



RRB NTPC GRADUATE & UNDER GRADUATE CBT-1

PHYSICS HANDOUT – 2

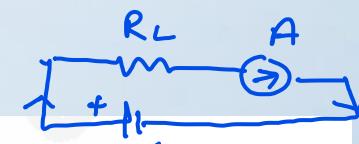
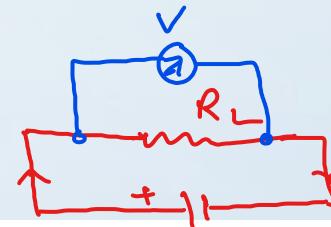
Presented by- Dept. of physics



detect current.

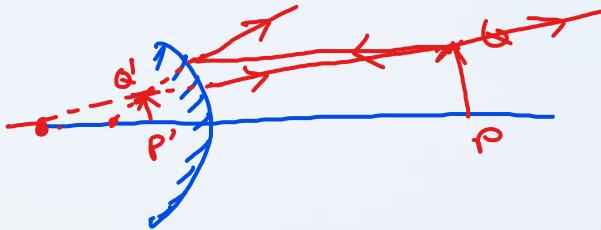
measure P.d.

1. A galvanometer can be converted into a voltmeter by connecting with it a –
- a) high resistance in parallel
 - b) low resistance in parallel *for Ammeter ✓*
 - c) high resistance in series *X ✓*
 - d) low resistance in series



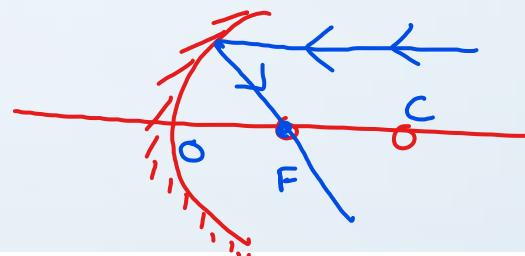
2. The _____ is connected in parallel in an electric circuit.

- a) voltmeter
- b) fuse
- c) galvanometer
- d) ammeter *⇒*



3. If you look into a mirror and find that the image your reflection is smaller than you and erect, then the type of the mirror is –

- a) plano-concave mirror
- b) concave mirror
- c) plane mirror
- d) convex mirror



$$OF = \frac{OC}{2}$$
$$f = \frac{r}{2}$$

4. The focal length of a concave mirror with a radius of curvature of 20.0 cm is –

- a) 15 cm
- b) 20 cm
- c) 5 cm
- d) 10 cm

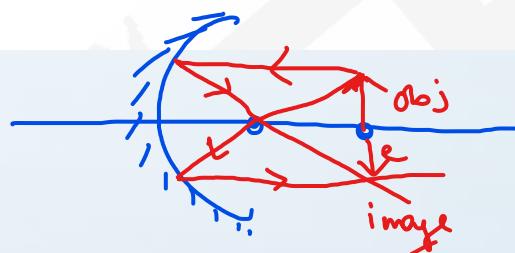


5. In a concave mirror, if object is placed at centre of curvature, then image will be –

- a) virtual
- c) diminished

- b) erect
- d) at the centre of curvature

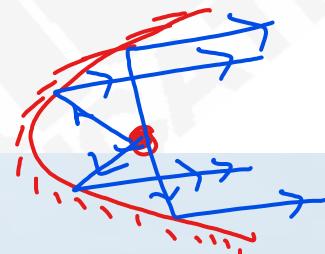
Real, inverted,
same size.



