

Unit -1

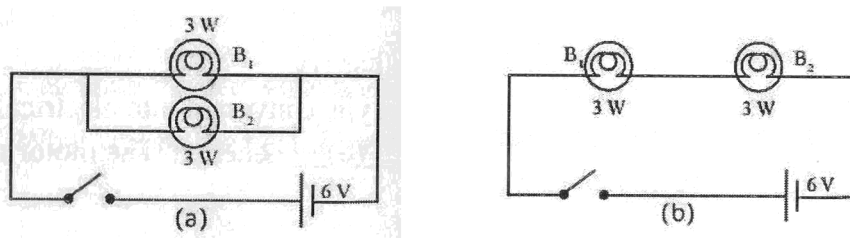
EFFECTS OF ELECTRIC CURRENT

Score : 40

Time : 1½ hr

Questions from 1 to 4 carries 1 score each.**(4 × 1 = 4)**

- Observe the relation in the first pair and complete the second pair.
Electric oven : Heating effect
Electric Mixie : _____
- Find the odd one out
a) Arc lamp b) CFL c) Sodium vapour lamp d) LED
- Observe the following circuits constructed using 3 W- 6 V bulbs.
When the switch is on, in which circuit the bulbs glow with more intensity?



- Amount of energy consumed in unit time is

Questions from 5 to 8 carries 2 score each.**(4 × 2 = 8)**

- Electrical energy can be converted to other forms of energy.
 - Write down the energy change in an LED bulb?
 - During lightning the fuse wire in house melts. Write the energy change happens in the fuse wire.
- Which peculiarities of nitrogen gas helps to fill it in incandescent lamps instead of inert gas
- Fill in the blanks.

The potential difference between two points will be one volt if one ___(a)___ of work is done in moving one coulomb of ___(b)___ from one point to the other.

- Find out Heating appliance from the list below.

Heater, soldering iron, Loudspeaker, electric kettle, cell, induction cooker, electric bulb.

Questions from 9 to 11 carries 3 score each.**(4 × 3 = 12)**

- Fill in the blanks.

A small motor is working with the help of a battery. When the battery is working _____(a)_____ energy is converted into electrical energy. Motor converts this electrical energy into _____(b)_____ energy. The motor make use of _____(c)_____ effect of electrical current.

10. 0.4 A current flows through a heating appliance which is connected to a 230 V supply.
- What is the resistance of the heating coil in this appliance?
 - Find out the heat developed in this appliance in 10 minute.
11. There are three resistors having $6\ \Omega$ resistance each.
- In which type of connection of resistors will give you the maximum effective resistance and how much is it?
 - In which way you will get the minimum effective resistance and how much is it?

Questions from 12 to 16 carries 4 score each.

(4 × 4= 16)

12. Suppose you decide to replace an incandescent lamp that is currently use in your house. Which will you prefer - CFL, incandescent lamp, Fluroscnt lamp or LED available in the market? Justify your answer?
13. a) Find the odd one out
Electric stove, electric bulb, soldering iron, electric heater
- What is the energy change in a storage battery while charging?
 - What is meant by the effect of electric current in a device?
 - Which effect of electric current is utilised in safety fuse?
14. 0.2 A current flows through a resistor of resistance $100\ \Omega$ for 2 minute.
- Calculate the heat generated?
 - What will be the heat if the resistance is changed to $200\ \Omega$ by keeping same current and time?
 - What will be the heat if current is doubled by keeping same resistance and time?
15. We can bring change in current and voltage in a circuit by connecting the resistors in different ways.
- What are the different ways that we can connect resistors in a circuit?
 - What will be the least resistance that you can get by using $2\ \Omega$, $4\ \Omega$ and $6\ \Omega$ resistors in a circuit. Draw the circuit.
 - When the above resistance are connected to 6 V battery in parallel. What will be the current through $2\ \Omega$ resistance?
16. Safety fuse is a device which protects us and the appliance from danger when excess current flows through the circuit.
- Which are the circumstances that cause high electric current?
 - How is fuse wire connected to a circuit? In series/parallel?
 - Which material is used to make fuse wire?
 - What are the peculiarities of above material?

Unit -1

EFFECTS OF ELECTRIC CURRENT**ANSWER KEY**

1. Mechanical effect
2. LED
3. (a)
4. Power
5. a) Electrical energy to Light energy
b) Electrical energy to heat energy
6. At normal temperature and pressure it behaves like an inert gas.
Small increase in temperature doesn't influence the expansion of nitrogen.
7. a) Joule
b) Charge
8. Heater, soldering iron, electric kettle, induction cooker.
9. a) Chemical energy
b) Mechanical energy
c) Mechanical effect
10. a) Resistance, $R = V/I$
 $= 230/0.4$
 $= 575 \Omega$
b) Heat developed, $H = VIt$
 $= 230 \times 0.4 \times 10 \times 60$
 $= 55200 \text{ J}$
11. a) Connect the resistance in series
 $R = rn = 6 \times 3 = 18$
b) Connect the resistance in parallel
 $R = r/n = 6 \div 3 = 2 \Omega$
12. ➤ LED
➤ High efficiency
➤ High longevity
➤ Low power consumption
➤ Not harmful to environment
13. a) Electric bulb
b) Electric energy to chemical energy.

c) The useful form of energy into which a device converts electrical energy, is considered as the effect of electric current on that device.

d) Heating effect.

14. a) $H = I^2Rt$

$$= 0.2 \times 0.2 \times 100 \times 2 \times 60 = 480 \text{ J}$$

b) $H = 0.2 \times 0.2 \times 200 \times 2 \times 60 = 960 \text{ J}$

c) $H = 0.4 \times 0.4 \times 100 \times 2 \times 60 = 1920 \text{ J}$

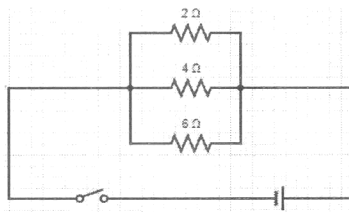
When current is doubled, the heat is increased by four times.

15. a) Series connection, Parallel connection

b) If the resistors are connected in parallel,

Effective resistance, $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} = \frac{1}{2} + \frac{1}{4} + \frac{1}{6} = \frac{11}{12}$

$$R = \frac{12}{11} = 1.09 \text{ } \Omega$$



c) $I = \frac{V}{R} = \frac{6}{2} = 3 \text{ A}$

16. a) Short Circuit and Overloading

b) In series

c) Alloy of tin and lead

d) Low melting point

Unit 2

MAGNETIC EFFECT OF ELECTRIC CURRENT

Score : 30
Time : 1 hr

Questions from 1 to 3 carries 1 score each. (3 × 1 = 3)

1. When electricity passes through a solenoid it acts like
2. Among the following which is not a part of electric motor?
(Permanent magnet, armature, voice coil, split ring)
3. Write the energy conversion in electric motor

Questions from 4 to 6 carries 2 score each. (3 × 2 = 6)

