KSTA ACADEMIC COUNCIL
S S L C MODEL EXAMINATION2021
PHYSICS

Time:$1_{1/2}$ Hour **Total score 40**

INSTRUCTIONS

- 20 minutes is the consolation time. This time can be used to read questions, choose easy ones and plan answers.
- Read the instructions carefully for each question and write the answer.
- Score and time should be considered when writing the answer.
- Questions 1 to 34 will have a maximum score of 40

Question Nos. 1 to 8 have a score of one

1. The device that works based on motor principle is
(Generator, Moving Coil Loudspeaker, Moving Coil Microphone, Transformer)

2. Write in which among the following devices convex mirror is utilized
(Torch reflector, shaving mirror, rear view mirror, mirror used by dentists)

3. What is the midpoint of a lens called
(Center of curvature, center of light, main focus, pole)

4. The image formed by a convex lens is small and inverted. If so the position of the object is
(Behind 2F, between F and 2F, at 2F, between F and the optic center)

5. The reason why the setting sun appears red
a) Red has less wavelength and therefore less scattering.
b) Red has a longer wavelength and therefore less scattering.
c) Red has a shorter wavelength so the scattering is higher.
d) The longer the red wavelength, the higher the scattering.

6. Which of the following is due to persistence of vision ?
a) The rainbow is circular when viewed from the sky
b) When a burning torch spins rapidly, it appears circular
c) The sky is blue
d) The path of light through the trees is visible on a snowy morning

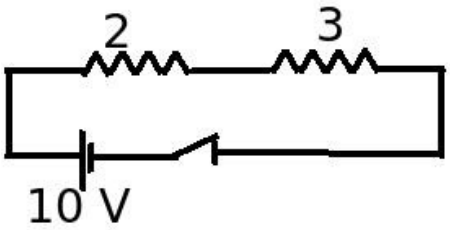
7. **If C N G** : Compressed Natural Gas , then **L N G** : _____

8. Which gas is added to LPG for domestic use to give it a specific odor ?
(Ethyl mercaptan, butane, methane, ethane)

Question Nos. 9 to 20 have two scores each.

9. Fuse wire is used to prevent accidents caused by excessive current.
a) What is the material used to make the fuse wire? (1)
b) What causes the fuse wire to melt when excessive current flows through the circuit? (1)

10. Observe the circuit diagram below and write the answers



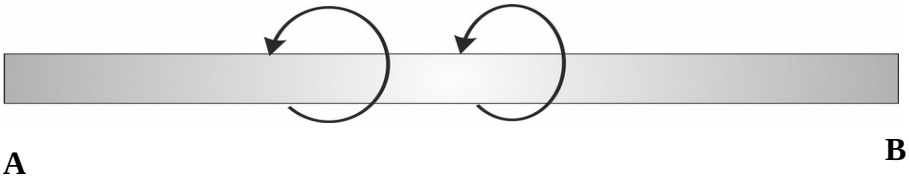
a) What is the effective resistance experienced in the circuit (1)

b) Calculate the current flowing through the circuit. (1)

11. Write down any two advantages of connecting devices in parallel in a household power supply (1)

12. Write the various stages of conversion of electrical energy into sound energy on a moving coil loudspeaker (1)

13. The direction of the magnetic field around the current carrying conductor AB is marked below



a) Which law helps to determine the direction of current flowing through this conductor? (1)

b) Write the law that helps to find the current direction. (1)

14. Choose the correct statements related to the DC generator (2)

a) AC power is generated in the armature of the DC generator.

b) DC power is generated in the armature of the DC generator.
c) The DC generator has slip rings (full rings).
d) DC generator has split rings (semicircles)

15. What are the safety precautions to be taken while handling electrical appliances in the home? (2)

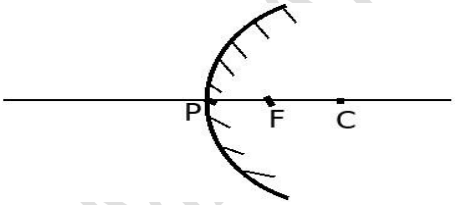
16. What is the function of an inductor in an AC circuit? Why can't it be utilized in DC circuits? (2)

17. The magnitude of the reflection that a mirror provides is -2. If so

a) What does the negative sign of recurrence indicate? (1)

b) If the height of the object is 5 cm, what is the height of the image? (1)

18. Observe the diagram of a spherical mirror.



a) What does point C denote? (1)

b) Write features of the image formed by these types of mirrors (1)

19. Explain why the focus of a convex lens is said to be real. (2)

20. BLEVI is the explosion of LPG when the pressure is too high (Boiling Liquid Expanding Vapour Explosion) . Write down two methods used for the safety of LPG. (2)

Question Nos. 21 to 28 have three scores each.

