**Chapter 11**

**The Human Eye and the Colourful World**

**(**Deleted topic- Functioning of lens in human eye, defects of vision and their corrections, application of spherical mirror and lenses)

1. Name the part of the retina are insensitive of light.
2. Which type of retinal cells respond to the brightness of light?
3. Why does it take some time to see objects in a cinema hall, when we just enter the hall?
4. Trace the sequence of events which occur when bright light is focussed on your eyes.
5. Name the technology based on the phenomenon of persistence of vision.
6. Define the term power of accommodation. Write the modification in the curvature of eye lens which helps us to see nearby objects clearly.
7. Why is red colour selected for dander signal light?
8. Why is the colour of clear sky blue?
9. What is the direction of rainbow formation? What is position of red colour in rainbow?
10. Is the position of a star as seen by us its true position? Justify your answer.
11. What causes Tyndall effect?
12. Why cannot we read a printed page by holding it very close to our eyes?
13. The extent of deviation of a ray of light on passing through a prism depends on the colour, give reason for this.
14. What is difference in colours of sun observed during sunrise/ sunset and noon? Give explanation for each.
15. Why does it take some time to see objects in a room with dim light when you enter there from bright sunlight outside?
16. Why do chickens can see only in bright light?
17. Explain the structure of human eye. How are we able to see distant and near objects
18. Draw a ray diagram each showing a) myopic eye and b) hypermetropic eye.
19. In dispersion of white light through prism, which colour deviates most and which one deviates least? Why do they deviate differently?
20. What is rainbow? Draw a labelled diagram to show the formation of rainbow.
21. What is pupil? How does it regulate the amount of light reaching the retina?
22. A person looking at a person wearing a shirt with a pattern comprising vertical and horizontal lines is able to see the vertical lines more distinctly than the horizontal ones. What is the cause of this defect? How is such a defect of such vision corrected?
23. What is Rayleigh scattering? Give essential condition for the same.
24. Why do stars twinkle?
25. Trace on your answer sheet the path of monochromatic ray AO incident on glass prism and mark the angle of deviation.

B

O

**A C**

b) If AO was a ray of white light.

i) What will you observe on the screen BC placed near the prism.

ii) Write the name of this phenomenon

iii) State the cause of this phenomenon.

Iv) what does it tells you about constituent of white light?

1. Multiple choice questions
2. The angle between the two rectangular surface of the prism is
3. Refracting angle b) angle of prism c) emergent angle d) none of these
4. Which of the following statements is correct regarding propagation of light of different colours of white light in air?
5. Red light moves fastest b) Blue light moves faster than green light c) All the colours of white light moves with same speed d) Yellow light moves with mean speed as that of red and violet light
6. When we enter a cinema hall we cannot see properly for a short time because
7. Pupil does not open b) Pupil does not close c) adjustment of the size of pupil takes some time. d) none of these.
8. Sunset is red because at that time the light coming from sun has to travel
9. Lesser thickness of earth’s atmosphere b) greater thickness of earth’s atmosphere c) varying thickness of earth’s atmosphere d) along the horizon.
10. A beam of white light when passes through the glass prism, a spectrum is observed, but when same beam of light passes through hollow glass prism then
11. Spectrum is same b) spectrum becomes brighter c) there will be no spectrum d) colours of spectrum is reversed.
12. Assertion and Reasons
13. If both assertion and reason is true and reason is the correct explanation of the assertion.
14. If both assertion and reason is true and reason is not the correct explanation of the assertion.
15. If the assertion is true but the reason is false.
16. If the assertion is false but the reason is true.
17. Assertion: The phenomenon of total internal reflection occurs only when incident ray travels from denser medium to rarer medium.

Reason: Rainbow is an example of the dispersion of white light.

1. Assertion: The ability of the eye to retain the image for about 1/6th of a second even after user has stopped seeing the object is called persistence of vision.

Reason: The phenomenon of persistence of vision is made use of in cinematography.

1. The phenomenon of splitting white light into seven colours when it passes through the glass prism is called dispersion.

Reason: Red colour deviates the most while passing through the glass prism.

**Chapter 12**

**Electricity**

1. Define the following
2. Electric current
3. Ampere
4. Volt
5. There are billions of electrons that move in random directions with different speeds. Is average velocity or the average speed of electron zero.
6. A current of 10 A flows through a conductor for two minutes.
7. Calculate the amount of charge passed through any area of cross section of conductor.
8. If the charge of an electron is 1.6x 10-16then calculate total number of electrons owing.
9. Distinguish between closed and open circuit.
10. When different wires of same dimensions but different materials connected such that these are joined end to end then what happens to potential difference across each wire?
11. State the relation between work, charge and potential difference for an electric circuit. Calculate the potential difference between two terminals of a battery if 100 joules of work is required to transfer 20 coulombs of charge from one terminal of battery to other.
12. a) If high voltage is applied to your body what will happen?

b)How much energy is transferred by a 12 V power supply to each coulomb of charge which moves it around the circuit?