4. We can determine the polarity of a solenoid based on the direction of flow of current.

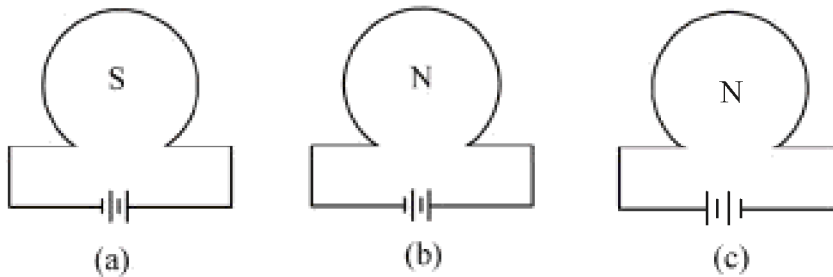
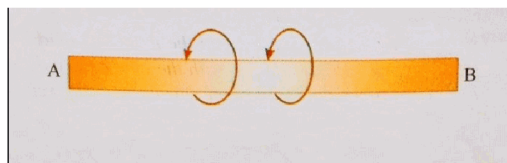
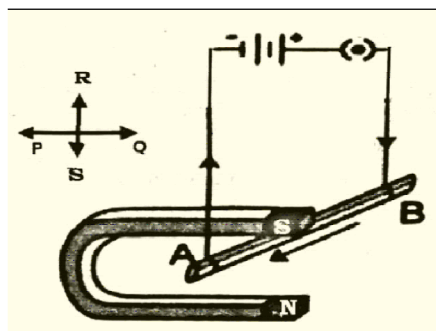


Figure relating to the polarity of a current carrying coil is given . Which is correct? Why?

5. The direction of magnetic field around a current carrying conductor AB is depicted.



- a. Find out the direction of current (From A to B / From B to A)
- b. Name the rule used to arrive at this inference.
6. Observe the picture given below and answer the following questions.



- a) In which direction the conductor AB moves when the switch is on?
 b) Which rule helps us to find the direction of movement of the conductor?

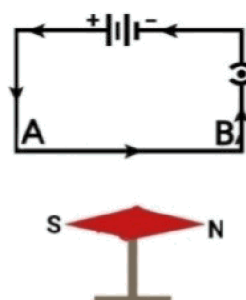
Question from 7 to 9 carries 3 score each.

(3 × 3 = 9)

7. Match of the following

i) To find direction of force in a current carrying conductor	a) Maxwells right hand thump rule
ii) To find direction of magnetic field around a current carrying conductor	b) Joule's law
iii) Direction of current in magnetic induction	c) Fleming's left hand rule
	d) Fleming's right hand rule

8. Rearrange the following points in correct order regarding the working of moving coil loud speaker.
- a) The voice coil placed in the magnetic field moves to and fro rapidly according to electric pulses.
 b) The diaphragm vibrates and reproduces sound
 c) The electrical pulses from the microphone are strengthened and passed through the voice coil.
9. A straight conductor AB is arranged parallel to a magnetic needle as shown in figure. When the switch is on, the magnetic needle deflects.

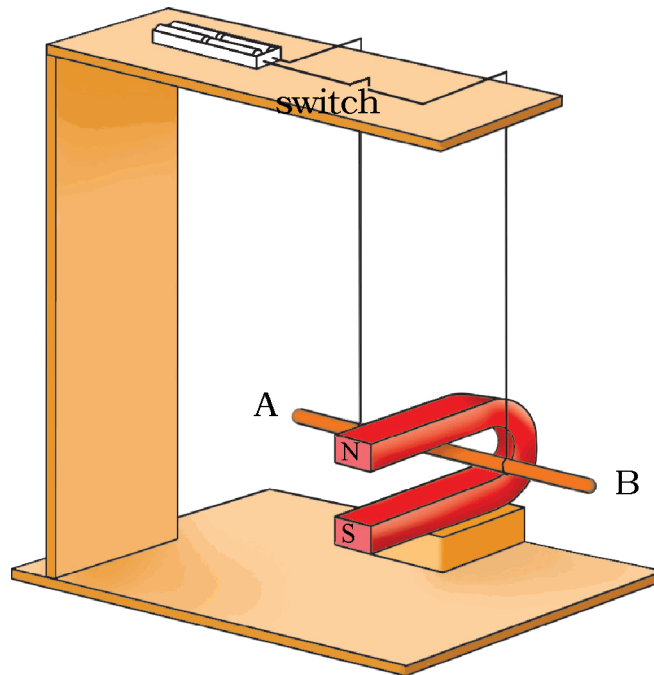


- a) The north pole of the magnetic needle deflects in ... (clockwise/ anticlockwise)
 b) What is reason for the deflection of the needle?
 c). Suggest a method to reverse the direction of deflection of the magnetic needle.

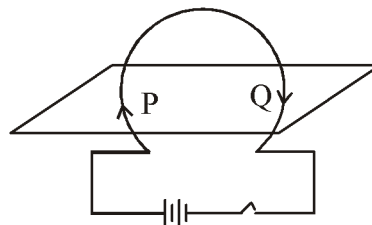
Question from 10 to 12 carries 4 score each.

(3 × 4 = 12)

10. A Straight conductor AB is arranged so as to move freely in the magnetic field of a U magnet as in the figure.

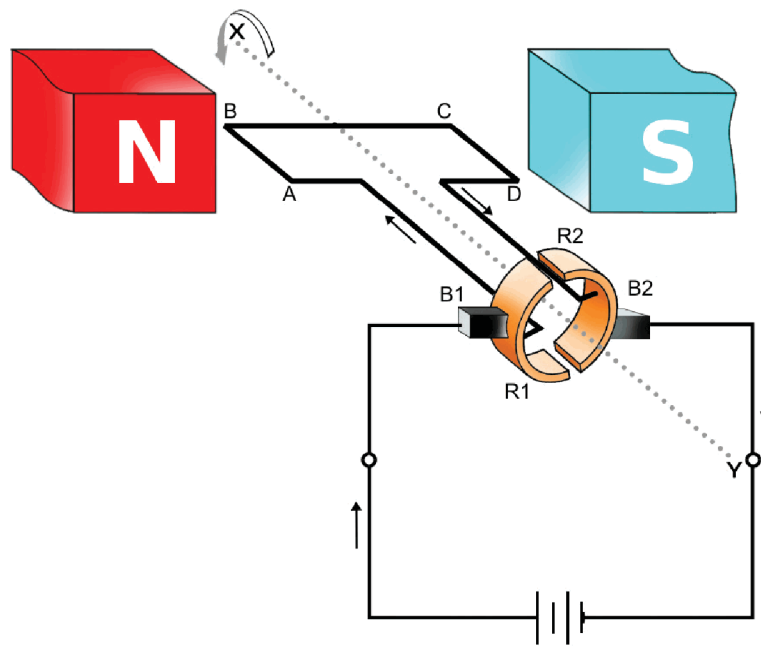


- a) In which direction will the conductor AB move when the switch is ON.
(Inward/Outward)
 - b) Name and state the law used to find the direction of motion of the conductor.
 - c) Suggest a method to keep the direction of motion of the conductor constant even when the current is reversed .
11. A circular coil is inserted into a cardboard as shown in figure. The portions passing through the cardboard are marked as P and Q.



- a) Draw one magnetic field line each around P and Q.
- b) Give any one method to increase the strength of the magnetic field.
- c) Write down two factors that affect the magnetic field strength around the circular coil.

