

**KANNUR DISTRICT PANCHAYAT**  
**DIET KANNUR-SAMAGRA SHIKSHA KERALA-KANNUR**  
**SAMAGRA VIDHYABHYASA PROJECT**  
**SMILE 2023-SSLC Annual Examination February 2023**  
**PHYSICS**

Time: 1½ Hours

Total Score:40

**GENERAL INSTRUCTIONS:**

- The first 15 minutes is cool off time. You may use the time to read and plan your answers.
- Answer the questions only after reading the instructions and questions thoroughly.
- Questions with marks respectively 1,2,3 and 4 are categorised as sections A,B,C and D.
- Five questions are given in each section. Answer any four from each section.
- Answer each question by keeping the time.

**SECTION A**(Answer any FOUR questions from 1 to 5. Each question carries 1 score)

1. Identify the relation between the first pair and complete the second pair  
 Biogas : Methane :: LPG :..... (1)
2. Which law helps to find the direction of magnetic field around a straight conductor carrying current ? (1)
3. The mid point of a lens is known as.....  
 ( pole , optic centre, centre of curvature , principal focus ) (1)
4. A concave mirror is used as shaving mirror. Identify the reason from the given statements (1)
  - a) Converges distant rays to the principal focus
  - b) Reflect the rays coming from principal focus as parallel rays
  - c) Enlarged and erect images are formed when the object is placed between focus and pole
5. When an object is viewed, the image remains in the retina of our eye for a time interval of  $\frac{1}{16}$  s (0.0625 s). In which name this property of eye is known? (1)

**SECTION B**(Answer any FOUR questions from 6 to 10. Each question carries 2 score)

6. LED bulbs are the light sources that gives more light . (2)
  - a) What is the full form of LED?
  - b) Write down any two merits of LED, apart from giving more light.
7. In a device, split rings helps to change the direction of current to armature after each half rotation. (2)
  - a) In which device split rings works like this ?
  - b) What is the energy transformation taking place in this device?
8. Statements related to magnetism of a **bar magnet** and a **current carrying solenoid** are given below. Classify them suitably. (2)
  - Magnetism is temporary
  - Poles are permanent
  - Polarity can be changed
  - Magnetic strength cannot be changed
9. An emf is induced in a coil when magnetic flux linked with it changes.
  - a) Write down any two factors that affect the induced emf ? (1)
  - b) Which law helps to find the direction of induced current. (1)

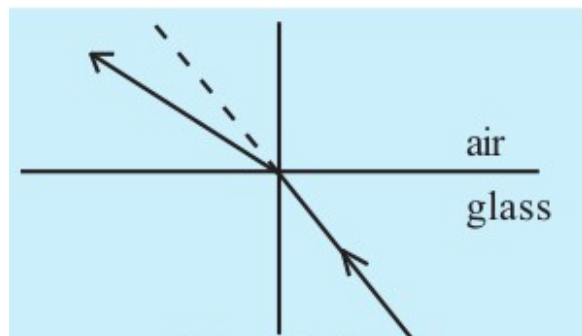
10. The table related to the image formation in a concave mirror is given below. Fill the missing data. (2)

Position of object	Position of image	Size of the image
At C	At C	.....(a).....
.....(b).....	Beyond C	Magnified
Beyond C	.....(c).....	Diminished
.....(d).....	Behind the mirror	Magnified

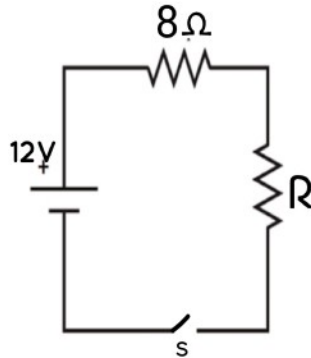
### SECTION C

(Answer any FOUR questions from 11 to 15. Each question carries 3 score)

11. Safety fuse is a device that protect us and the appliances from the danger when excess current flows through a circuit.
- Which are the two circumstances that cause excess current in a circuit? (1)
  - Explain the working of a safety fuse. (2)
12. An object is kept at a distance of 15 cm away from a concave mirror. A real image is formed 10 cm away from the mirror.
- Calculate the focal length of this mirror? (2)
  - Calculate the magnification of the image? (1)
13. The ray diagram of the refraction of light from glass to air is depicted.



- What is the angle of refraction when the angle of incidence in glass is  $42^\circ$ ? (1)
  - Name the phenomenon that happens when the angle of incidence becomes more than  $42^\circ$  (1)
  - Write any two practical applications of this phenomenon. (1)
14. Energy sources are classified as Green Energy and Brown Energy.
- What is the basis of this classification? (1)
  - Classify the energy sources given below as **Green energy** and **Brown energy**. (2)  
(atomic reactor, solar cell, biogas, thermal power station)
15. A person suffering from problem in vision met a doctor. In the prescription it was written as **-2.25 D** for buying spectacles.
- Which type of lens is prescribed here? (1)
  - What defect of eye does the person has? (1)
  - Write two reasons for this defect? (1)

**SECTION D**(Answer any FOUR questions from 16 to 20. Each question carries 4 score)16. Observe the circuit diagram.  $8\ \Omega$  resistor and an unknown resistor  $R$  are included in the circuit.

- a) In which way the resistors are connected in the circuit. (1)  
 b) If  $1\text{A}$  current is passing through the circuit, calculate the value of  $R$ . (1)  
 c) Calculate the heat generated in the  $8\ \Omega$  resistor if the switch is on for 50 s. (2)

17. Generators convert mechanical energy into electrical energy.

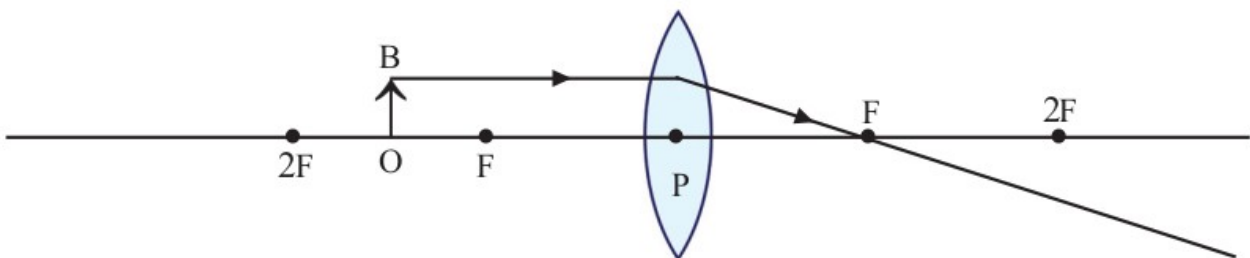
- a) Which part of an AC generator helps to take the output current? (1)  
 b) What change must be done in the structure of an AC generator so as to convert it into a DC generator? (1)  
 c) Draw the graph of the output emf obtained from AC and DC generators. (2)

18. A transformer converts 240 V AC into 12 V AC.

- a) What are such transformers called? (1)  
 b) In which coil of this transformer is thick wire used? (1)  
 c) The number of turns in the primary coil of this transformer is 6000. Calculate the number of turns in the secondary coil? (2)

19. Explain the reasons for the following statements.

- a) Dispersion occurs when sunlight passes through a prism. (2)  
 b) The sky appears blue in colour. (2)

20. Observe the ray diagram given below. An object  $OB$  is placed in front of a convex lens.

- a) Complete the ray diagram and find the position of the image. (2)  
 b) Write two features of the image. (1)  
 c) Where should the object  $OB$  be placed in order to get a magnified virtual image? (1)