1. a) List the factors on which the resistance of conductor in the shape of wire depends.

b)Why are metal good conductors of electricity whereas glass is bad conductor of electricity? Give reason

1. Why are alloys commonly used in electrical heating devices? Give reason.
2. A wire has resistance of 16 ohms. It is melted and drawn into a wire half its length. Calculate the resistance of new wire. What is the percentage change in the resistance?
3. A copper wire has diameter 0.5mm and resistivity 1.6x 10-8Ω m. Calculate the length of this wire to make it resistance 100Ω. How much does the resistance change if the diameter is doubled without changing its length?
4. Explain why resistance becomes more in a series combination.
5. 2identical resistors are first connected in series and then in parallel. Find the ratio of equivalent ratio in two cases.
6. Explain the following
7. Why is tungsten used almost exclusively for filament of electric lamps?
8. Why are the conductors of electric heating devices such as bread toasters and electric irons made of an alloy rather than pure metal?
9. How does the resistance of a wire vary with its area of cross-section?
10. Why copper and aluminium wires are usually employed for transmission of electricity?
11. Several electric bulbs designed to be used on a 220V electric supply line are rated 10 W. How many lamps can be connected in parallel with each other across 2 wires of 220V line if the maximum allowable current is 5 A.
12. Read the given passage and answer the following questions

A straight cylindrical wire lying along the X-axis has a length of .5m and diameter of .2 mm. It has resistivity of₽= 4x 10-8Ωm.

Let a potential of 4V is maintained between x=0 and x=0.5m

1. Resistance of the wire is
2. .600Ω b) .318Ω c) .637Ω d) .928Ω
3. Current in the wire is
4. 6A b) 7A c) 6.28 A d) 3.14 A
5. A simple electric circuit has 24V battery and a resistor of 120 ohms. What will be the current in the circuit? The resistance of connecting wires is negligible.
6. A blue tooth speaker of 120 watts runs for 50 hours. How much electrical energy is consumed?
7. A potential difference of 220volts is applied across a resistance of 11000 ohms in an electric iron. Calculate a) current and b) heat energy produced in joules in 10 seconds.
8. What is heating effect of current? List two electrical appliances which work on this effect.
9. Explain why an electric bulb becomes dim when an electric heater in parallel circuit is switched on. Why dimness decreases after some time?
10. Deduce the expression of 3 resistors R1, R2 and R3 connected in parallel. Draw a circuit showing their position and position of voltmeter and ammeter.
11. State Ohm’s law. How can it be verified experimentally? Does it hold good under all condition? Comment.
12. Multiple choice questions
13. The unit of resistivity is
14. Ohm b) Ampere c) Ohm-Ampere d) Ohm-metre
15. When the temperature of a metallic conductor is increased its resistance
16. Increases b) decreases c) may increase or decrease d) remains the same
17. An electric kettle consumes 1kW of electric power when operated at 220 V. A fuse wire of what rating must be used for it
18. 2A b) 1A c) 4A d) 5A
19. A heating unit of an electric stove is rated at 880W. It is connected to a power supply of 220V, the current it will consume
20. 2A b) 6 A c) 4A d) 8 A
21. Which of the following terms does not represent electrical power in circuit?
22. I2R b) IR2 c) VI d) V2R
23. Assertion and Reasons
24. If both assertion and reason are true and reason is the correct explanation of reason.
25. If both assertion and reason are true but reason is not correct explanation of the reason.
26. If assertion is true but reason is false.
27. If assertion is false but reason is true
28. Assertion: In parallel combination of electrical appliance, total power consumption is equal to the sum of the powers of individual appliances.

Reason: In parallel combination the voltage across each appliance is the same.

1. Assertion: Bending of wire does not alter its resistance.

Reason: Resistance of wire depends on its resistivity.

1. Assertion: Each bulb in a frill of 20 bulbs in the series when connected to supply voltage will emit more light than each bulb in frill of 19 bulbs in series when connected to same supply voltage.

Reason: Each bulb in a frill of 20 bulbs in series will get more voltage than that in frill of 19 bulbs.

1. Assertion: The wires supplying current to electric heater are not heated appreciably.

Reason: Resistance of connecting wire is very small and HαR

1. Assertion: Heating elements of a heater must have high resistance than connecting wires and high melting point.

Reason: If resistance is high, the electrical conductivity will be less.

1. Assertion: kWh is a commercial unit for expressing consumed electric energy.

Reason: Kilowatt hour is the unit of electric power.