D–5–A

Roll No.....

Total No. of Questions : 40] [Total No. of Printed Pages : 16

10th ARA(HZ)JK/LEHUT2024

1305–A

SCIENCE

Time : 3 Hours] [Maximum Marks : 80

Section–A

Note :– Q. Nos. 1 to 18 are very very short answer type questions/ MCQ of 1 mark each.

1. The refractive index of water is :

(A) 1.44

(B) 1.47

(C) 1.33

(D) 1.50

2. When the ciliary muscles present in the eye are relaxed the lens becomes thin. Its focal length :

(A) Decreases

(B) Increases

(C) Remains the same

(D) Both (B) and (C)

3. The human eye forms the image of an object at its :

(A) Cornea

(B) Retina

(C) Eye lens

(D) Iris

4. An electronic charge on a body produces :

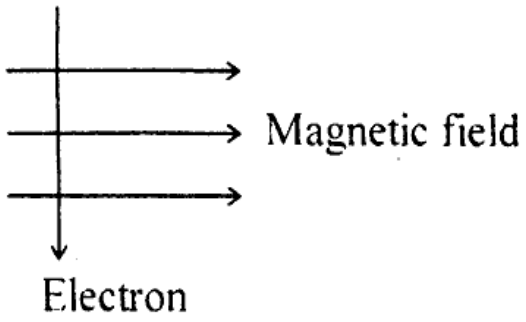
(A) A magnetic field only

(B) Electric field only

(C) Both of them

(D) None of these

5. An electron enters a magnetic field at right angles to it as shown in figure :



According to Fleming's left hand rule, what will be the direction of force on the electron ?

(A) To the right

(B) To the left

(C) Out of the page

(D) Into the page

6. On heating gypsum at 373 K, the product formed is called :

(A) Sodium bicarbonate

(B) Calcium carbonate

(C) Calcium sulphate hemihydrate

(D) Calcium oxychloride

7. Butanone is a four-carbon compound with the functional group :

(A) Carboxylic acid

(B) Aldehyde

(C) Ketone

(D) Alcohol

8. Give the equation for the reaction of zinc with sodium hydroxide.

9. Why is table salt called Iodized salt ?

10. The pH of soil for healthy growth of plants should neither be alkaline nor highly acidic. (True/False)

11. ..... is the main thinking part of the brain.

(A) Fore brain

(B) Mid brain

(C) Hind brain

(D) Both (A) and (C)

(Choose the correct one and fill up)

12. The pollen needs to be transferred from the stamens to the stigma. When it happens in the same flower, it is called :

(A) Cross pollination

(B) Self pollination

(C) Fertilization

(D) Both (A) and (C)

13. The anther contains :

(A) Sepals

(B) Ovules

(C) Carpel

(D) Pollen grain

14. Which of the following constitutes a food chain ?

(A) Grass, Wheat and Mango

(B) Grass, Goat and Human

(C) Goat, Cow and Elephant

(D) Grass, Fish and Goat

15. Ozone is depleted by :

(A) Methane

(B) Chlorofluorocarbons

(C) Carbon dioxide

(D) Hydrogen sulphide

Note :- From Q. Nos. **16** to **18**, two statements (Assertion–A and Reason–R) are given. Select the correct answer to these questions from the codes A, B, C and D as given below :

Codes :

(A) A and R are true and R is the correct explanation of A.

(B) A and R are true but R is not the correct explanation of A.

(C) A is true but R is false.

(D) A is false but R is true.

16. **Assertion (A)** : No two magnetic field lines are found to cross each other.

Reason (R) : At the point of intersection, the compass needle would point towards two directions, which is not possible.

17. **Assertion (A)** : The rusting of iron can be prevented by painting, oiling, greasing etc.

Reason (R) : Painting, oiling and greasing forms a protective layer over the Iron metal.

18. **Assertion (A)** : When we eat something we like, our mouth waters.

Reason (R) : The saliva helps in swallowing of food.

