Sl. No.

SSLC MODEL EXAMINATION, MARCH - 2021

PHYSICS

(English)

Time : 1½ Hours | Total Score : 40

Instructions :

- 20 minutes is given as cool-off time.
- Use cool-off time to read the questions and plan your answers.
- Attempt the questions according to the instructions.
- Keep in mind, the score and time while answering the questions.
- The maximum score for questions from 1 to 34 will be 40.

Each question from 1 to 8 carries 1 score. Score

1. From the following choose the instrument that works on motor principle. 1

   [AC-Generator, Moving Coil Microphone, DC-Generator, Moving Coil Loud Speaker]

2. Identify the magnetic pole at the end of a solenoid at which current is in the clockwise direction. 1

3. In a water filled beaker a pencil is placed in an inclined position. It appears bent, the reason is : 1

   [Scattering of light, Refraction of light, Dispersion of light, Diffraction of light]

4. Write the fossil fuel used to extract coke, coal tar and coal gas. 1

5. The radius of curvature of a convex lens is 50 cm. What is its focal length ? 1

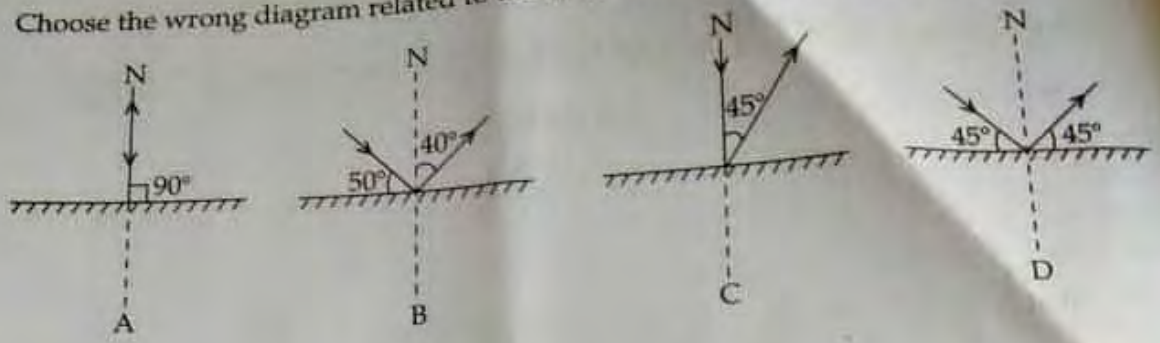
   [+25 cm, +50 cm, −25 cm, −50 cm]

6. Correct the following statement by changing the underlined words. 1

   The direction of deflection of magnetic needle placed near a current carrying conductor depends on the intensity of electric current through that conductor.

Score 1

7. Choose the wrong diagram related to the reflection of light on a plane mirror.



8. Analyse the relationship between the terms in the first pair and complete the second one accordingly. 1

LPG : Butane

CNG : _____

Each question from 9 to 20 carries 2 scores.

9. Write the electrical devices which converts electrical energy to mechanical energy.

- Electric Iron
- Loud Speaker
- Soldering Iron
- Electric Mixie

10. Nichrome wires are used as heating coil. Write any two reasons for the same.

11. Why does a heater having low resistant heating coil gets heated more ? Explain.

12. Explain the working of split ring commutator in a DC-motor.

13. Pick out the correct relationship associated with a step-down transformer.

[V, N, I represents Voltage, Number of turns and Current respectively, p and s represents the primary and secondary]

(a) $V_s > V_p$ (b) $V_p > V_s$ (c) $N_p > N_s$ (d) $I_p > I_s$

14. Inductors and resistors are used to reduce current in a circuit to a desired value. Bu inductors are not used in DC circuits why ? Explain.

Score

15. Choose the correct statements associated with the electromagnetic induction. 2

(a) When the number of turns in a solenoid is increased the induced emf decreases.

(b) When a strong magnet is used the induced emf increases.

(c) When the magnet or solenoid moved in fast the induced emf increases.

16. What is the energy crisis ? Write any two suggestions to reduce the energy crisis. 2

17. An object is placed 20 cm away from a concave mirror. The image obtained is at a distance of 30 cm on the same side. Find the focal length of given mirror. 2

18. Speed of light in three media are given.

[Glass - 2×10^8 m/s, Water - 2.25×10^8 m/s, Diamond - 1.25×10^8 m/s]

(a) In which medium does the refraction of light occurs more while falling from air ?

(b) Arrange the three given media in the increasing order of optical density.

19. Write the correct statements regarding irregular reflection.

(a) Parallel incident rays reflected as parallel rays.

(b) Even though the incident rays are parallel the reflected rays are not in parallel.

(c) After reflection no clear image is formed.

(d) The angle of incidence and the angle of reflection for each ray is not equal.