12. Observe the diagram and the answer the following questions.

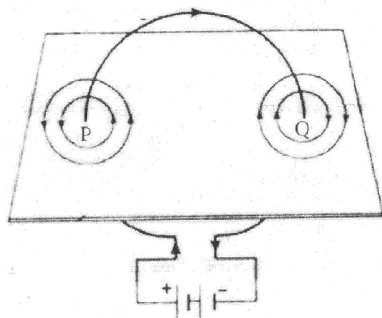


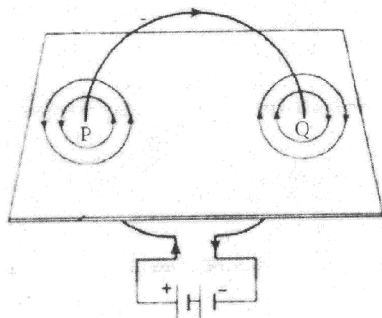
- Name the device
- What is the working principle? State the principle.
- What does R_1 and R_2 indicate in the figure. Write the function of this?
- Name another device which works based on this principle.

Unit 2

MAGNETIC EFFECT OF ELECTRIC CURRENT**ANSWER KEY**

1. Electromagnet/Bar magnet
2. Voice coil
3. Electrical Energy to Mechanical Energy
4. b) The end of solenoid where current flows in clockwise direction is south pole and end of solenoid where current flows in anticlockwise direction is north pole.
5. a) From B to A
b) Right Hand Thumb Rule/Right Hand Screw Rule
6. a) Towards P b) Fleming's left hand rule
7. i) c ii) b iii) d
8. c, a. b
9. a) Anticlockwise
b) The magnetic needle is deflected as a result of the mutual action of the magnetic field around the magnetic needle and the magnetic field developed around the current carrying conductor.
c) Reverse the direction of current.
10. a) Backwards
b) Fleming's left hand rule. Hold the fore finger, the middle finger and the thumb of the left hand in mutually perpendicular direction the fore finger indicates the direction of motion of the conductor.
c) Reverse the direction of the magnetic field.



11. a) 
b) To increase the current.
c) Number of turns of the coil, current through the coil.
12. a) Motor
b) Motor principle. A current carrying conductor in a magnetic field experience a force.
c) Split rings. Split ring commutator helps to change the direction of current.
d) Moving coil loud speaker.

Unit 3

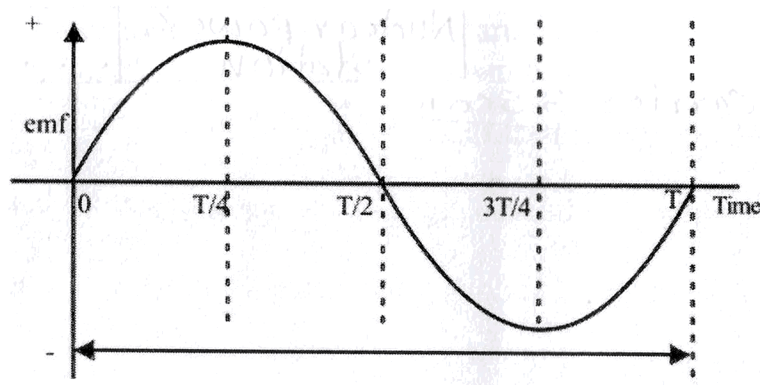
ELECTROMAGNETIC INDUCTION

Score : 40

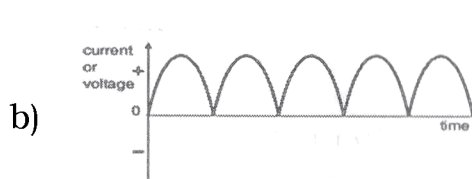
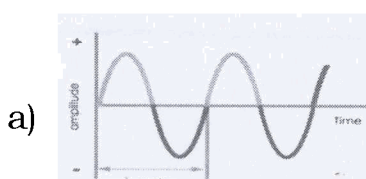
Time : 1 hr

Each questions from 1 to 4 carries 1 score.**(4 × 1 = 4)**

- Which device is used to understand the direction and magnitude of even feeble current in a circuit?
(Ammeter, Voltmeter, Galvanometer, Rheostat)
- Fill suitably
Transformer : Mutual Induction
Microphone :
- To which device is the electric line reaching our home connected first?
- Analyse the graph given below and find out the instances at which the emf is maximum.

**Each questions from 5 to 8 carries 2 score.****(4 × 2 = 8)**

- Choose the correct statements associated with electromagnetic induction?
 - When the number of turns in a solenoid increases, the induced emf decreases
 - When a strong magnet is used the induced emf increases.
 - When the magnet or solenoid moved in fast the induced emf increases.
 - When magnet and solenoid are moved in the same direction at the same speed induced emf increases.
- Identify the AC and DC from the graph



7. Choose the generator suitable for the given statements.

- a) i) Produces unidirectional current
- ii) Produces alternating current.
- b) What is the working principle of generator?

8. Complete the table.

Power station	Energy change
Hydro electric power station	Potential energy-Electrical energy
Thermal power station(a).....
Nuclear power station(b).....

OR

8A. Categorise the following relations appropriately as step up transformer or step down transformer.

- a) $V_s > V_p$ b) $I_s > I_p$ c) $V_s < V_p$ d) $I_s < I_p$

OR

8B. How three pin plug provide safety?

Each questions from 9 to 12 carries 3 score. (4 × 3 = 12)

9. Two stages of an experiment conducted with a solenoid and a magnet is given below.

(Magnets shown in Fig A and Fig B are stationary magnet and a moving magnet respectively)

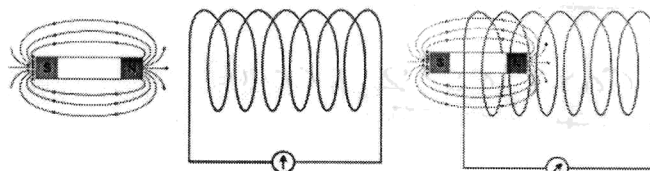
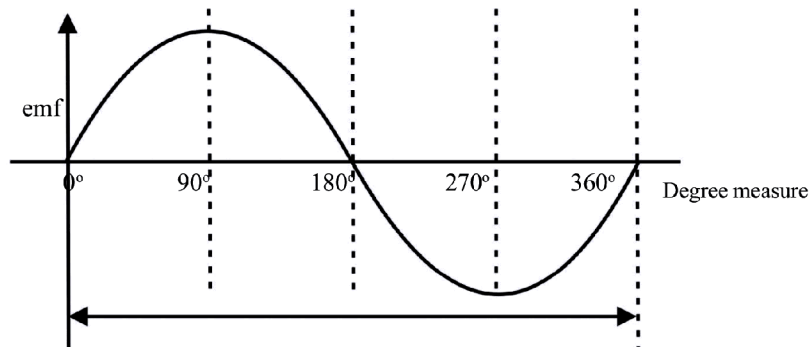
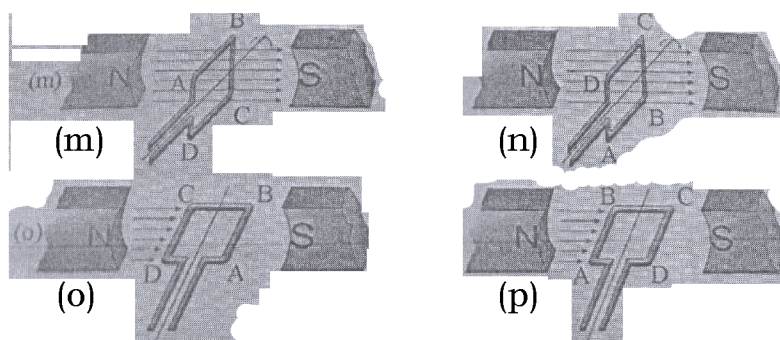


