

**KANNUR DISTRICT PANCHAYAT
DIET KANNUR
SSLC MUKULAM EXAMINATION JANUARY 2020
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

1. Identify the relation between the first pair, complete the second pair. (1)

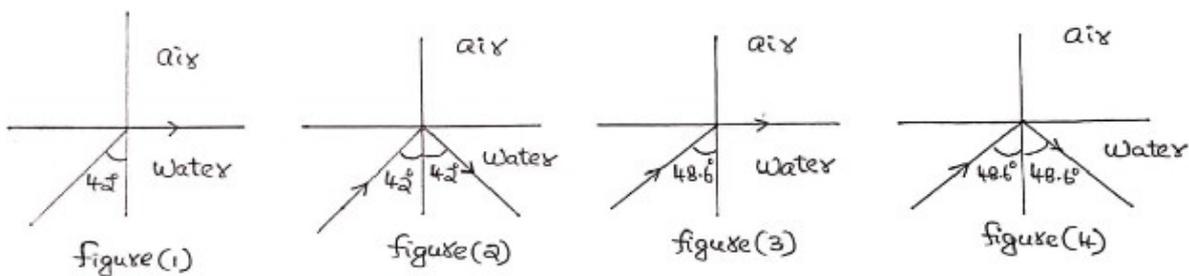
The phenomenon of splitting of composite light into its constituent colours: Dispersion
The phenomenon of seeing the path of light when light passes through a colloid:

2. What is the effective resistance when **two** 6Ω resistors are connected in parallel. (1)
(6Ω , 1Ω , 3Ω , 12Ω)

3. If 3 images can be seen of an object kept in between two plane mirrors , then the angle between the mirrors will be (1)
(90° , 120° , 60° , 180°)

4. Find the odd one out and give reason for your answer. (1)
(Peat, Lignite , coke, anthracite)

5. The figures given below shows a ray of light passing obliquely from water to air. Choose the the correct figure. (1)



SECTION B

6. When electric current is passed through a straight insulated conductor, a magnetic field is developed around it.

- a) Which law helps to find the direction of this magnetic field? (1)
b) In which name the insulated conductor known when it is wound in the shape of a helix . (1)

7. The electricity produced at 11kV in a power station is transmitted after increasing the voltage upto 220 kV.

a) Which type of transformer is used for this purpose ? (1)

b) Why the voltage is increased before power transmission ? (1)

8. Classify the given energy sources as green energy and brown energy. (2)

Solar cells, tidal energy, diesel engines, windmills

Green energy	Brown energy

9. Light pollution brings adverse effects in our environment

a) What is referred as light pollution? (1)

b) Write any two measures to reduce light pollution. (1)

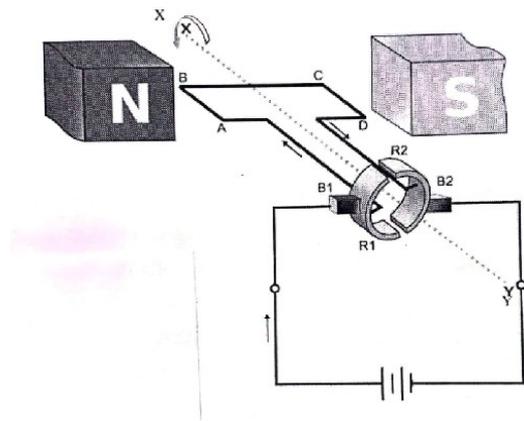
10. Biomass and biogas are considered as renewable energy sources.

a) How biogas is produced from biomass? (1)

b) Write any two advantages of biogas over biomass. (1)

SECTION C

11. The diagram of a DC generator is depicted.



a) Identify the part that helps to rotate the armature continuously. (1)

b) State motor principle. (1)

c) Write an example for another device which works on motor principle. (1)

12. A few statements related to the image formation in spherical mirrors are given below.

- Always forms diminished, virtual and erect images.
- Forms enlarged virtual images.
- Forms virtual images of same height as the object.
- Forms real images of same height as the object.

a) Convex mirror is used as rear view mirror in vehicles. Find its reason from the statements given above. (1)

b) Identify the statements related to concave mirrors. (2)

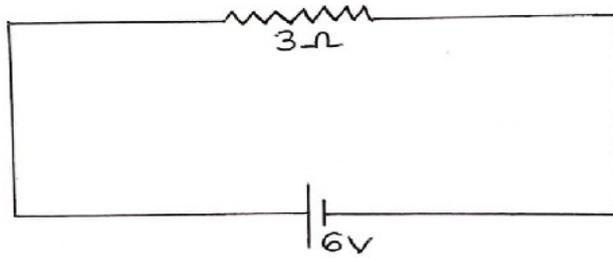
13. In a prescription given to a person by an eyespecialist, it is written as -2D (negative 2D)

a) What does 'D' indicate ? (1)

b) Which type of lens is prescribed by the doctor ? (1)

c) Calculate the focal length of this lens. (1)

14. A 3Ω resistor connected to a 6 V battery is shown in the circuit given below.



- a) Calculate the current in the circuit. (1)
 b) Draw a circuit diagram, by connecting another 3Ω resistor in the same circuit, so as to get the effective resistance decreased. (2)
 15. Match the items in columns A, B and C suitably. (3)

A	B	C
	Battery	Without changing direction, emf varies.
	DC generator	Direction and magnitude of emf changes continuously.
	AC generator	Obtain constant emf.

SECTION D

16. The heat generated in a current carrying conductor is directly proportional to the square of intensity of electric current.

- a) What are the other factors that influence the heat generated in a current carrying conductor? (1)
 b) Name the law related to this. (1)
 c) A heater having 400Ω resistance is connected in 200 V supply. If the heater is worked for 10 minutes, calculate the quantity of heat produced. (2)

17. When sunlight passes through the atmosphere, rays of light are reflected by tiny particles of the atmosphere.

- a) By which name this phenomenon is known as? (1)
- b) Which colour spreads maximum in the atmosphere due to this phenomenon? (1)
- c) During sunset, the horizon appears to have red colour. Explain the reason based on this phenomenon? (2)

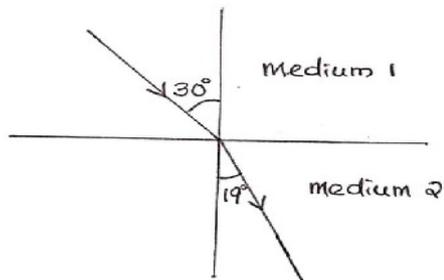
18. In a house, 6 LED lamps each of 15 W works for 5 hours and 2 fans each of 60 W works for 5 hours in a day.

- a) Write any two advantages of connecting electrical appliances in parallel in a house hold circuit. (1)
- b) Which device is used to measure electrical energy consumed in a house? (1)
- c) Calculate the electric energy consumed in this house in a day. (2)

19. When an object is placed in front of a spherical mirror of focal length 20 cm the magnification of the image is found to be -1 (negative 1).

- a) Which type of spherical mirror is this? (1)
- b) Write any two features of this image? (1)
- c) When the object is placed 45 cm away from the mirror, calculate the distance to the image from the mirror. (2)

20. Observe the figure related to refraction of light.



- a) Find out the angle of incident and angle of refraction. (1)
 - b) In the diagram, which medium has more optical density? (1)
 - c) Find out the refractive index of medium 2. (2)
- ($\sin 30^\circ = 1/2$, $\sin 19^\circ = 1/3$)