Section–B

Note :– There will be *ten* questions in this Section (Q. Nos. **19** to **28**) each of 2 marks.

19. A concave lens of 20 cm fresh length forms an image 15 cm from the lens. Calculate the object distance.

20. Define Ohm's law and draw its circuit diagram.

21. What is Fleming's left hand rule ?

22. Define the terms oxidation and reduction.

23. What are covalent bonds ?

24. What are the ingredients of baking soda ?

25. What is meant by Heterotrophic mode of nutrition ?

26. What is difference between Breathing and Respiration ?

27. Name the parts of a flower.

28. Write *two* secondary sexual characters in human males.

Section–C

Note :– There will be *nine* questions (SAQs) with internal and parallel choice from Q. Nos. **29** to **37** of 3 marks.

29. Write down at least *three* uses of Electromagnets.

Or

Compare electromagnet with a permanent magnet.

30. Describe Dispersion of white light by a glass prism.

Or

Describe how stars appear twinkling at night.

31. What are the advantages of connecting electrical devices in parallel with the battery instead of connecting them in series ?

Or

An electric iron rod of resistance 20Ω takes a current of 5A. Calculate the heat developed in 30 seconds.

32. What are the effects of oxidation in everyday life ?

Or

Explain the terms Corrosion and Rancidity.

33. Explain how the metals towards the top of the reactivity series are extracted from their compounds ?

Or

Describe Galvanisation and Alloying as methods that prevent corrosion of metals.

34. Why should curd and sour substances not be kept in brass and copper vessels ?

Or

While diluting an acid, why is it recommended that acid should be added to water and not water to acid ?

35. How are fats digested in our bodies ?

Or

How are the alveoli designed to maximize the exchange of gases ?

36. Write the names of the components of DNA.

Or

What is the chemical nature of Gene ? Where are the genes located ?

37. What are trophic levels ? Give an example of food chain and state the different trophic levels in it.

Or

What is biological magnification ? Will the levels of this magnification be different at different levels ?

Section–D

Note :– There will be *three* Long Answer Type Questions with internal choice (each of 5 marks) from Q. Nos. **38** to **40**.

38. What will be the nature, position and relative size of the image formed by a convex lens for the following positions of the object ?

(a) When object is at infinity.

(b) When object is beyond $2F_1$.

(c) When object is at $2F_1$.

(d) When object is between $2F_1$ and F_1.

(e) When object is between F_1 and O.

(Diagram is optional) **1×5=5**

Or

Describe the process of Refraction through a Reet-angular glass slab with proper diagram. 5

39. What is a homologous series ? Explain with examples. 3+2=5

Or

Give a test that can be used to differentiate chemically between butter and cooking oil. Explain the mechanism of the cleaning action of soaps. 3+2=5

40. What is Photosynthesis ? Write down different steps or events that occur during the process of photosynthesis. 5

Or

(i) What are plant hormones ? 2

(ii) Name *two* plant hormones that promote growth. 1

(iii) How do auxins promote growth of a tendril around a support ? 2

A–5–Z

Roll No.....

Total No. of Questions : 40] [Total No. of Printed Pages : 16

10th ARM(SZ)JKUT2024

1005–Z

SCIENCE

Time : 3 Hours] **[Maximum Marks : 80**

Section–A 1 each

Note :– Q. Nos. **1** to **18** are very short answer type questions of 1 mark each.