Fig A

Fig B

- a) In which stage does the galvanometer deflect?
 - b) Explain the reason for the deflection in the galvanometer with the help the scientific principle that you have learned?
10. a) What is the role of earthing wire in a house hold circuit?
- b) Why do we say that metallic devices should be earthed?
11. Parts of an AC generator are given below.
(Field magnet, Armature, Slip rings, Brush)
- a) Explain the position of Slip rings and Brushes in an AC generator.
 - b) Write down the function of Slip ring and Brush in an AC generator.
12. The various stages of rotations of armature coil in a magnetic field and the graph of the emf produced by the coil are shown below.



- From the figures m, n, o, p select appropriate positions 1, 2, 3, 4, 5 on the graph?
- Which are the figures in m, n, o, p showing maximum flux change?

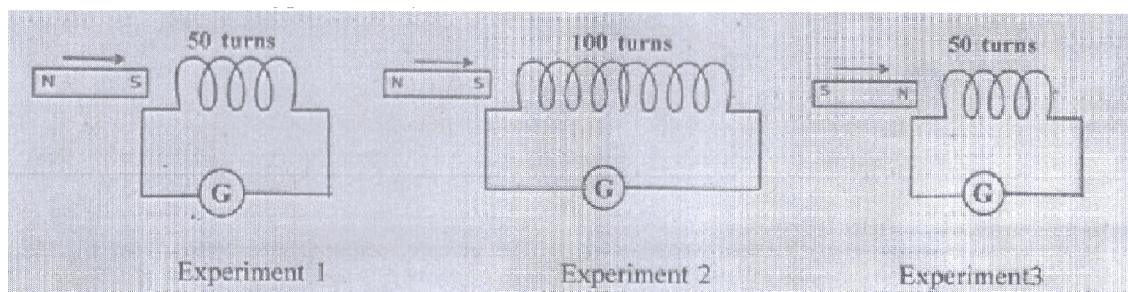
OR

12A. How are the household devices connected in the circuit? What are the advantages of such connection?

Each questions from 13 to 16 carries 4 score. (4 × 4 = 16)

13. Three students are doing the same experiment by using the following sets of solenoid and magnets.

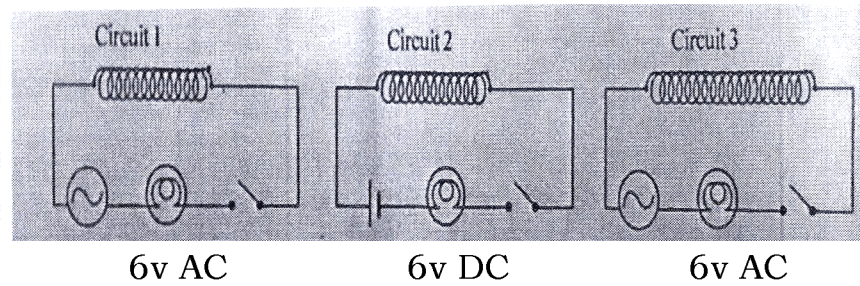
(magnets are identical and the solenoid are wound in clockwise direction with the same type of wires)



- Is the deflection occurring in the galvanometer in these three are equal, when the magnet moves towards the solenoid? Explain the reason.
- Among the experiments 1, 2 and 3 identify the solenoids which produce the same direction of deflection when the magnet is moved towards the coil?

c) Write any two methods to increase the induced emf in the solenoid?

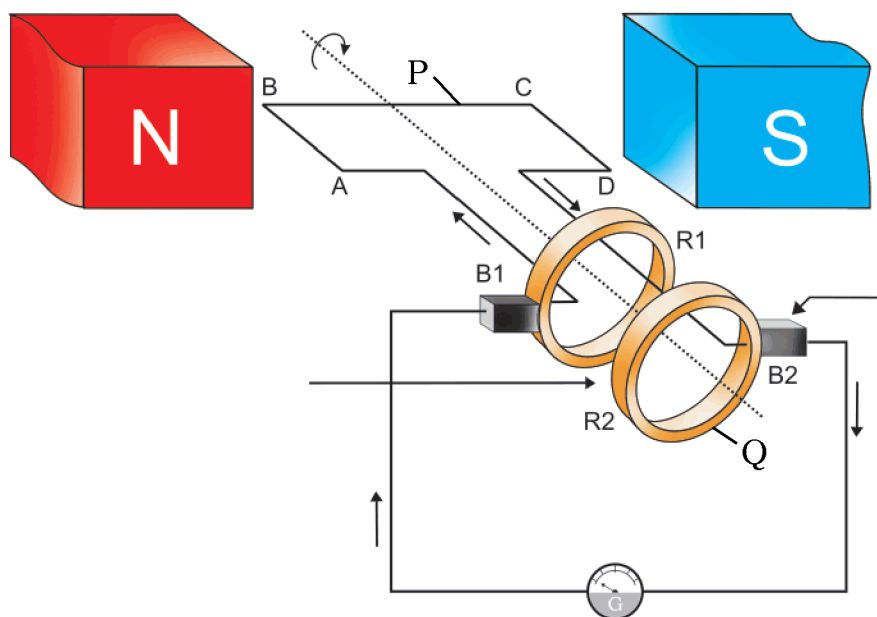
14. The following diagram shows the current carrying solenoids made of insulated copper wire.



- Which bulb will glow with less intensity, when it is switched on? Justify your answer.
- Which bulb will not show any change in light intensity, when identical soft iron cores are inserted into the solenoid? Justify your answer.

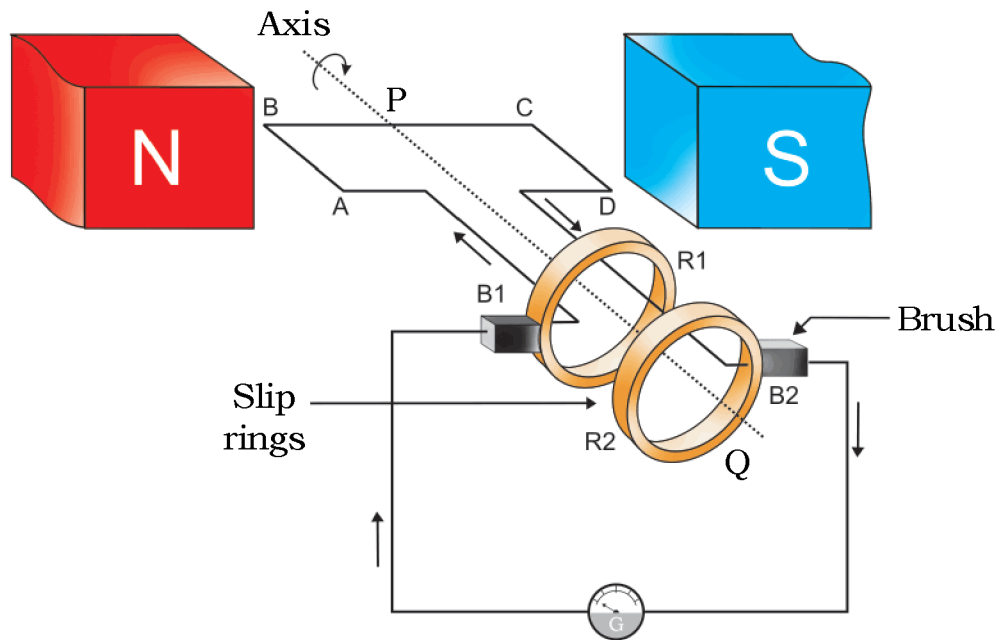
15. The diagram shows below is an arrangement for producing Alternating Current.

