

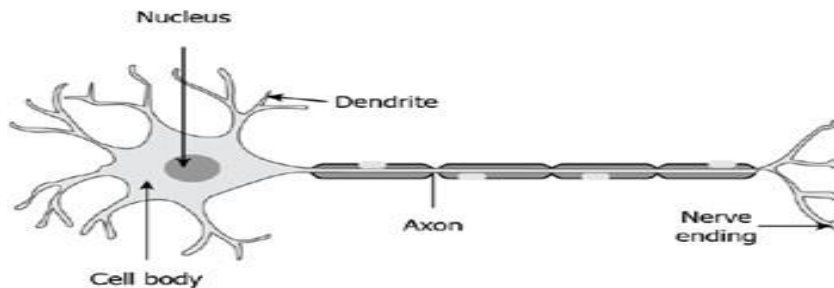


General Instructions:

- i. This question paper consists of 39 questions in 5 sections.
- ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- iii. **Section-A** consists of 20 objective type questions carrying 1 mark each.
- iv. **Section-B** consists of 6 very short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.
- v. **Section-C** consists of 7 short answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words.
- vi. **Section-D** consists of 3 long answer type questions carrying 05 marks each. Answers to these questions should in the range of 80 to 120 words.
- vii. **Section-E** consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION-A (20 x 1 = 20 marks)

1. The correct sequence of rainbow formation is:
(a) Refraction, Dispersion, internal Reflections, Refraction
(b) Dispersion, Refraction, internal Reflections, Refraction
(c) Internal Reflections, Refraction, Dispersion, Refraction
(d) Refraction, internal Reflections, Refraction, Dispersion
2. The direction of magnetic field line around a straight current carrying conductor is given by
(a) Fleming's left hand rule (b) Fleming's right hand rule (c) Right hand thumb rule (d) Both a & b
3. The most abundant metal on the earth crust
(a) Al (b) Sn (c) H (d) none
4. Marsh gas is
(a) Methane (b) fructose (c) a and b (d) none
5. Oxidation of alcohol gives---- .
(a) Aldehyde (b) ester (c) ketone (d) All
6. The first member of keto group is
(a) Acetone (b) Propanone (c) Di methyl ketone (d) All
7. Rancidity is ----- reaction.
(a) Oxidation (b) Reduction (c) Slow oxidation (d) All
8. Find the odd man out
(a) Blue vitriol (b) Gypsum (c) POP (d) NaHCO_3
9. Which is the correct sequence of body parts in the human alimentary canal?
(a) Mouth → stomach → small intestine → large intestine → oesophagus
(b) Mouth → oesophagus → stomach → small intestine → large intestine
(c) Mouth → stomach → oesophagus → small intestine → large intestine
(d) Mouth → oesophagus → stomach → large intestine → small intestine
10. What do seminal vesicles add to the semen?
(a) Proteins (b) Sugar Fructose (c) Sperm (d) (a) and (b)
11. The image shows the structure of a neuron.



Which of the following options shows the mechanism of the travelling of sense in our body after our nose senses a smell?

- (a) Olfactory receptors → dendritic tip of a nerve cell → axon → nerve ending → release of the signal dendritic tip of another nerve cell
- (b) Olfactory receptors → dendritic tip of a nerve cell → axon → cell body → release of signal → dendritic tip of other nerve cell
- (c) Gustatory receptors → dendritic tip of a nerve cell → cell body → axon → release of the signal dendritic tip of another nerve cell
- (d) Gustatory receptors → dendritic tip of a nerve cell → axon → cell body → release of the signal dendritic tip of another nerve cells

12. What is the probability that the progeny will be a boy?

- (a) 50 % (b) 56 % (c) 47.43 % (d) It varies

13. Which of the following acts as both endocrine and exocrine gland?

- (a) Pancreas (b) Thyroid (c) Adrenal (d) Liver

14. The harmful chemical which is accumulating in human beings through the food chain is

- (a) BHC (b) DDT (c) Absciscic acid (d) CFC

15. The decomposers in an ecosystem:

- (a) Convert organic material to inorganic forms
- (b) Convert inorganic material to simpler forms
- (c) Convert inorganic material into the organic compound
- (d) Do not break down the organic compound

16. Among the following one is anesthesia, find it out

- (a) CH_3Cl (b) CHCl_3 (c) A only (d) B only

17. Cinnabar is the ore of _____

- (a) Hg (b) Al (c) A only (d) B only

Directions: In the following question, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

- a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- c) Assertion (A) is true but reason (R) is false.
- d) Assertion (A) is false but reason (R) is true.

18. Assertion : A geneticist crossed two plants and got 50% tall and 50% dwarf progenies.

Reason: This cross follows Mendelian law as one of the parent plant might be heterozygous.

19. Assertion : The function of consumers is to convert organic compound into inorganic compound.

Reason: Green plants are called the producers.

20. Assertion (A) : A ray passing through the centre of curvature of a concave mirror after reflection, is reflected back along the same path.

Reason (R) : The incident rays fall on the mirror along the normal to the reflecting surface.

SECTION-B (6 x 2 = 12 marks)

21. State the laws of refraction of light. Explain the term 'absolute refractive index of the medium' and write an expression to relate it with the speed of light in vacuum.

22. Explain with the help of a diagram, how we are able to observe the sunrise about two minutes before the Sun gets above the horizon.

23. $\text{MnO}_2 + \text{HCl} \rightarrow ?$

Find out the products and balance the equations

24 (a) What happens when a mature Spirogyra filament attains considerable length?

