Set - A

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E1006 - Ph

SECOND TERMINAL EVALUATION 2023-24

PHYSICS

Standard: X

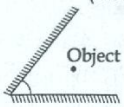
Time : 1½ hour
Total Score : 40

Instructions

- First 15 minutes is given as cool off time. This time is to be spent for reading and understanding the questions.
- Answer the questions based on instructions.
- Answer the questions according to score and time.

Answer any four questions from 1 to 5. (1 score each) **(4 x 1 = 4)**

1. When two plane mirrors are arranged as shown in the figure, 5 images of an object are formed. What is the angle between the mirrors? (1)



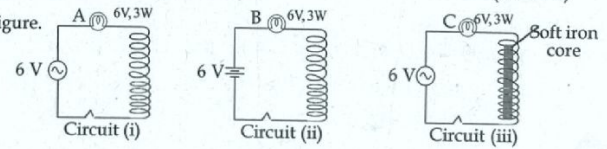
a) 50^0 b) 60^0 c) 90^0 d) 120^0

2. Which of the following statement is associated with the current induced in an armature of a DC generator, when it works? (1)
   (a) the magnitude of the current changes but the direction of current remains the same.
   (b) both the magnitude and direction of the current remains the same.
   (c) the magnitude of the current remains the same but the direction of current changes.
   (d) both the magnitude and direction of the current changes.
3. The magnification of image formed by a mirror does not depend on the position of the obejct. Which type of mirror is this? (1)
4. The frequency of the current produced in the power stations of our country is ..... (1)
   a) 11 Hz b) 50 Hz c) 230 Hz d) 400 Hz
5. Identify the relation from the first pair with respect to current and complete the second pair suitably. (1)

   I^2Rt : Energy
   I^2R : .....

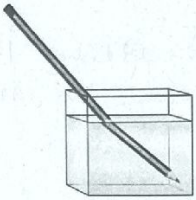
Answer any 4 questions from 6 to 10. (2 score each) **(4 x 2 = 8)**

6. Observe the figure.



   (a) Which bulb will glow with maximum brightness when current flows through the circuit? Which bulb will give the least brightness? (1)
   (b) Justify your answer. (1)

7. Observe the figure.



A pencil kept in water appears bend at the air-water interface as shown in the figure.

(a) Name the optical phenomenon that produces this effect. (1)

(b) Which charecteistic properties of the medium are responsible for this phenomenon? (1)

8. The given statements explain the nature of images formed by different types of mirrors. Arrange the statements in the given table. (2)

(a) Always form diminished images.

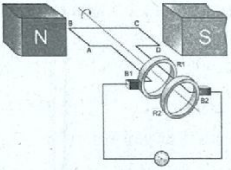
(b) Can form real or virtual images.

(c) Can form a virtual and magnified image than the object.

(d) Always form images between F and P.

Convex mirror	Concave mirror

9. Analyse the given schematic diagram.



(a) Write down the rule that helps to find the direction of current induced in the armature, when the device works. (1)

(b) Draw the graphical representation of emf obtained from the device, when it works. (1)

10. In a transformer without any loss in power, the secondary voltage is 12 V and the primary current is 0.1 A. The power of this transformer is 24 W.

(a) Calculate the secondary current. (1)

(b) Which type of transformer is this? (1)

Answer any 4 questions from 11 to 15. (3 score each) **(4 x3 = 12)**

11. (a) Explain how a three pin plug ensures better safety from electric shock, when there is an insulation failure in an electric iron box. (2)

(b) Write down the first aid to be given to a person in case of an electric shock. (1)

12. 0.2 A current flows through an electric heating coil connected to 200 V supply. If this resistor is divided into two resistors of equal resistance and then connected in parallel to the same circuit, what will be the electric power of the circuit? (3)

13. Analyse the table.

Medium	Speed of light
Diamond	1.25×10^8 m/s
Water	2.25×10^8 m/s
Vacuum	3×10^8 m/s
Glass	2×10^8 m/s

(a) List given mediums in the ascending order of their optical densities. (1)

(b) What is the refractive index of glass with respect to water, when light enters from water to glass. (1)

(c) Write down a practical definition for absolute refractive index. (1)

14. Different types of mirrors are used in our daily life.

(a) Which type of mirror is used as a reflector in the headlight of vehicles? (1)

(b) The bulbs in head lights of vehicles are placed at which point with respect to the mirror? Why? (1)

(c) Which mirror is used as rear view mirrors in vehicles? (1)

15. Rearrange columns B and C to match the column A. (3)

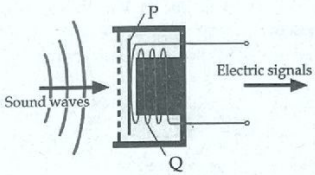
A	B	C
Incandescent lamp	Nichrome	Low melting point
Safety fuse	Copper	Ability to remain in red hot condition for a long time
Electric heater	Alloy of tin and lead	Ability to emit white light in the white hot condition
	Tungsten	High conductivity

Answer any 4 questions from 16 to 20. (4 score each) **(4 x 4 = 16)**

16. The given table shows the measurements related to the image formation of a spherical mirror. Complete the table properly.

Distance of object from the mirror	-60 cm
Radius of curvature	-30 cm
Focal length	(a) ..... (1)
Distance of the image from the mirror	(b) ..... (2)
Height of the object	+12 cm
Height of the image	(c) ..... (1)

17. Observe the figure.

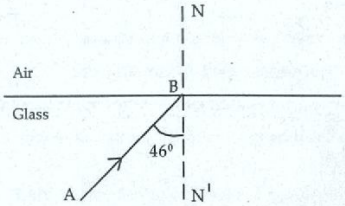


(a) Name the parts P and Q in the figure.
P : ....., Q : ..... (2)

(b) What is the working principle of this device? (1)

(c) Describe its working. (1)

18. Observe the figure.



(a) AB is the path of light falling obliqely on the glass-air interface. NN' is the normal at the point of incidence. Complete the diagram in your answer sheet to show the change in the path of the ray after B. (2)

(b) Name the optical phenomenon that helped you to draw the path of this ray after the incidence. (1)

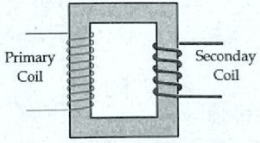
(c) Write down two practical applications of this optical phenomenon. (1)

19. Observe the figure.

(a) Write down the name of the device. (1)

(b) In a house 5 LED lamps each of 20 W work for 5 hours and one laptop of 50 W works for 2 hours daily. Calculate the electrical energy consumption in one month in commercial units. (3)

20. A schematic diagram of an electric device is depicted.



(a) Name the device shown in the figure. (1)

(b) Write down the working principle of this device. (1)

(c) Thicker coils are used in the secondary of this device. Why? (2)