20. Write any two situations in daily life that caused by persistance of vision.

Score

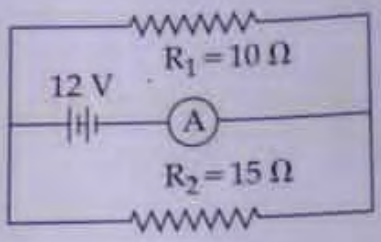
Each question from 21 to 28 carries 3 score.

21. The heat generated in a current carrying conductor can be explained by a famous law.

(a) Write the name of this law. 1

(b) Write the mathematical equation for this law, explain each letters used in the equation. 2

22. Analyse the given circuit.

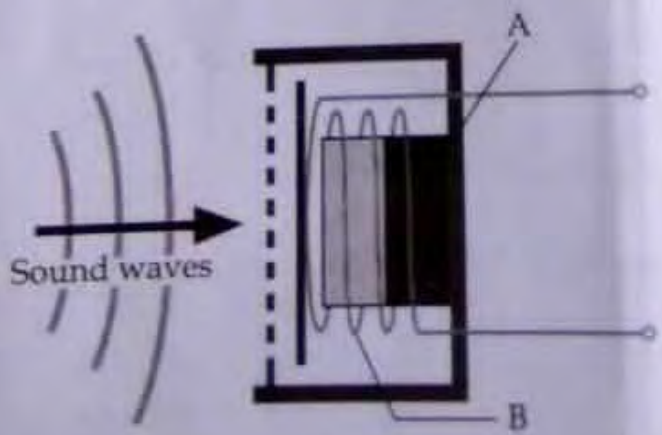


(a) How are the resistors connected in the above circuit ? 1

(b) What will be the current shown in the ammeter ? 1

(c) Calculate the current through the resistor R_1. 1

23. The given figure represents the parts of a moving coil microphone.



(a) Identify the parts labeled as A, B.

(b) How is the sound wave falling on this device get converted to electrical signal ? Explain.

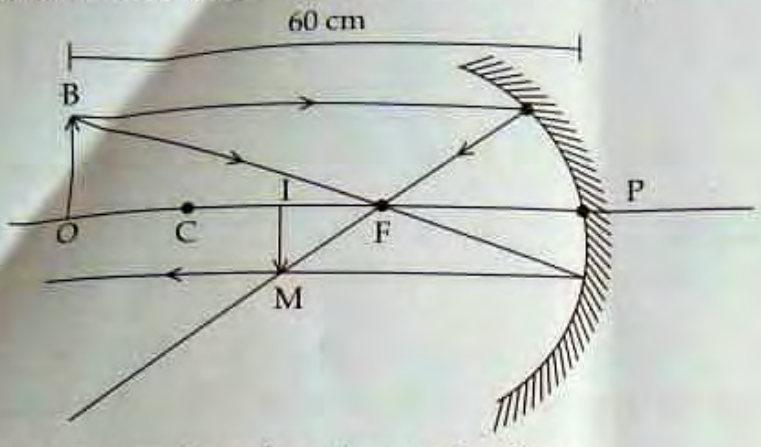
Score

24. (a) Write any two methods to reduce the transmission loss in power transmission. 2

(b) Write the names of any two electric lines that brings electric power to your house. 1

25. Observe the figure. Use new cartesian sign convention to fill the given blanks.

[Radius of curvature of the given mirror is 30 cm]



(a) Distance from the mirror to the object 1

u = _____

(b) Focal length of the given mirror

f = _____

(c) Image is formed at a distance

v = _____

26. An image is obtained at a distance of 40 cm away from a convex lens when the object placed at the same distance on the opposite side.

(a) Write any two characteristics of the image obtained.

(b) Write the focal length of the given lens.

27. (a) Which colour of sunlight is most scattered in the atmosphere ?

(b) Explain the reason for the red colour of rising and setting sun.

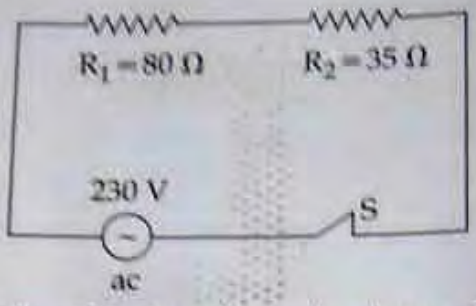
28. Tabulate the following energy sources as green energy and brown energy.

(a) Naptha (b) Biogas (c) Sun

(d) Coal (e) Wind (f) CNG

Each question from 29 to 34 carries 4 score.

29. Observe the figure.



(a) Calculate the total resistance in the circuit. [Neglect the resistance of connection wires]

(b) Calculate the heat generated in this circuit in 5 minutes.

(c) If one more resistance of 50 ohms is connected in series what happens to the heat generation.