1. No matter how far you stand from a mirror, your image appears erect. The mirror is likely to be :

(A) Plane

(B) Concave

(C) Convex

(D) Either plane or convex

2. The danger signals installed at the top of a tall building are red in colour. These can be easily seen from a distance because among all other colours. the red light :

(A) is scattered the most by smoke or fog

(B) is scattered the least by smoke or fog

(C) is absorbed the most by smoke or fog

(D) moves fastest in air

3. The power of concave lens is 0.5 D. Its focal length will be :

(A) 100 cm

(B) 200 cm

(C) 150 cm

(D) 250 cm

4. A wire of resistance 1 Ω is divided into two halves and both halves are connected in parallel. The new resistance will be :

(A) 1 Ω

(B) 2 Ω

(C) 0.5 Ω

(D) 0.25 Ω

5. Magnitude of magnetic field around a current carrying conductor at any point is :

(A) Directly proportional to the intensity of electric current

(B) Inversely proportional to the distance from the conductor

(C) Directly proportional to the distance from the conductor

(D) Both (A) and (B)

6. Which of the following statements are correct about an aqueous solution of an acid and of a base ?

(A) Higher the pH. stronger the acid

(B) Higher the pH. weaker the acid

(C) Lower the pH. stronger the base

(D) Lower the pH. weaker the base.

7. $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$

The above reaction is an example of a :

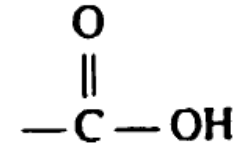
(A) Combination reaction

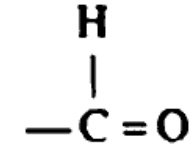
(B) Displacement reaction

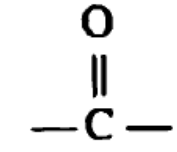
(C) Double displacement reaction

(D) Decomposition reaction

8. Butanone is a four carbon compound with the functional group :

(A) 

(B) 

(C) 

(D) —C—Br

9. Which among the following is the least reactive metal ?

(A) Sodium

(B) Zinc

(C) Mercury

(D) Aluminium

10. When the object is placed beyond centre of curvature of a concave mirror, the image formed will be :

(A) Erect and diminished

(B) Erect and magnified

(C) Inverted and diminished

(D) Inverted and magnified

11. Which of the following oxide(s) of iron would be obtained on prolonged reaction with steam ?

(A) FeO

(B) Fe_2O_3 and Fe_3O_4

(C) Fe_3O_4

(D) Fe_2O_3

12. The process where the unfertilized egg is released out of the body with blood is known as :

(A) Menstruation

(B) Fertilization

(C) Germination

(D) Pollination

13. The testes are located outside the abdominal cavity in scrotum because :

(A) Sperm formation requires more space

(B) Sperm formation requires a lower temperature

(C) Sperm formation requires a higher temperature

(D) Both (A) and (C)

14 The decomposers in an ecosystem :

(A) Convert inorganic materials to simpler forms

(B) Convert organic materials to inorganic forms

(C) Convert inorganic materials into inorganic compounds

(D) Do not breakdown organic compounds

15. Which part of the brain regulates the body temperatures ?

(A) Hypothalamus

(B) Thalami

(C) Pituitary

(D) Medulla oblongata

Note :– From Q. Nos. 16 to 18, two statements (Assertion–A and Reason–R) are given. Select the correct answer to these questions from the codes A, B, C and D as given below :

Codes :

(A) A and R are true and R is the correct explanation of A.

(B) Both A and R are true but R is not the correct explanation of A.

(C) A is true but R is false.

(D) A is false but R is true.

16. **Assertion (A)** : When a compass needle is moved away from a current carrying straight conductor. the deflection of the needle decreases.

Reason (R) : The strength of magnetic field decreases on moving away from the conductor.

17. **Assertion (A)** : At puberty human male develops secondary sexual characters.

Reason (R) : There is decreased secretion of testosterone at puberty.

18. **Assertion (A)** : There is always interaction between ecosystem.

Reason (R) : An ecosystem is recognized as self-regulating and self-sustaining entity.

Section–B

2 each

Note :– There will be *ten* questions in this Section (Q. Nos. **19** to **28**) each of 2 marks.

