

PHYSICS

Answer key

Section A

1. Light Effect
2. Split Rings
3. 11 kV
4. Generator or d
5. $1/f = 1/u + 1/v$
6. Total Internal Reflection
7. Persistence of Vision
8. The cylinder has maturity period up to December 24

Section B

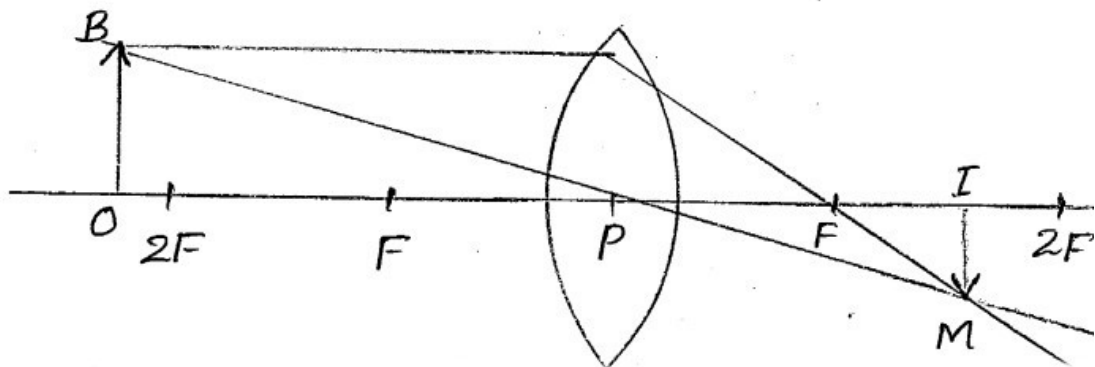
9. Tungsten has the ability to emit white light in the white hot condition, Nichrome has not.
10. a) The mutual action of the magnetic field around the current carrying conductor and that around the magnetic needle.
b) Right Hand Thumb Rule or Right Hand Screw Rule
11. a) Optic Centre
b) Focal length
c) Centre of Curvature
d) Principal Axis
12. a) Step up Transformer
b) Mutual Induction or Electromagnetic Induction
13. a) AO b) OB c) 40°
14. a) Plane Mirror b) Convex Mirror c) Virtual Image d) Real Image
15. a) Zero or 0 V
b) 400 V
16. a) Dispersion
b) Violet has less wavelength, so deviation more.
17. Any 2 precautions.
18. Increases. Resistance decreases due to Self Induction/Back emf.
19. a) Nearer objects cannot be seen clearly even though distant objects are clearly seen.
b) Convex Lens
20. Low power consumption, High efficiency, High longevity, Not harmful to environment, No loss of energy in the form of heat etc (Any 2 advantages)

Section C

21. a) Alloy of Lead and Tin
 b) Low Melting point
 c) Short Circuit or Overloading
22. a) $p = 100 \text{ W}$ b) $H = 30000 \text{ J}$
23. a) AC Generator b) Downwards



24. a) Nichrome wire . Due to more Resistance . b) Joule's Law
25. $v = +80 \text{ cm}$
 Nature of the image : Erect and Virtual image
26. a) Red
 b) Wavelength increases, scattering decreases.
 c) Because Red has more wavelength and less scattering.
27. a) Moving coil Loudspeaker
 b) A - Voice coil B – Field Magnet
 c) Electrical Energy transformed into Mechanical energy/ Sound Energy
- 28.

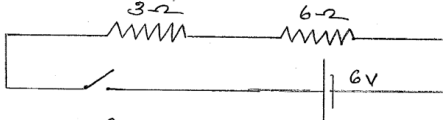


Nature of the mage : Real, Inverted, Diminished

Section D

29. a) Magnetic Effect
 b) South Pole
 c) Intensity of current, Number of turns of the coil, Nature of the soft iron core.(any 2)
30. a) (i) Convex lens (ii) Concave lens
 b) Using Convex lens . At C / Centre of Curvature

31. a) Step down Transformer
b) $V_p = 400 \text{ V}$
c) Mutual Induction
32. a) Fossil fuels are formed by the transformation of plants and animals that went under the earth's crust millions of years ago.
b) Coal, Petroleum, Natural gases etc (any 2)
c) They cause environmental problems.
33. a)



- b) Effective Resistance $R = 2 \text{ ohm}$
34. a) Kilowatt Hour or kWh
b) Parallel connection
c) Consumption of Energy = 1.6 kWh or Unit

Physics

Anwer Key

SECTION A

1. Electric Iron
2. Clockwise Direction
3. 11000 V /11 KV
4. Convex
5. Diamond
6. Red
7. Mutual Induction
8. L.P.G

SECTION B

9.
 - 1). Protects Equipments, Circuits and life.
 - 2) Alloy of Tin and lead
10.
 - 1) DC Motor
 - 2) Poles of Magnet
11. Increase body Temperature, give artificial respiration.
12. Same size as that of the object, Inverted, real, image forms in C itself
13. Endoscope-Medical field, Optical fibre Cables-in Tele communication
14. A-Violet, B-Red
15. Solar Energy, Wind Energy-Green Energy
Nuclear energy & burning of fuels-brown Energy
16.
 - 1) From B \rightarrow A
 - 2) Outward the magnet
17.
 - 1) Electromagnetic Induction
 - 2) Mechanical Energy Converts to Electrical Energy
18.
 - 1) Step up transformer
 - 2) To decrease energy loss in the form of heat by decreasing current.