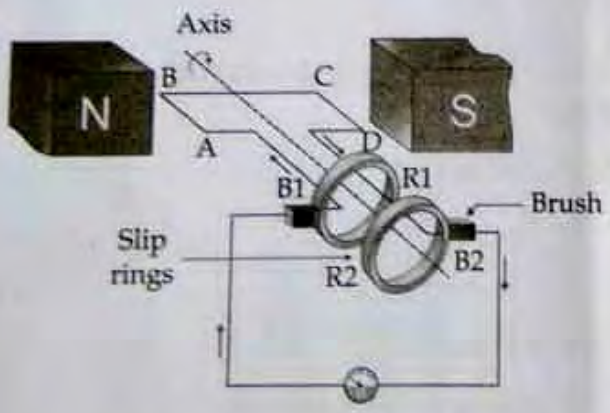
30. (a) An electric bulb of 60 W power is connected on 240 V mains. Write the current through the bulb.

[4 A, 2 A, ½ A, ¼ A]

(b) How is the safety fuse connected in a branch circuit ?

(c) Explain the working of a safety fuse.

31. Observe the picture.



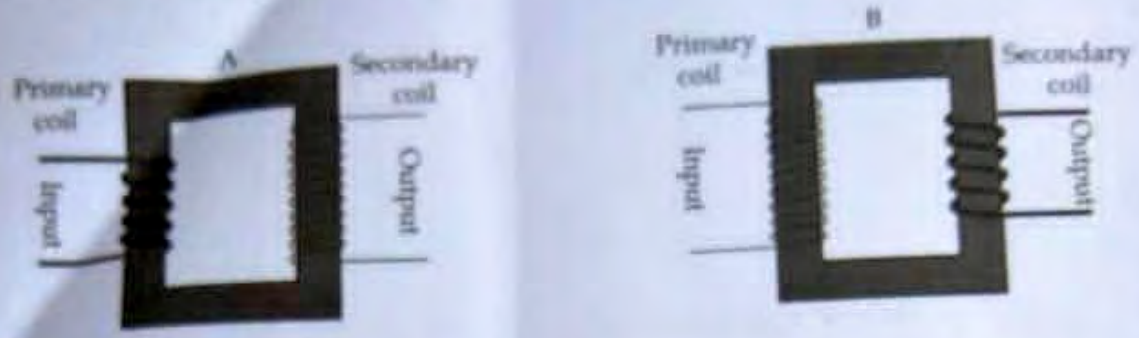
(a) Which type of generator is given in the picture ?

(b) Write the working principle of this generator.

(c) Draw the graph of the output emf of the above generator.

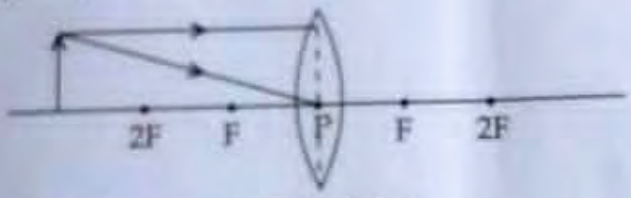
(d) How is the graph differ from the graph of the output emf from a DC-Generato

32. The block diagrams represent two type of transformers.



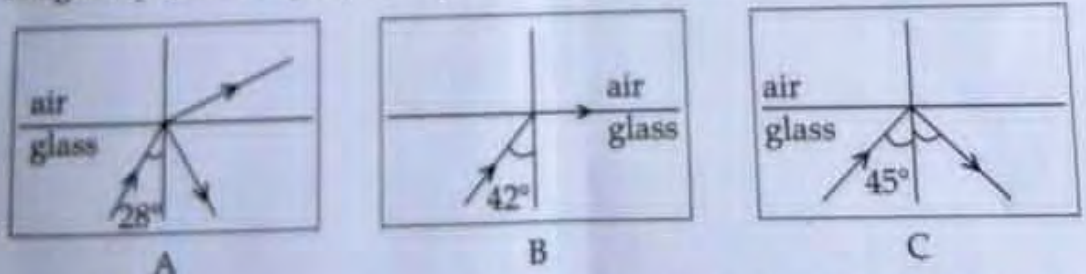
(a) Identify the step-up transformer from the figure. Justify your answer. 3
(b) Some coils in the transformers shown in the figure are made up of thick wires. Why ? 1

33. (a) Redraw the given figure and complete the two light rays to get an image on the principal axis. 2



(b) Write the position of the image. 1
(c) Write any two characteristics of the image obtained. 1

34. A light ray falls obliquely from glass to air in different angles are shown in the figure.



(a) Which diagram represents the critical angle of glass ? Write the value of critical angle.
(b) Explain the phenomenon total internal reflection.
(c) If we replace the medium air with water, is there any change in critical angle of glass ?