Observe the diagram carefully and answer the questions.



- Identify the device?
- Which law is used to find out the direction of induced emf when the armature coil ABCD starts rotating?
- In which direction the side CD move (up/down) to produce a flow of current from B2 to B1?
- Identify the parts P and Q and write them down.

16.



- Draw the graph of emf produced from the above device?
- If the slip rings are substituted with split rings, what will be the graph of emf produced?
- Compare these graphs with the graph of an emf from a cell.

Unit 3

ELECTROMAGNETIC INDUCTION**ANSWER KEY**

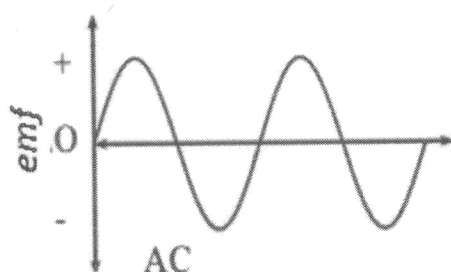
1. Galvanometer
2. Electromagnetic Induction
3. kWh meter
4. $T/4$, $3T/4$
5. b, c
6. a) AC b) DC
7. a) i) DC Generator
ii) AC Generator
b) Electromagnetic Induction
8. a) Chemical energy \rightarrow Electrical energy
b) Nuclear energy \rightarrow Electrical energy

8A.	Step up transformer	Step down transformer
	a) $V_s > V_p$ d) $I_s < I_p$	b) $I_s > I_p$ c) $V_s < V_p$

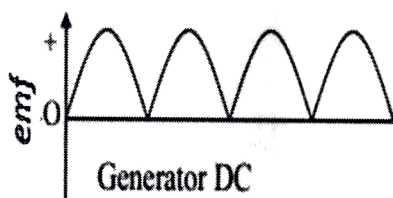
- 8B. The earth pin of the three pin plug is connected to the body of the appliance. If the body comes in contact with the electric connection, current flows through the earth wire. The flow of current through a low resistance path increases the current in the circuit. Hence the fuse wire is heated more and the circuit is broken. This ensures safety of the instrument and the person holding it.
9. a) Fig B
b) There is a flow of current in the circuit due to electromagnetic induction. Whenever there is a change in the magnetic flux linked with a coil, an emf is induced in the coil. This phenomenon is electromagnetic induction.
 10. a) If there is any leakage of current in the circuit. Current flows to earth through the earth wire.
b) To avoid electric shock.
 11. a) Slip rings are soldered to the ends of armature coil. Brush is connected in such a way as to have constant contact with slip rings.
b) Slip rings and brushes are the ways and means by which the current induced in the armature to the outer circuit.

12. a) 1 - fig m, 2 fig o, 3 - fig n, 4-fig p, 5 - fig m
 b) Figure o and p
- 12A. In house hold wiring, electrical devices are connected in parallel. When the devices are connected in parallel
- * Each device can be controlled separately with switch.
 - * Each device get the same applied voltage.
13. a) No. Reading will be higher in the case of galvanometer connected with solenoid having greater number of turns.
 b) In experiments 1 and 2
 c) 1) Increase the speed of motion of the magnet
 2) Increase the number of turns of the solenoid
 3) Use powerful magnet
14. a) Circuit 3
 b) Circuit 2 - No self induction
15. a) AC Generator
 b) Flemings Right hand rule
 c) The side CD moves downwards then flow of current is from B2 to B1.
 d) P - Armature
 Q- Slip rings

16. a)



b)



- c) In AC generator there is a change in emf and direction. In DC generator there is no change in direction but change in emf. In a cell there is no change in emf and direction.

Unit 4

REFLECTION OF LIGHT

Score : 30
Time : 1 hr

Each questions from 1 to 4 carries 1 score.

(4 × 1 = 4)

1. An object is placed at infinity from a concave mirror. Find the position of the image?

(at C, beyond C, at F, between F and P)

2. Find out the correct equation related with a mirror from the following.

$$\left(f = \frac{u+v}{uv}, f = \frac{uv}{u+v}, f = \frac{2uv}{u+v}, f = \frac{2(u+v)}{uv} \right)$$

3. “When magnification is less than 1, the size of the image is greater than the size of the object”. Say whether the statement is ‘true’ or ‘false’?
4. The maximum range of the vision through the mirror is _____

Each questions from 5 to 7 carries 2 score.

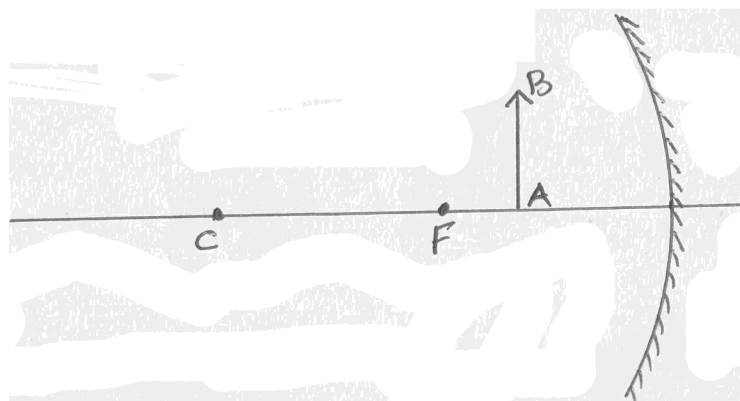
(3 × 2 = 6)

5. Write two difference between ‘Regular reflection’ and ‘Irregular reflection’
6. a) Write the equation that shows the relation between the number of images and angle between mirrors ?
- b) The angle between two plane mirror is 60° . How many images will be formed there?
7. a) Which type of mirror is used as ‘Rear view mirror’ in vehicles?
- b) Why it is written on rear view mirrors that objects in the mirror are closer than they appear.

Each questions from 8 to 11 carries 3 score.

(4 × 3 = 12)

8. When an object of height 6cm is placed in front of a concave mirror at a distance 20cm away from it, an image is obtained 8 cm away, on the same side. Find out the height of image and magnification.
9. State ‘New Cartesian Sign Convention’
10. Draw the image formation of the object ‘AB’ on the given figure.



11. The rays coming from F reflects as parallel rays.
- Which type of mirror is this?
 - Give any two situations which make use of such mirrors?