6. Name the type of mirror used in the headlight of vehicles.

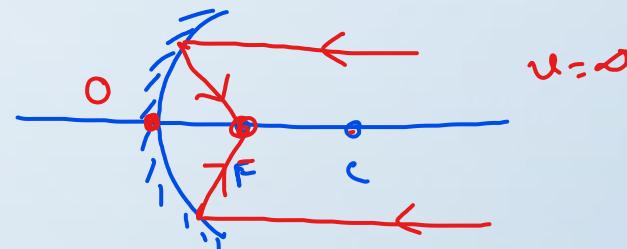
- a) Plane mirror
- c) Convex mirror

- b) Plano-convex mirror
- d) Parabolic concave mirror





7. In a concave mirror, when the object is placed at infinity which of the following applies to the image?
- a) Real, inverted image of the same size at centre of curvature
 - b) Real, inverted, highly diminished image at focus
 - c) Real, inverted, highly enlarged image at centre of curvature
 - d) Real, inverted, diminished image between centre of curvature C and principal focus F





$$+ve \Rightarrow \text{Convex lens} \\ -ve \Rightarrow \text{Concave lens} \\ P = \frac{1}{f_{\text{mm}}} = \frac{100}{x_{\text{mm}}}$$

8. A lens has a power of +2D, which one of the following statements about the lens is true?
- a) The lens is concave and has a focal length of 0.5 m.
 - b) The lens is convex and has a focal length of 2.0 m.
 - c) The lens is convex and has a focal length of 0.5 m.
 - d) The lens is concave and has a focal length of 2.0 m.

$$f = \frac{1}{2} = 0.5 \text{ m} \\ = 50 \text{ cm} //$$



$$P = \frac{1}{f} = \frac{1}{50} = 2$$

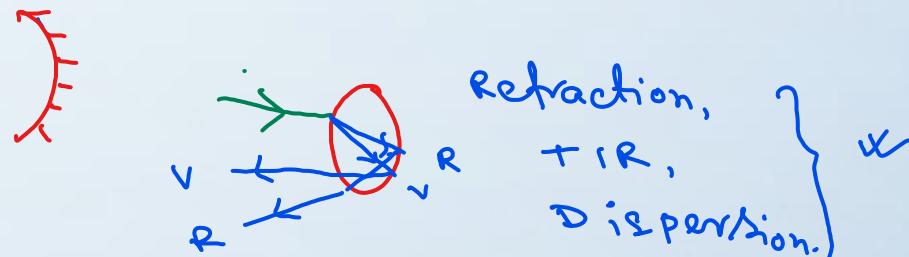
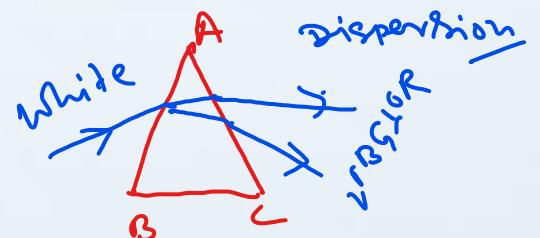
9. If the focal length of a convex lens is 50 cm, then which one of the following is its power?

a) +2 D

b) +0.02 D

c) -0.5 D

d) +0.5 D



10. A rainbow is produced due to which one of the following phenomena?

a) Dispersion of light

b) Interference of light

c) Diffraction of light

d) Scattering of light by atmospheric dust



11. Which one of the following statements is not correct? *(x)*

- a) Human eye is a refracting system containing a diverging lens. *(Convex lens) x*
- b) The retina of the human eye contains millions of light sensitive cells, called rods and cones, which convert the light into electrical messages.
- c) Every image that is focussed on the retina is upside down.
- d) We need both eyes to judge the relative positions of objects accurately.



12. The focal length of the lens of a normal human eye is about –

a) 25 cm

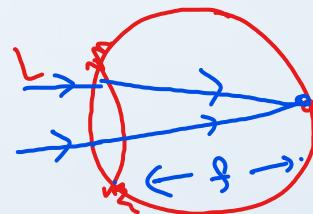
↙ =

b) 1 m

c) 2.5 mm

d) 2.5 cm

(approx)





hypermetropia



ve

remedy \Rightarrow Convex lens
+ ve power.

