times does it [2]
vibrate in a minute?
- G] Give any three characteristics of a source of energy. [3]

QUESTION 3

- A] Draw the mirror image of the word INDIA when it is placed in front of [2]
a plane mirror.
- B] A convex mirror has a diameter of 40 cm. What will be its focal length? [2]
- C] Name the SI unit of current. Write its relation with the number of [2]
electrons per second.
- D] Observe the given figure and answer the questions that follow: [2]



- i) Name the process shown in the figure.
- ii) Write the polarity at both the ends of an iron nail.
- E] Statement: The energy transfer in an ecosystem is not 100% efficient. [2]
i) Which law of the thermodynamics explains the above statement?
- ii) State the law mentioned by you in Q.3 E-i.

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SECTION B [40 MARKS]

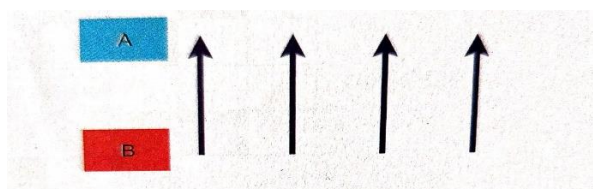
ATTEMPT ANY 4 COMPLETE QUESTIONS FROM THIS SECTION

QUESTION 4

A] Give the requisites of the material medium in case of propagation of sound through it in each of the following cases: [3]

- i) For the particles of the medium to come back to their initial positions after displacement on either side.
- ii) For the particles of the medium to store the mechanical energy.
- iii) For no loss of energy in the propagation.

B] The figure below shows the magnetic field lines of the earth in a limited space, Study the figure and answer the questions that follow: [3]



- i) Are the magnetic field lines uniform or non-uniform?
 - ii) Write the nature of the magnetic field lines.
 - iii) Where is the position of geographic North, at point A or point B?
- C]** i) How many electrons pass through a lamp in one minute if the current is 200mA? [2]
- ii) State two ways to save energy. [2]

QUESTION 5

A] Which type of source is the solar energy- Conventional or Non-conventional Give one advantage and one disadvantage of use of solar energy. [3]

B] i) Which type of reflection is observed when the rays of light get reflected from a curtain? [3]

- ii) Are the laws of reflection obeyed in such type of reflection?
- iii) How is the reflection mentioned by you in Q.5 B-i, useful to us?

C] i) Draw a neat labelled ray diagram of the image formed by a converging mirror when an object is placed in front of it beyond the centre of curvature at a finite distance. [3]

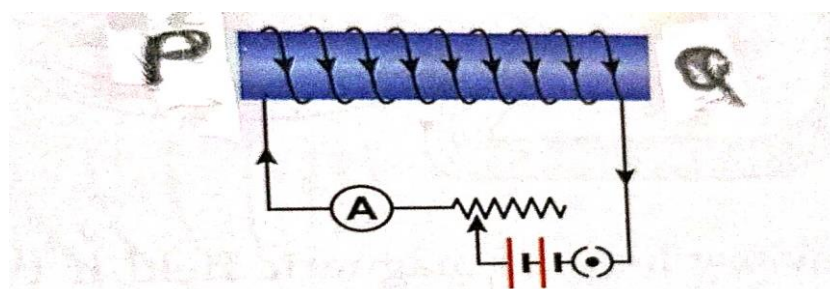
- ii) Write the nature of the image formed in Q.5 C- i [1]

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QUESTION 6

A] A convex mirror forms an erect image of an object of size one-third the size of object. If the radius of curvature of a convex mirror is 36 cm, find the position of the object. [3]

B] The figure given below represents I shaped electromagnet. Study the figure and answer the questions that follow: [3]



- i) State the polarity at ends P and Q of the given electromagnet.
- ii) Justify your answer in Q.6 B- i.
- iii) Give one way in which the strength of the magnetic field of an electromagnet can be increased.

C] A source of sound produces 500 compressions and 500 rarefactions in air in 30 s. Find the i) frequency ii) wavelength of sound produced. (Velocity of sound in air = 330 ms^{-1}) [4]

QUESTION 7

A] Distinguish between the following pairs on the basis of what is given the brackets. [3]

- i) Heat and Temperature (factors on which it depends)
- ii) Real image and Virtual image (how it is formed?)
- iii) Primary cell and Secondary cell (internal resistance)

B] Which magnet Nisha will select for the research purpose- A permanent magnet or an electromagnet? Why? (Give 2 points) [3]

C] Draw the symbols of the following: [4]

- i) Battery
- ii) Fixed resistance
- iii) Open tapping key
- iv) A.C. Source

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QUESTION 8

A] How is the resistance of a conductor depends on the following factors? [3]

- i) length of a conductor
- ii) temperature of a conductor
- iii) area of cross section of a conductor

B] Define: [3]

- i) Global warming
- ii) Lateral inversion
- iii) Potential difference

C] Name the following: [4]

- i) The type of a current of constant magnitude flowing in one direction.
- ii) A spherical mirror used as a doctor's head mirror.
- iii) The geometric centre of the spherical surface of mirror.
- iv) The method to detect and find the distance of objects under water using ultrasound.

BEST OF LUCK