19. What happens to the image distance in the eye when we increase the distance of an object from the eye ?

20. We cannot read a printed page by holding it very close to our eyes. Why ?

21. Write the balanced chemical equation for the following chemical reactions :

(i) Barium chloride + Aluminium sulphate → Barium sulphate + Aluminium chloride

(ii) Zinc carbonate → Zinc oxide + Carbon dioxide

22. Let the resistance of an electrical component remains constant while the potential difference across the two ends of the component decreases to half of its former value. What change will occur in the current through it ?

23. Write the formula of a cyclopentane and draw its electron dot structure.

24 Draw the pattern of magnetic field lines around a current carrying solenoid.

25 What would you observe when zinc is added to a solution of Iron (II) sulphate ? Write the chemical reaction that takes place.

26. How is the concentration of hydroxide ions affected when excess base is dissolved in a solution of sodium hydroxide ?

27. Under what soil conditions do you think a farmer would treat the soil of his fields with quick lime (calcium oxide) or slaked lime (calcium hydroxide) or chalk (calcium carbonate) ?

28. How does our body respond when adrenaline is secreted into the blood ?

Section–C 3 each

Note :– In this Section from Q. Nos. **29** to **37**. there will be *nine* questions with internal choice. each of 3 marks.

29. The potential difference between the terminals of an electric heater is 60 V when it draws a current of 4 A from the source. What current will the heater draw if the potential difference is increased to 120 V ?

Or

An electric iron of resistance 20 Ω takes a current of 5 A. Calculate the heat developed in 30 seconds.

30. Define Magnetic Field. List any *three* sources of magnetic field.

Or

What is an Electromagnet ? State any *two* points of difference between an electromagnet and a permanent magnet.

31. Differentiate between combination and decomposition reactions with the help of examples.

Or

What is a balanced chemical equation ? Why should chemical equations be balanced ?

32. Differentiate between minerals and ores with the help of examples.

Or

In an electrolytic refining of a metal M. what would you take as the anode. the cathode and the electrolyte ?

33 Write one function of each of the following components of the transport system in human beings ?

(i) Blood vessels

(ii) Blood platelets

Or

Why do the herbivores have longer whereas carnivores have a shorter small intestine ?

34 Some diabetic patients are treated by giving insulin injections. Why ?

Or

Which animal or plant hormone is associated with the following ?

(i) Develop secondary sexual characters at puberty in boys.

(ii) Inhibits growth of plants

(iii) Goitre

35. Chances of fertilization are more if copulation has taken place during the middle of the menstrual cycle. Give reason.

Or

Give reasons for the following :

(i) Petals of flowers are variously coloured

(ii) Some plants are propagated only by vegetative methods.

36. What are the different ways in which individuals with a particular trait may increase in a population ?

Or

Will geographical isolation be a major factor in the speciation of an organism that repoduces asexually ? Why or why not ?

37. How can you help in reducing the problem of waste disposal at local level ? Give any *two* methods.

Or

What are the problems caused by the non-biodegradable wastes that we generate ?

Section–D 5 each

Note :– In this Section from Q. Nos. **38** to **40**, there will be *three* long answer type questions with internal choice, each of 5 marks.

38. Draw a ray diagram in each of the following cases to show the formation of image when the object is placed :

(i) Between centre of curvature and principal focus of a concave mirror

(ii) At the focus of a concave mirror

(iii) Between focus and pole of the concave mirror

Or

An object of size 7.0 cm is placed at 27 cm in front of a concave mirror of focal length 18 cm. At what distance from the mirror should a screen be placed, so that a sharp focused image can be obtained ? Find the size and the nature of the image.

39. Draw the structures for the following compounds :

(i) Bromopentane

(ii) Hexanal

(iii) Propene

(v) 2, 3-dimethyl butane

(v) 2-Propanol

Or

Explain the following reactions with examples :

(i) Combustion reaction

(ii) Substitution reaction

40. Describe the structure and functioning of nephron.

Or

Describe transport of the following materials in plants :

(i) Water

(ii) Minerals

(iii) Food

A–5–Y

Roll No.