Each questions from 12 to 13 carries 4 score.

(2 × 4 = 8)

12. Draw the image formation of an object placed in front of a convex mirror and write the position and characteristics of the image.
13. When an object is placed in front of a spherical mirror of focal length 20cm the magnification of the image is found to be negative (-1)
- Which type of spherical mirror is this?
 - Write any two features of this image?
 - When the object is placed 45 cm away from the mirror. calculate the distance to the image from the mirror.

Unit 4

REFLECTION OF LIGHT

ANSWER KEY

1. at F
2. $F = \frac{uv}{u+v}$
3. False
4. Field of view
5. Regular reflection: Ray's of light travelling parallel after reflection. Image formed.
Irregular reflection : Ray's of light travelling irregular path after reflection. Image is not formed.

6. a) $n = \frac{360}{\theta} - 1$
- b) $n = \frac{360}{60} - 1; n = 6 - 1; n = 5$

7. a) Convex
- b) Text book page : 89

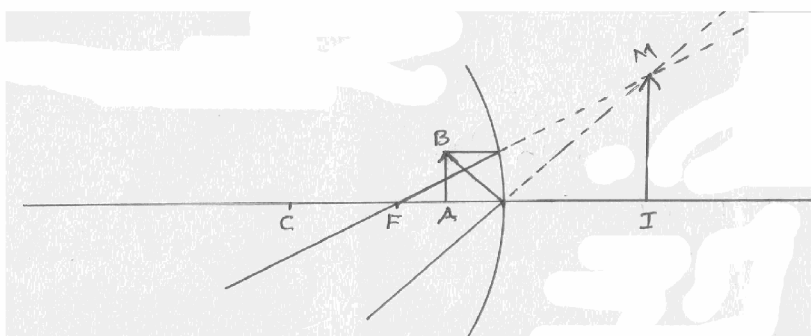
8. $u = 20\text{cm}$ $v = 8\text{cm}$, $h_o = +6\text{cm}$, $h_i = ?$

$$m = \frac{-v}{u}; m = \left(\frac{-8}{-20} \right); m = \frac{+8}{-20}; m = -0.4$$

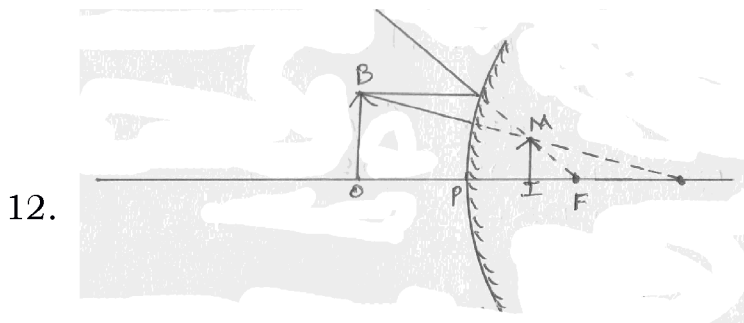
$$\text{magnification, } m = \frac{h_i}{h_o}, h_i = m \times h_o; -0.4 \times +6 \therefore h_i = -2.4\text{cm}$$

9. Text book page : 85

10.



11. a) Concave
b) Makeup mirror, shaving mirror, etc.



Position: Behind the mirror

Characteristic : Small, erect

13. a) Concave mirror
b) Image is virtual and erect
c) $F = -20\text{cm}$, $u = -45\text{cm}$, $m = -1$, $v = 9$

$$\frac{1}{f} = \frac{1}{u} + \frac{1}{v}, \quad \frac{1}{v} = \frac{1}{f} + \frac{1}{u}, \quad v = \frac{fu}{f-u}$$

$$\therefore v = \frac{-20 \times -45}{-20 - 45}; \quad v = \frac{900}{25}; \quad \therefore v = 36\text{cm}$$

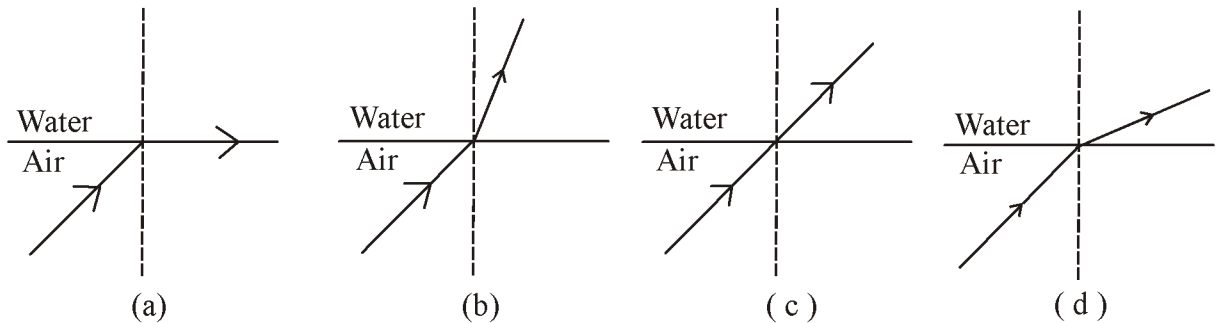
Unit 5

REFRACTION OF LIGHT

Score : 40
Time : 1½ hr

Each questions from 1 to 4 carries 1 score. (4 × 1 = 4)

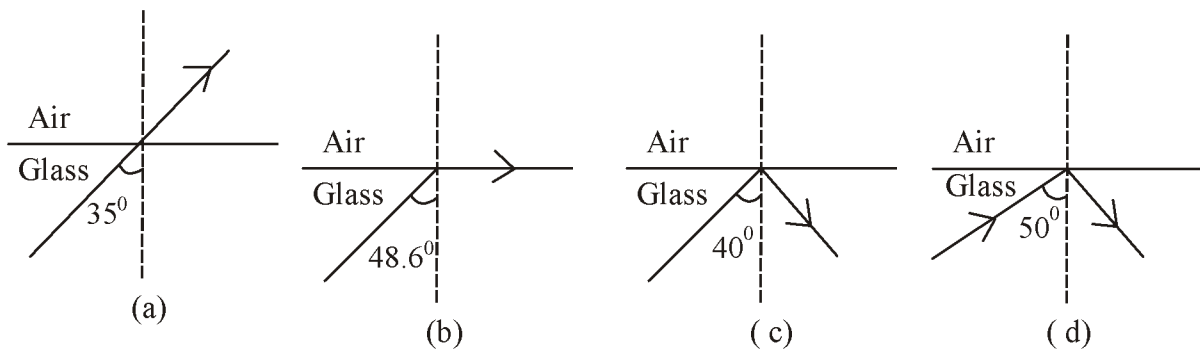
1. Arrange the given media in the increasing order of their optical density.
Glass, Water, Diamond, Air
2. Observe the relation in the first pair and complete the second pair.
Reflection : Mirror
..... : Lens
3. In relation with refraction, find out the correct figure?



4. Which phenomenon is made use in endoscope?
(Reflection, Scattering, Total internal reflection, Dispersion)

Each questions from 5 to 8 carries 2 score. (4 × 2 = 8)

5. Optical density of diamond is high.
a) Explain optical density?
b) What is the relation between speed of light and optical density?
6. The critical angle of water is 48.6°
a) Describe critical angle?
b) Which figure is not correct in relation with the internal reflection?