13. In long-sightedness, images are formed –

a) on retina

=
ve

b) in front of retina.

+

Myopia

Concave lens
- ve power.

c) behind the retina

d) on blind spot

14. The frequency of direct current is –

a) zero

=
ve

b) 50 Hz

+

AC in india

c) 60 Hz

d) 100 Hz



1

$$Q = It \\ = 1.0 \times 600$$

$$t = 10 \times 60 = 600 \text{ sec.}$$

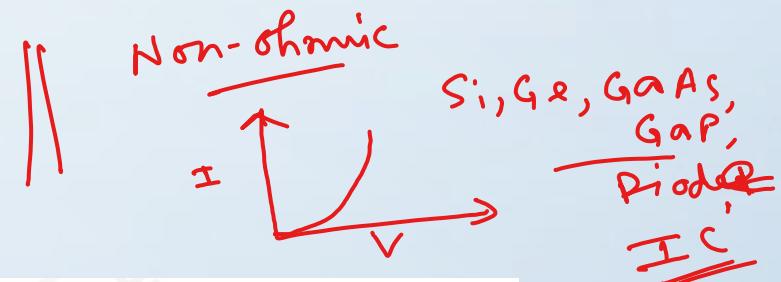
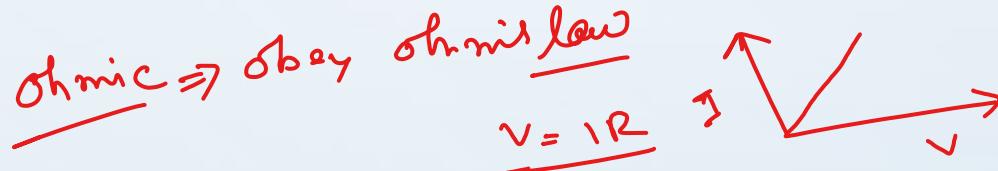
15. A current of 1.0A is drawn by a filament of an electric bulb for 10 minutes . The amount of electric charge that flows through the circuit is –

a) 0.1C

b) 10C

c) 600C

d) 800C



16. Which one of the following devices is non-ohmic?

a) Conducting copper coil

c) \checkmark Semiconductor diode \checkmark

b) Electric heating coil

d) Fe wire

Cu, conductor
AT



17. Which one of the following is an ohmic conductor?

a) Germanium

b) Silicon

c) Carbon

d) Silver

non-ohmic .

A, Cu, Fe .

18. The ~~compression~~ is made at the place where the air pressure is –

a) Zero



b) Less

c) Endless

d) High



19. A compressed spring has _____ energy compared to a normal spring.

- a) Less c) Equal b) Zero d) Greater

20. Fill in the blank with the correct option.

An object is thrown vertically upward, during the rise, potential energy and kinetic energy respectively.