Total No. of Questions : **40**] [Total No. of Printed Pages : **16**

10th ARM(SZ)JKUT2024

1005–Y

SCIENCE

Time : 3 Hours] **[Maximum Marks : 80**

Section–A

1 each

Note :– Q. Nos. **1** to **18** are very short answer type questions of 1 mark each.

1. **If you are not able to read small letters in a dictionary, which of the following lenses would you prefer to use ?**

(A) A convex lens of focal length 50 cm

(B) A concave lens of focal length 50 cm

(C) A convex lens of focal length 5 cm

(D) A concave lens of focal length 5 cm

2. Which of the following statements is correct regarding the propagation of light of different colours of white light in air ?

(A) Red light moves fastest

(B) Blue light moves faster than green light

(C) Yellow light moves with the mean speed as that of the red and the violet light

(D) All the colours of the white light move with the same speed

3. The focal length of a concave lens is 100 cm. Calculate its power in dioptres :

(A) 1 D

(B) 0.5 D

(C) 2 D

(D) 0.2 D

4. Three resistors having resistances of 2 Ω, 4 Ω and 8 Ω are connected in parallel. Their equivalent resistance will be :

(A) 10 Ω

(B) 14 Ω

(C) 8/7 Ω

(D) Between 2 Ω and 8 Ω

5. To find out the direction of the deflection of the compass needle due to magnetic field of a current carrying conductor, we use :

(A) Ampere's swimming rule

(B) Fleming's right hand rule

(C) Fleming's left hand rule

(D) Maxwell's right hand rule

6. Which of the following phenomena occur, when a small amount of acid is added to water ?

(i) Ionisation

(ii) Neutralisation

(iii) Dilution

(iv) Salt formation

(A) (i) and (ii)

(B) (i) and (iii)

(C) (ii) and (iii)

(D) (ii) and (iv)

7. $4Na(s) + O_2(g) \rightarrow 2Na_2O(s)$

In the above reaction :

(A) Sodium gets reduced

(B) Sodium oxide gets reduced

(C) Sodium oxide gets oxidised

(D) Sodium gets oxidised

8. Which among the following compounds has 10 covalent bonds ?

(A) Ethane

(B) Propane

(C) Butane

(D) Pentane

9. Which of the following pairs will give displacement reactions ?

(A) NaCl solution and copper metal

(B) $MgCl_2$ solution and aluminium metal

(C) $FeSO_4$ solution and silver metal

(D) $AgNO_3$ solution and copper metal

10. The image formed by a concave mirror is observed to be virtual, erect and magnified. Where should be the position of the object ?

(A) Between the principal focus and the centre of curvature

(B) At the centre of curvature

(C) At infinity

(D) Between pole and principal focus

11. Aluminium is used for making cooking utensils. Which of the following properties of aluminium are responsible for the same ?

(i) Good thermal conductivity

(ii) Good electrical conductivity

(iii) Ductility

(iv) High melting point

(A) (i) and (ii)

(B) (i) and (iii)

(C) (ii) and (iii)

(D) (i) and (iv)

12. Which of the following is the correct sequence regarding sexual reproduction in a flowering plant ?

(A) Pollination, fertilization, seedling, embryo

(B) Seedling, embryo, fertilization, pollination

(C) Pollination, fertilization, embryo, seedling

(D) Embryo, seedling, pollination, fertilization

13. After fertilization which of the following parts develops into seed ?

(A) Ovary

(B) Ovule

(C) Pollen grain

(D) Stigma

14. In natural ecosystem, decomposers include :

(A) All microscopic organisms

(B) Bacteria and fungi

(C) Only bacteria

(D) Only fungi

15. Involuntary actions in the body are controlled by :

(A) Medulla in forebrain

(B) Medulla in midbrain

(C) Medulla in hindbrain

(D) Medulla in spinal cord

Note :– From Q. Nos. **16** to **18**, two statements (Assertion–A and Reason–R) are given. Select the correct answer to these questions from the codes A, B, C and D as given below :

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(C) A is true but R is false. 17

(D) A is false but R is true.