7. The focal length of a concave lens is 20 cm. If the distance to the image is 12 cm, find out the distance to the object from the lens?
8. While observing sky, a child saw that a star is twinkling. What is the reason for the twinkling of stars?

Each questions from 9 to 12 carries 3 score.

(4 × 3 = 12)

9. Optical fibre cables are using in the field of telecommunications.
- Which phenomenon is made use in optical fibre cables?
 - Write the reason for using optical fibre in telecommunications?
10. When an erect object of height 3 cm is placed at a distance of 30 cm from a lens, a real image is formed at a distance of 15 cm.
- Find out the height of the image?
 - Write any one characteristic of the image?
11. Observe the table.

Medium	Speed of light
Water	2.25×10^8 m/s
Air/Vacuum	3×10^8 m/s
Glass	2×10^8 m/s

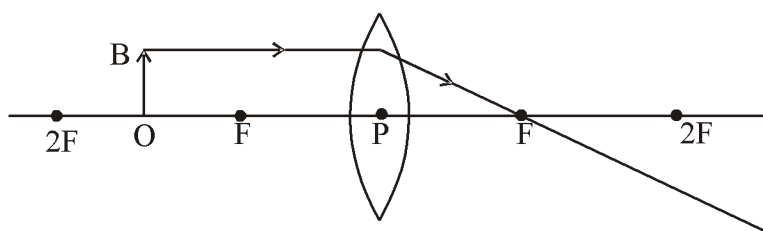
- Calculate refractive index of glass?
 - Describe absolute refractive index?
12. Match the following.

	A		B		C
a	Object at infinity	d	Image formed at infinity	h	Longer image than object
b	Object at F	e	Image formed at same side of object	i	Diminished image
c	Object is between F and lens	f	Image formed beyond 2F	j	Very large image
		g	Image formed at F	k	Size of image same as object.

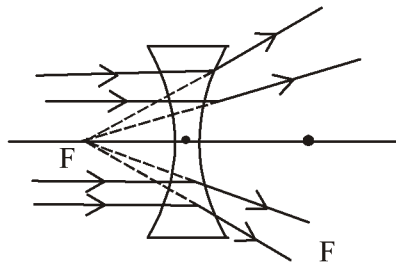
Each questions from 13 to 16 carries 4 score.

(4 × 4 = 16)

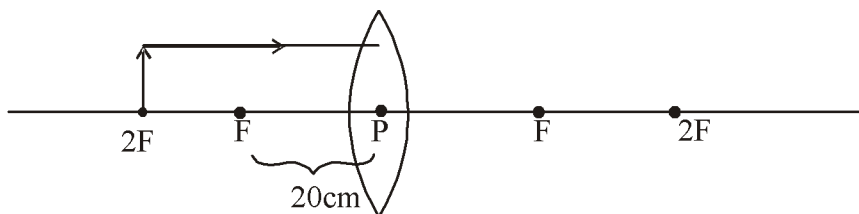
13. Observe the figure.



- a) Redraw the diagram and complete it to get the image?
 - b) Write any two characteristics of the image obtained?
14. While doing an experiment with a convex lens a small image is formed.
- a) What is the nature of the image.
(Virtual/Real)
 - b) Identify the position of the image.
(Same side of the object/Other side of the lens)
 - c) According to new cartesian sign conventions, the focal length of the lens is _____
(negative/positive)
 - d) Write any one use of such lens?
15. Observe the figure.



- a) Write the definition of the point F.
 - b) Write any two characteristics of the image formed by this lens?
16. Observe the ray diagram.



- a) Redraw the diagram and complete it to get the image?
- b) Calculate the magnification of the image formed by this lens?
- c) What is the power of this lens?

Unit 5

REFRACTION OF LIGHT**ANSWER KEY**

1. Air, Water, Glass, Diamond
2. Refraction
3. (b)
4. Total internal reflection
5. a) Correct definition of optical density b) Inversely proportional
6. a) Correct definition of critical angle b) C
7. $u = \frac{vf}{f-v} = -30 \text{ cm}$
8. When light passes through media of different optical densities it undergoes successive refraction. Hence the source of light appears like twinkling.
9. a) Total internal reflection
b) Through optical fibre thousands of signals of different frequencies can be sent to distant places simultaneously.
10. a) $\frac{v}{u} = \frac{hi}{ho}$
 $hi = -1.5 \text{ cm}$
b) Write any one characteristics
11. a) 1.5
b) The refractive index of a medium with respect to vacuum
12.

a	g	i
b	d	j
c	e	h
13. a) Complete the figure.
b) Any two characteristics
14. a) Real
b) Other side of the lens
c) Positive
d) Any one use
15. a) Correct definition
b) Any two characteristics
16. a) Complete the figure
b) 1
c) Power = $\frac{1}{f}$ $f = -0.2 \text{ m}$ $P = \frac{1}{0.2} = 5 \text{ D}$

Unit -6

VISION AND THE WORLD OF COLOURS

Score : 30
Time : 1 hr

Each questions from 1 to 3 carries 1 score.

(3 × 1 = 3)

1. Observe the relation between terms in the first pair and complete the second pair.

Persistence of hearing : $\frac{1}{10}$ Second

Persistence of vision : -----

2. It is given that the power of a lens is +2D. What type lens is this?
3. Due to the diminishing ability of the ciliary muscles the distance to the near point in elderly people increase. What is this defect of vision?

(Near sightedness, Long sightedness, Presbyopia)

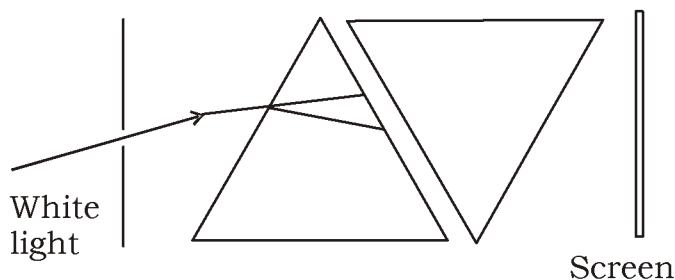
Each questions from 4 to 6 carries 2 score.

(3 × 2 = 6)

4. The use of light in excess in a non-judicious manner is referred to as light pollution,

Write any two consequences of light pollution?

5. Redraw and complete the figure given below and write the light obtained on the screen?

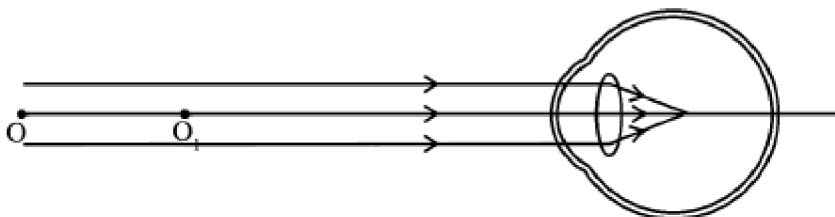


6. During misty morning, the path of light rays can be seen clearly. Name this phenomenon? Describe it?

Each questions from 7 to 9 carries 3 score.