- a) increases, decreases

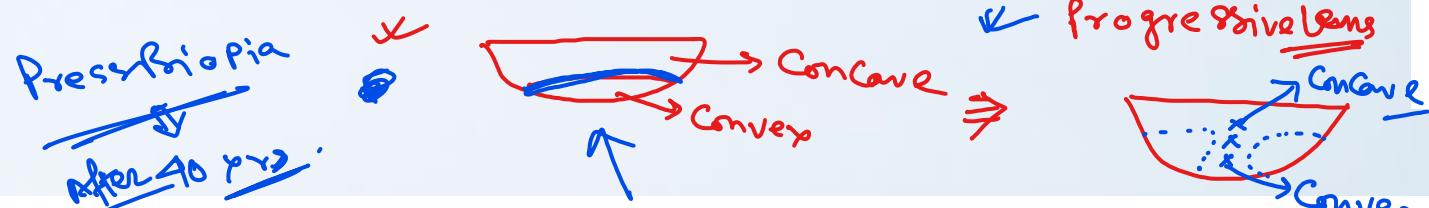
- c) increases, increases



- b) decreases, increases

- d) remains the same, remains the same

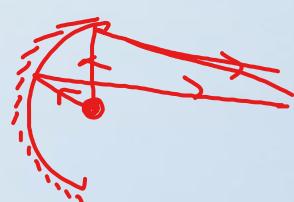
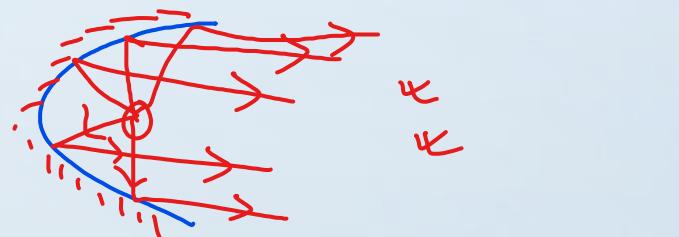
~~Top most KE = 0~~

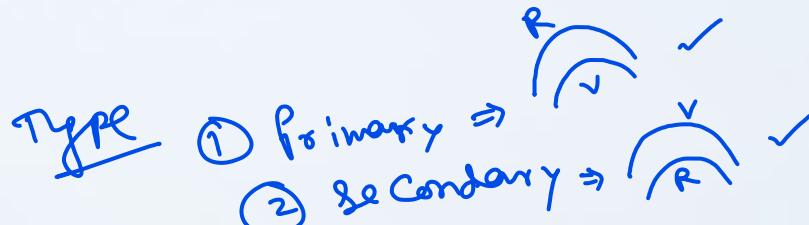


21. The upper and lower portions in common type of bi-focal lenses are respectively -
- a) concave and convex
 - b) b) convex and concave
 - c) both concave of different focal lengths
 - d) both convex of different focal lengths

Parabolic

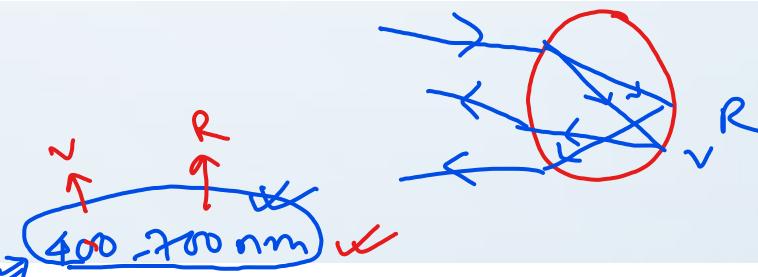
22. Concave mirror is used in headlights of vehicles, because it -
- a) focuses light from the bulb onto nearby vehicles
 - b) sends parallel rays
 - c) fits well into the shape of the headlight
 - d) is cheaper than other mirrors





23. A rainbow is produced due to which one of the following phenomena?

- a) Dispersion of light \times
- b) Interference of light
- c) Diffraction of light
- d) Scattering of light by atmospheric dust



24. Wavelength of visible light lies in between –

- a) 400 to 800 nm \times
- b) 500 to 1000 nm
- c) 300 to 600 nm
- d) 200 to 400 nm



25. A device for measuring temperatures at a distance is –

- a) Gas thermometer
- b) Mercury thermometer
- c) Radiation pyrometer
- d) Maximum-minimum thermometer

i) $P_k = P_w \Rightarrow$ level No change -
 $P_k > P_w \Rightarrow$ " rise " good "
 $P_k < P_w \Rightarrow$ " fall "

$$\text{volume} = \frac{m}{\rho}$$

$$V_k > V_w$$

26. A piece of ice is floating in kerosene in a pot. When ice melts completely, the level of liquid will –

- a) Go up
- b) Remain the same
- c) Go down
- d) First go up then go down



27. Which of the following statements are true /false about the speed of sound in a different medium at 25° C?

- A. The speed of sound in oxygen gas is 316 m/s. ✓
- B. Speed of sound in distilled water is 1498 m/s. ✓
- a) Both A and B are correct ✗
- c) Only A is correct
- b) Neither A nor B is correct
- d) Only B is correct