16. **Assertion (A) :** When the direction of current in a current carrying straight conductor is upwards. the direction of magnetic field lines is clockwise.

Reason (R) : To find the direction of magnetic field lines, we use Maxwell's Right hand rule.

17. **Assertion (A) :** Vagina acts as copulation canal and fertilization canal.

Reason (R) : Both insemination and fusion of gametes occur in vagina.

18. **Assertion (A) :** Decomposers are micro-consumers.

Reason (R) : They bring mineralisation of decomposed matter.

Section–B

2 each

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20. Write the balanced chemical equation for the following chemical reactions :

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Section–C

3 each

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In an electrolytic refining of a metal M, what would you take as the anode, the cathode and the electrolyte ?

33. What would be the consequences of a deficiency of haemoglobin in our bodies ?

Or

Give the points of difference between autotrophic and heterotrophic nutrition.

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Which animal or plant hormone is associated with the following ?

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(iii) Goitre

35. Chances of fertilization are more if copulation has taken place during the middle of the menstrual cycle. Give reason.

Or

Give reasons for the following :

(i) Petals of flowers are variously coloured

(ii) Some plants are propagated only by vegetative methods.

36. Will geographical isolation be a major factor in the speciation of a self-pollinating plant species ? Why or why not ?

Or

Why are traits acquired during the life-time of an individual not inherited ?

37. How can you help in reducing the problem of waste disposal at local level ? Give any *two* methods.

Or

What are the problems caused by the non-biodegradable wastes that we generate ?

Section–D **5 each**

Note :– In this Section from Q. Nos. **38** to **40**, there will be *three* long answer type questions with internal choice, each of 5 marks.

38 Draw a ray diagram in each of the following cases to show the formation of image when the object is placed :

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(ii) At the focus of a concave mirror

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Or

An object of size 7.0 cm is placed at 27 cm in front of a concave mirror of focal length 18 cm. At what distance from the mirror should a screen be placed, so that a sharp focused image can be obtained ? Find the size and the nature of the image.

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(i) Bromopentane

(ii) Hexanal

(iii) Propene

(iv) 2, 3-dimethyl butane

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Explain the following reactions with examples :

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Or

Describe transport of the following materials in plants :

(i) Water

(ii) Minerals

(iii) Food

A–5–X

Roll No.

Total No. of Questions : **40]** [Total No. of Printed Pages : **16**

10th ARM(SZ)JKUT2024

1005 X

SCIENCE

Time : 3 Hours] **[Maximum Marks : 80**

Section–A 1 each

Note **:–** Q. Nos. **1** to **18** are very short answer type questions of 1 mark each.

1. A spherical mirror and a thin spherical lens have each a focal length of –15 cm. The mirror and the lens are likely to be :

(A) Both concave

(B) Both convex

(C) The mirror is concave and the lens is convex

(D) The mirror is convex and the lens is concave

2. Which of the following statements is correct ?

(A) A person with myopia can see distant objects clearly

(B) A person with hypermetropia can see nearby objects clearly

(C) A person with myopia can see nearby objects clearly

(D) A person with hypermetropia cannot see distant objects clearly

3. A person cannot see distinctly object kept beyond 2 m. This defect can be corrected by using a lens of power :

(A) +0.5 D

(B) –0.5 D

(C) +0.2 D

(D) –0.2 D

4. The energy given to each Coulomb of charge passing through a 6 V battery is :

(A) 12 J

(B) 6 J

(C) 3 J

(D) 18 J

5. Which among the following is used to find out the direction of magnetic field lines around a current carrying straight conductor ?