19. High resistivity, High melting point, Ability to stand a long time in red hot condition
20. 1) Picture A and E
2) 42°

SECTION C

21. $H = \frac{V^2 t}{R} = \frac{230 \times 230 \times 300}{23} = 69000J$

22. 1) The reaction between magnetic field of the magnetic needle and the magnetic field of the current carrying conductor
2) Direction of movement of magnetic needle changes
3) Right hand thumb rule

23. Stepup 2,3,5
Stepdown-1,4,6

24. 1). Concave
2). $\frac{1}{6} = \frac{1}{4} + \frac{1}{v}$ $\frac{1}{v} = \frac{1}{6} - \frac{1}{4} = \frac{2-3}{12} = \frac{-1}{12}$ $v = -12$

=

25. 1) Current Diagram
2) Large size, Erect, Virtual
26. Definition for each

27. 1) Definition
2) Any two solutions

28. 1) Battery 2) DC Generator 3) AC Generator(emf)

SECTION D

29. 1) Picture B 2) Electromagnetic induction = Definition 3) AC Generator, DC Generator, Moving coil microphone transformer (Anyone)
30. 1) Bulb glows only at switch on and switch off
2) Primary Coil
3) Secondary Coil
4) Bulb glows Continuously
31. 1) C 2) A 3) D 4) B
32. 1) AO 2) OB 3) 45°

- 4) Law of reflection
- 33. 1) Optic Centre 2)Principal axis 3)Focal Length 4)Convex
- 34. 1) Moving Coil Microphone
 - 2) Electro magnetic induction
 - 3) Permanent magnet,diaphragm,Voice coil
 - 4) Sound energy to electrical energy

PHYSICS
Answer Key

Section A

- 1) Tin, Lead
- 2) a) Thumb Indicates the direction of motion of the conductor
- 3) 50 Hz
- 4) Convex mirror
- 5) Greater than
- 6) Nuclear fusion
- 7) Naphtha
- 8) Biogas

Section B

- 9) a) Resistors are in series connection.

$$\begin{aligned}\text{Effective resistance} \quad R &= R_1 + R_2 + R_3 \\ &= 2 + 2 + 2 \\ &= 6\Omega\end{aligned}$$

or

$$nR = 3 \times 2 = 6\Omega$$

- b) Resistors are in parallel connection

$$\text{Effective resistance} \quad \frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$\frac{1}{R} = \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$$

$$= \frac{3}{2}$$

$$R = \frac{2}{3} = 0.66\Omega$$

- 10) 1. Major part of the electrical energy is lost as heat.
2. Efficiency is less.

- 11) a) Diaphragm, Voice coil, Soft iron core, Field Magnet.
 b) Motor Principle
- 12) • No. of turns
 • Intensity of electric current in conductor
- 13) a) Fleming's Righthand Rule
 b) Magnetic field
- 14) Similarity
 Field Magnet, armature, brushes
Difference
 DC generator - split rings
 AC generator - slip rings
- 15) a) Plane mirror
 b) Concave mirror
- 16) a) 2 c.m.
 b) 4 c.m.
- 17) a) Angle of incidence - 30°
 Angle of refraction - 19°
 b) Light ray deviates towards the normal
- 18) During sunrise and sunset sunlight has to travel more distance. Light rays of less wavelength scattered more and lost. Therefore the remaining red colour with high wavelength exist.
- 19) a) Liquefied Petroleum Gas
 b) Butane
- 20) Any two methods for reducing energy crisis.

SECTION C

- 21) High resistivity, high melting point, ability to remain in red hot condition for a long time without getting oxidised.
- 22)
- | | A | B | C |
|--|---|--------------|---------------------------------------------------------|
| | 1 | AC generator | Direction of emf changes continuously |
| | 2 | Battery | emf is steady |
| | 3 | DC generator | emf increases and decreases without change in direction |

- 23) a) Conductor AB Moves
 b) Mutual action of two magnetic fields
 c) Direction of motion also reverses
- 24) a) Real, inverted, same size
 b) Concave mirror
 c) Image become virtual and erect.
- 25) a) Power of the lens
 b) Convex lens
 c) $P=+2D$

$$P = \frac{1}{f}$$

$$f = \frac{1}{P} = \frac{100}{2} = +50 \text{ cm}$$
- 26) 1) Convex lens
 2) Concave lens
 b) Convex lens , at 2F
- 27) a) Red
 b) When wavelength increases scattering decreases
 c) Red has higher wavelength. So Scattering less.
- 28) a) White light
 b) Persistence of vision
 c) A torch rotated rapidly appears as an illuminated circle.

SECTION D

- 29) a) Convex lens
 b) Complete the diagram. Position beyond 2F.
 c) Real, inverted, magnified
- 30) a) Longsightedness or hipermetropia
 b) Size of the eyeball small, power is low.
 c) Convex lens
 d) Draw the figure
- 31) a) Step up transformer
 mutual induction
 b) $V_s = 24V$

- 32) a) Diaphragm vibrates, air column vibrates and sound produces.
b) No vibration. No change in magnetic flux
c) Motor Principle
d) Electrical Energy converts to sound energy/mechanical energy
- 33) a) $f = 12 \text{ c.m.}$
b) Concave mirror - Shaving mirror (any)
Convex mirror - Rear view mirror
- 34) Electric heater - Heat effect
Microphone - Electro magnetic induction
Bulb - Light effect
LED - Not harmful to environment

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