21. Tungsten is used as a filament in incandescent lamps.

a)Why tungsten is used as a filament? (1)

b)Write two possible ways to increase the efficiency and life of a filament lamp (2)

22. The power of a device operating at 250 V potential difference is 500 W. If so a) Calculate the intensity of current flowing through the circuit while this device is operating. (1)

b) What is the change in power if the resistance of this device is reduced. Explain. (2)

23. Emf is induced when there is a change in the magnetic flux associated with a conductor

a) By what name is this phenomenon known? (1)
b) Write ways to increase the amount of emf generated in this way. (1)

24. Voltage drop is a major problem associated with power transmission.

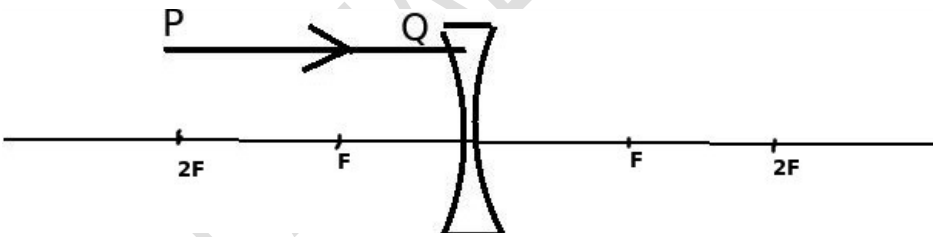
a) What is the main reason for voltage drop? (1)
b) Explain the way to avoid this (2)

25. When an object is placed 60 cm away from the pole of a concave mirror, an inverted image is formed at a distance of 20 cm.

a) Write the mirror equation (1)

b) Calculate the focal length of the mirror using the New Cartesian sign convention. (2)

26. Observe the figure and answer to the questions



a) Complete the path of PQ the light ray falling on the concave lens (1)

b) The focus of a concave lens is virtual. Why? (2)

27. a) What is the color of the outer edge of the rainbow? (1)

b) Explain how a rainbow is formed when sunlight passes through water droplets in the atmosphere. (2)

28. a) What is an energy crisis? (1)

b) Write four ways to reduce the energy crisis. (2)

Question Nos. 29 to 34 have four scores each.

29. Joule's law is the law of heat generated by a conductor of electricity

a) Write the Joule law. (1)

b) 2 A current flows through a heating device with a resistance of 115 for 30 minutes. Calculate the heat generated. (2)

c) What is the potential difference experienced by this device? (1)

30. a) What is meant by the power of an electrical device? (1)

b) What is the change in the resistance of the heating coil if its length is cut in half? (1)

c) What is the change in the heat generated by the heater if this type of coil is used? Explain. (2)

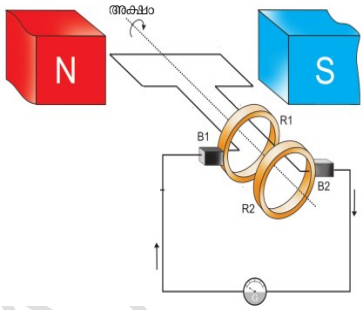
31. A transformer has 400 coils in the primary and 600 coils in the secondary.

a) What type of transformer is this? (1)

b) On which coil of this transformer is the thick wire used? (1)

c) Explain the need to use thicker wire in the coil of such a transformer (2)

32. A picture of an AC generator is given below

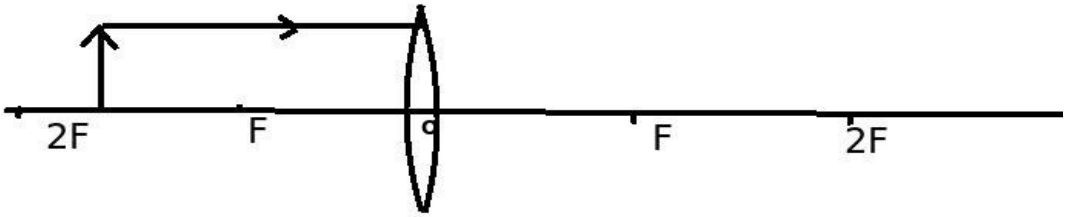


a) What is the energy changer in it? (1)

b) Graphic representation of the electric current available at its output (2)

c) What is the change in the device required to convert it into a DC generator (1)

33. Observe the figure.

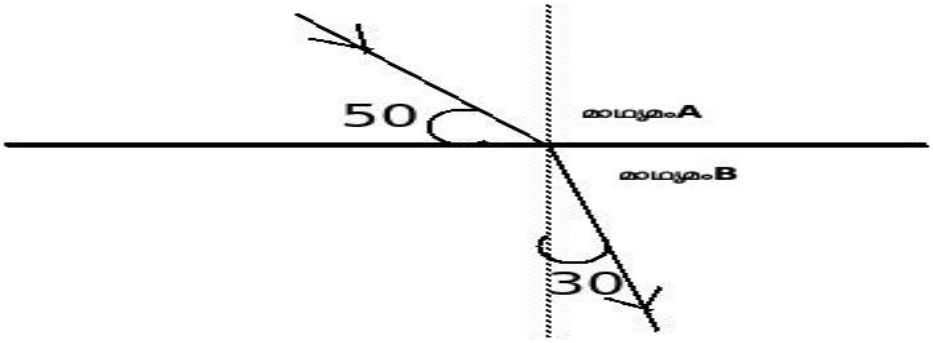


a) What is the point O in the figure ? (1)

b) Complete the drawing and mark the position of the image (2)

c) Write two features of the image. (1)

34. Examine the image of the refraction of light and write the answers to the questions



a) Write the angle of incidence and the angle of refraction. (1)

b) Which law connects the incident angle and refracting angle (1)

c) Which of the following media has low optical density?
Justify your answer. (2)