Rayleigh's scattering

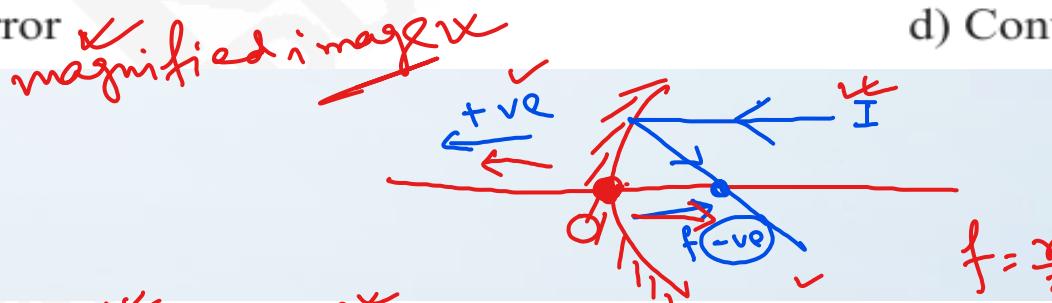
28. Why does sky appear blue?

- a) All colors of white light, except blue, are most strongly engraved by air molecules.
- b) The light of all colors is in the correct proportion.
- b) Blue wavelength is relatively low as white light and it is most scattered by air molecules. ↗, scattering ↓
- d) White light is reflected by all the air molecules.



29. Which type of mirror is used by dentists to see large image of patients' teeth?

- a) Spherical and convex mirror
- b) Spherical mirror
- c) Concave mirror
- d) Convex mirror



All distance measure from
Pole of mirror
i) towards incident ray $\Rightarrow +ve$
ii) Reverse $\Rightarrow -ve$

30. The radius of curvature of a concave mirror is 30 cm. Following cartesian sign convention, its focal length is expressed as -

- a) -15 centimeters ~~✓~~
- b) -30 centimeters
- c) +15 cm
- d) +30 cm



31. The characteristic of sound which distinguishes a female voice from a male voice is called –

- a) pitch
- b) phase
- c) quality
- d) loudness

depends on frequency

→ High e⁻

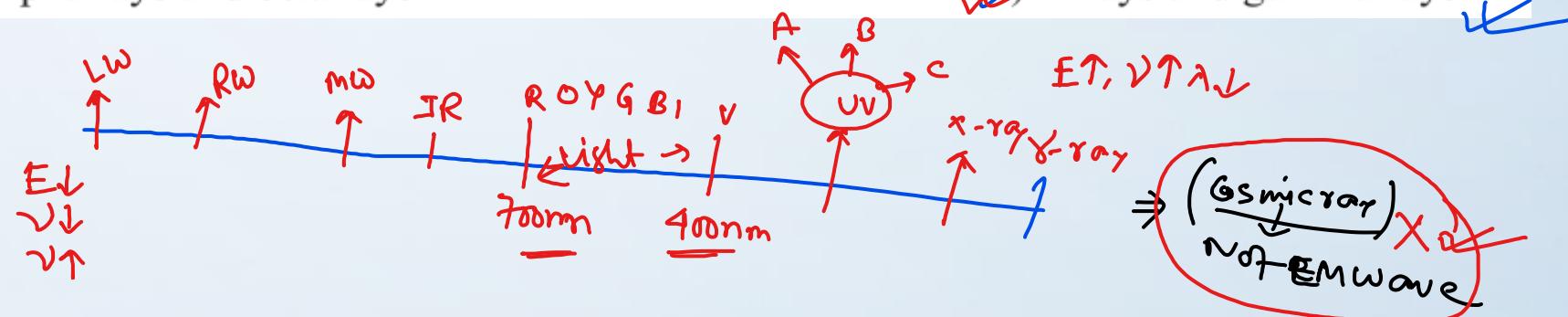
32. A body is charged negatively. It implies that – ✓