(3 × 3 = 9)

7. The figure shows the image formation in the defective eyes of a person.



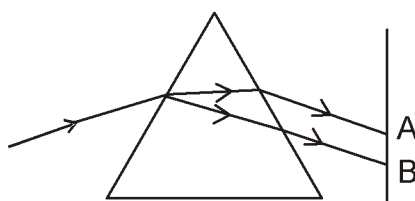
- a) Identify this defect of vision? b) What are the reasons for this defect?

- c) What is the remedy to rectify this defect?
8. We can see the objects which are near and far clearly.
- Name the nearest point at which an object can be seen distinctly?
 - How many centimeter is that point from the eye?
 - How do we get the clear image of objects near and far on the retina?
9. The Newton's colour disc appears to be white when it is rotated fast.
- What is this phenomenon of eye called?
 - Write two similar examples from our daily life?

Each questions from 10 to 12 carries 4 score.

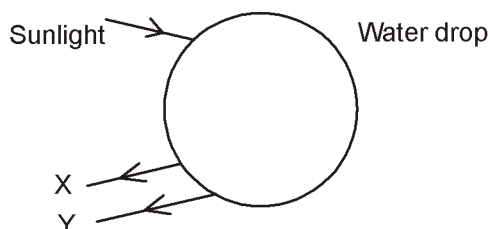
(3 × 4 = 12)

10. Observe the figure.



Sunlight passing through a prism at an oblique angle splits into constituent colours.

- Name this phenomenon?
 - Identify the colours A and B from the figure?
 - Why do these colours deviate differently?
11. Observe the figure.



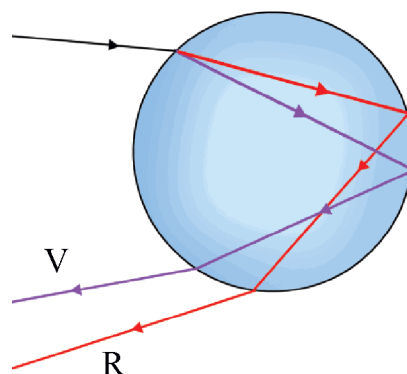
A figure showing sunlight passing obliquely through a water drop is depicted.

- Redraw and complete the picture
 - Identify the colour X?
 - What shape will a rainbow be when observed from an aeroplane?
12. When sunlight passes through the atmosphere the light rays collide with tiny particles in the atmosphere and gets deflected irregularly.
- Name this phenomenon?
 - Which colours in the white light get affected by this phenomenon the most?
 - During the time of dawn and dusk why does the sky appear red in colour?

Unit -6

VISION AND THE WORLD OF COLOURS
ANSWER KEY

1. $\frac{1}{16}$ s
2. Convex lens
3. Presbyopia
4. Any 2
5. Complete the figure.
White light
6. Tyndal Effect
When rays of light pass through a colloidal fluid or suspension, the tiny particles get illuminated due to scattering. Because of this, the path of light is made visible.
7. a) Near - sightedness
b) Eye ball may be long. Power of the lens may be more
c) By using concave lens of suitable power.
8. Near point
b) 25cm
c) Accommodation of eye
9. a) Persistence of vision
b) Any 2 examples
10. a) Dispersion of light
b) A - Red, B - Violet
c) The deviations of light depends on its wavelength
11. a) Complete figure.



- b) X - Violet
 - c) Circle
12. a) Scattering
- b) Violet
 - c) During sunrise and sunset, the light reaching us from the horizon has to travel long distance through the atmosphere. During this long journey, colours of short wave length would be almost fully lost due to scattering. Then the red light which undergoes less scattering reach our eyes and so the sun appears red.

Unit -7

ENERGY MANAGEMENT

Score : 30
Time : 1 hr

Each questions from 1 to 4 carries 1 score. (4 × 1 = 4)

1. Find the odd one from the following.
(Kerosene, Petrol, Diesel, Coal)
2. The expansion of LPG is _____
3. It is marked 'C25' on a LPG cylinder. What does 'C' stand for?
4. The main component of CNG is _____

Each questions from 5 to 7 carries 2 score. (3 × 2 = 6)

5. Appropriately fill the energy change of a thermal power station.
..... → heat energy → → electrical energy.
6. What is biomass? Write the advantage of converting biomass into biogas?
7. 'Energy Crisis' is one of the problems we faced today.
 - a) What is meant by energy crisis?
 - b) Write measures to reduce energy crisis.

Each questions from 8 to 11 carries 3 score. (4 × 3 = 12)

8. Hydrogen is a fuel of high calorific value.
 - a) What is meant by calorific value?
 - b) Hydrogen is not used as domestic fuel. Why?
9. Categories the following energy sources into green energy sources and brown energy sources.
(Atomic reactor, Solar cell, Energy from waves, Thermal power station, wind mill, Diesel engines)
10.
 - a) What is hot spot?
 - b) Is it possible to establish geothermal power plants in kerala?
11.
 - a) Name the particles responsible for nuclear pollution
 - b) How electrical energy is produced in nuclear power station?
 - c) What is the energy change in nuclear power station.

Each questions from 12 to 13 carries 4 score. (2 × 4 = 8)

12. Write four characteristic features of good fuel.
13. Maximum utilization of solar energy is essential during this period.
 - a) Name the electronic component used in solar cell
 - b) Write the energy change in solar cell.
 - c) Write an instance where the solar panel can only be used?

Unit -7

ENERGY MANAGEMENT

ANSWER KEY

1. Coal
2. Liquefied petroleum gas
3. The expiry date of the cylinder is from July to September.
4. Methane
5. Chemical energy, mechanical energy
6. Biowastes formed from plants and animals is called biomass.
When biomass is changed into biogas
 - a) Calorific value increases
 - b) Minimised atmospheric pollution
 - c) The slurry discharged from biogas plant is a good manure.
7. Energy crisis is the consequence of increasing demand but decreasing availability.
 - ◆ Judicious utilization of energy
 - ◆ Maximum utilization of solar energy
 - ◆ Making use of public transportation as far as possible
 - ◆ Timely maintenance of machines.
 - ◆ Ensuring maximum efficiency of machines
 - ◆ Minimising the wastage of water.
8.
 - a) The amount of heat liberated by the complete combustion of 1 kg of fuel is its calorific value. Its unit is kilo joule/kilogram.
 - b) Hydrogen is highly inflammable and explosive in nature. So it is difficult to store and transport it.
9.

Green Energy	Brown Energy
Solar Cell	Atomic reactor
Energy from waves	Thermal power station
Wind mill	Diesel Engines
10.
 - a) The interior part of the earth is in molten form. The magma which is at higher temperature comes out of the core through the softer regions. Such places are known as hot spots.
 - b) No. Geothermal plants cannot be established in Kerala because there is no hot spot found in Kerala.
11. a) Alpha particles, Beta particles, Gamma radiations

- b) Using nuclear energy water is converted into steam at a high temperature and pressure. The force of steam is used to turn the turbines to generate electrical energy.
 - c) Nuclear energy → heat energy → mechanical energy → electrical energy
12. ♦ Easily available
- ♦ Low cost
 - ♦ High calorific value
 - ♦ Easily storable and transportable
 - ♦ Minimum atmospheric pollution on combustion
13. a) P.N. Junction diode
- b) Solar energy is converted into electrical energy
 - c) In satellite