(b) Name the causative agent of the disease “kala-azar” and its mode of asexual reproduction.

25. (a) Name four types of metabolic wastes produced by humans.

(b) Name any two human excretory organs other than kidney.

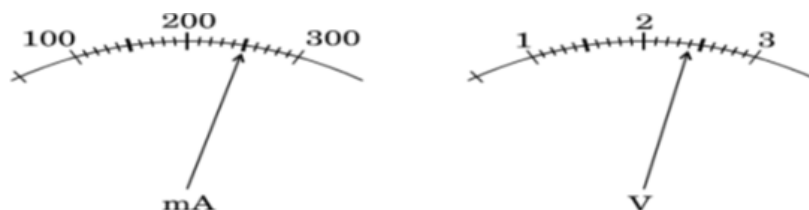
26. State with reason any two possible consequences of elimination of decomposers from the earth.

SECTION-C (7 x 3 = 21 marks)

27. Draw the pattern of magnetic field lines produced around a current carrying straight conductor passing perpendicularly through a horizontal cardboard. State and apply right-hand thumb rule to mark the direction of the field lines. How will the strength of the magnetic field change when the point where magnetic field is to be determined is moved away from the straight conductor ? Give reason to justify your answer.

28. The current flowing through a resistor connected in a circuit and the potential difference developed across its ends are as shown in the diagram by milli ammeter and voltmeter readings respectively

(a) What are the least counts of these meters ? (b) What is the resistance of the resistor ?



29. (a) A 5 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 30 cm. Find the position, nature and size of the image formed.

(b) Draw a labelled ray diagram showing object distance, image distance and focal length in the above case.

30. A silvery white metal X on treatment with an acid A to give a black colour substance Y and a gaseous element Z which is most abundant at the core of stars.

(a) What are X, Y, Z and A?

(b) Name the reaction.

(c) Write the equation and balance it.

31. What is isomerism? Write isomers for the given compound $\text{C}_2\text{H}_6\text{O}$. Draw the electron dot structure of the isomers.

32. How do Mendel's experiments show that traits are inherited independently?

33. How are involuntary and reflex actions different?

SECTION-D (3 x 5 = 15 marks)

34. It is desired to obtain an erect image of an object, using concave mirror of focal length of 12cm.

(a) What should be the range of distance of an object placed in front of the mirror?

(b) Will the image be smaller or larger than the object. Draw ray diagram to show the formation of image in this case.

(c) Where will the image of this object be, if it is placed 24 cm in front of the mirror? Draw ray diagram for this situation also to justify your answer. Show the positions of pole, principal focus and the centre of curvature in the above ray diagrams.

35. An alcohol X has 2 carbon atoms reacts with an acid Y which has 2 carbon atoms to form sweet smelling Substance Z. Z on treatment with alkali to give back X.

a) What are X, Y and Z.

b) Name the reactions.

c) Write the equations of the reactions and balance the equations.

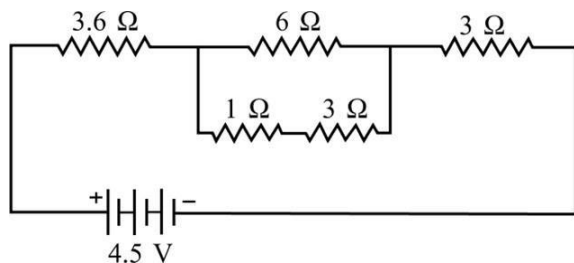
36. (a) Mention the role of the following organs of human male reproductive system.

(i) Testes (ii) Scrotum (iii) Vas deferens (iv) Prostate gland

(b) What are the two roles of testosterone?

SECTION-E (3 x 4 = 12 marks)

37. Shyam made one circuit for his Physics. He used five resistances: two 3Ω , one 1Ω , one 6Ω , one 3.6Ω and a battery of 4.5 V . The circuit diagram is given below:



(i) find the total resistance of parallel combination in the above circuit.

(ii) Find the equivalent resistance of total circuit.

(iii) Calculate the total current and current in 6 ohm resistor.

(iv) Define electric potential and find the potential difference across 3.6 ohm resistor

38. Cu, Ag and gold are called as coinage metals. These metals are used to make the coins. Among them gold is used to make the jewels. Gold is most ductile element. 1 gm gold can be drawn as a wire for 2 kilometers . Gold is acting as a vital role in printing currencies. It determines the economic condition of a country. Gold is so brittle. Without addition of Cu, gold cannot be used. Ag is the best conductor of electricity. Ag is used to make the jewels. Cu is one of the best conductor. It is used to make alloys. Brass and bronze are the alloys of copper.

i) What are coinage metals? Why have they been called so?

ii) Can we say gold jewels are alloy? Give the reasons.

iii) What are the constituents of brass and bronze?

iv) Name the metal used as a conductor in the solar panels.

39. The two sexes participating in sexual reproduction must be somewhat different from each other for a number of reasons. How is the sex of a newborn individual determined? Different species use very different strategies for this. Some rely entirely on environmental cues. Thus, in some animals like a few reptiles, the temperature at which fertilised eggs are kept determines whether the animals developing in the eggs will be male or female. In other animals, such as snails, individuals can change sex, indicating that sex is not genetically determined. However, in human beings, the sex of the individual is largely genetically determined. In other words, the genes inherited from our parents decide whether we will be boys or girls.

i) How many chromosomes are there in human beings?

ii) What are the pair of sex chromosome present in both male and female?

iii) How is the sex of the child determined in human beings?

iv) Give a cross between male and female for sex determination in human beings.

*** ALL THE BEST ***