- a) it has lost some of its protons X
- b) it has acquired some electrons from outside X
- c) it has lost some of its electrons $\Rightarrow +ve$
- d) none of these



33. Which one of the following pairs of rays is electromagnetic in nature?

- a) Beta rays and gamma rays
- b) Cathode rays and X-rays
- c) Alpha rays and beta rays



34. If 4 resistances of $\frac{1}{4} \Omega$ are connected in series order then how much the maximum resistance may be obtained?

- a) 4Ω
- b) $\frac{1}{8} \Omega$
- c) 1Ω
- d) $\frac{1}{4} \Omega$

$$R_s = r_1 + r_2 + r_3 + \dots + r_n$$

$$R_s = 4 \cdot \frac{1}{4} = 1 \Omega$$

\parallel

$$\frac{1}{R_p} = \frac{1}{r_1} + \frac{1}{r_2} + \frac{1}{r_3} + \dots$$



~~for conductor~~
 $R_t = R_0 (1 + \alpha \cdot \Delta t)$

35. Factors affecting resistance of matter are –

I. Temperature \times

II. Nature of substance \rightarrow Resistivity.

III. Conductor length $\propto R \propto l$

IV. Area of cross section $A \propto R \propto \frac{1}{A}$

\checkmark All I, II, III and IV \times

b) Only I, III and IV

c) Only I, II and III

d) Only I and III

for semiconductor
 $\alpha = -\nu_e$ $T \propto R \propto \frac{1}{T}$

$$\begin{array}{c} \textcircled{V} \\ \textcircled{R} \\ 400 - 700 \end{array}$$

36. In the visible spectrum the colour having the shortest wavelength is –

a) Green

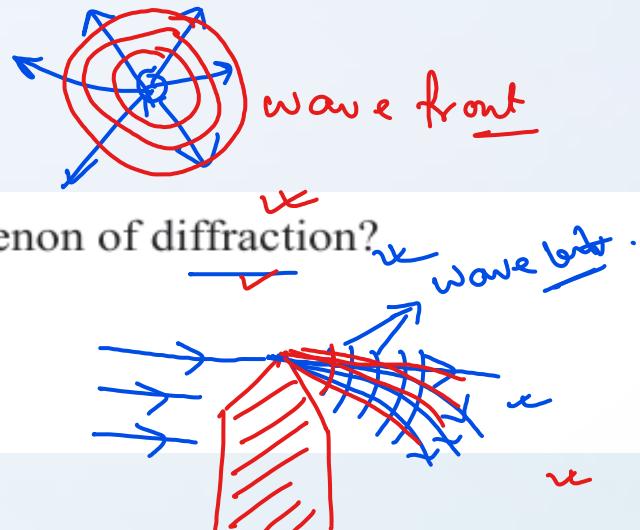
b) Red

$$\downarrow 700 \text{ nm}$$

\checkmark c) Violet \times

$$\begin{array}{c} \textcircled{V} \\ \textcircled{R} \\ 400 \text{ nm} \end{array}$$

d) Blue



37. What causes the phenomenon of diffraction?

- a) Reflection of light
- c) Scattering of light

- b) Bending of light around obstacles
- d) Absorption of light

38. Battery capacity is expressed in –

- Ampere-hour

- b) Voltage

- c) Battery load

- d) Volume of electrolyte

$$Q = I \times t$$



39. CV Raman was awarded the Nobel prize for his work associated with which of the following phenomenon of radiations?

- a) scattering
- b) diffraction
- c) interference
- d) polarization

X

40. What is the absolute refractive index of air?

- a) 1.03
- b) 1.00003
- c) 1.003
- d) 1.0003

X

X

- ✓ 1.0003