(A) Ampere's swimming rule

(B) Fleming's right hand rule

(C) Maxwell's right hand thumb rule

(D) Fleming's left hand rule

6. Three solutions A, B and C when tested with universal indicator showed pH as 5, 1 and 13 respectively. Based on this observation choose the correct statement from the following :

(A) Solution A is a very strong acid and solution B is a weak acid

(B) Solution A is a weak acid and solution C is a weak base

(C) Both the solutions A and B are strong acids

(D) Solution B is a strong acid and solution C is a strong base

7. $CuO(s) + H_2(g) \rightarrow Cu(s) + H_2O(l)$

In the above reaction :

(A) Cu is an oxidising agent

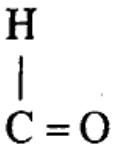
(B) H_2O is a reducing agent

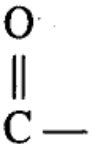
(C) CuO is an oxidising agent

(D) Both CuO and H_2 are oxidising agents

8. Which among the following represents the functional group of aldehydes ?

(A) —COOH

(B) 

(C) 

(D) —C ≡ C—

9. An element reacts with oxygen to give a compound with a high melting point. This compound is also soluble in water. The element is likely to be :

(A) Calcium

(B) Carbon

(C) Silicon

(D) Iron

10. Where should an object be placed in front of a convex lens to get a real image of the size of the object ?

(A) At the principal focus of the lens

(B) At twice the focal length

(C) At infinity

(D) Between the optical centre of the lens and its principal focus

11. Which one of the following properties is not generally exhibited by ionic compounds ?

(A) Solubility in water

(B) Electrical conductivity in solid state

(C) High melting and boiling points

(D) Electrical conductivity in molten state

12. Growing foetus derives nutrition from mother's blood through :

(A) Uterus

(B) Fallopian tube

(C) Placenta

(D) Cervix

13. Characters that are transmitted from parents to offsprings during sexual reproduction show :

(A) Only similarities with parents

(B) Only variations with parents

(C) Both similarities and variations with parents

(D) Neither similarities nor variations

14. In an ecosystem, the 10% of energy available for transfer from one trophic level to the next is in the form of :

(A) Heat energy

(B) Chemical energy

(C) Light energy

(D) Mechanical energy

15. Which is the correct sequence of the components of a reflex arc ?

(A) Receptors → Muscles → Sensory neuron → Motor neuron → Spinal cord

(B) Receptors → Motor neuron → Spinal cord → Sensory neuron → Muscles

(C) Receptors → Spinal cord → Sensory neuron → Motor neuron → Muscles

(D) Receptors → Sensory neuron → Spinal cord → Motor neuron → Muscles

Note **:–** From Q. Nos. **16** to **18**, two statements (Assertion–A and Reason–R) are given. Select the correct answer to these questions from the codes A, B, C and D as given below :

Codes :

(A) A and R are true and R is the correct explanation of A.

(B) Both A and R are true but R is not the correct explanation of A.

(C) A is true but R is false.

(D) A is false but R is true.

16. **Assertion (A)** : When a current carrying conductor is placed in a magnetic field, it experiences a force.

Reason (R) : The force acting on a current carrying conductor is only due to the external magnetic field.

17. **Assertion (A)** : In human male, testes are extra abdominal and lie in scrotal sacs.

Reason (R) : Scrotum keeps temperature lower by 2°C for normal spermatogenesis.

18. **Assertion (A)** : Food web is a network of food chains which are inter-connected at various trophic levels.

Reason (R) : In a food web, one organism may occupy more than one position.

Section–B

2 each

Note :– There will be *ten* questions in this Section (Q. Nos. **19** to **28**) each of 2 marks.

19. What happens to the image distance in the eye when we increase the distance of an object from the eye ?

20. We cannot read a printed page by holding it very close to our eyes. Why ?

21. Let the resistance of an electrical component remains constant while the potential difference across the two ends of the component decreases to half of its former value. What change will occur in the current through it ?

22. Draw the pattern of magnetic field lines around a current carrying solenoid.

23. Write the balanced chemical equation for the following chemical reactions :

(i) Barium chloride + Aluminium sulphate → Barium sulphate + Aluminium chloride

(ii) Zinc carbonate → Zinc oxide + Carbon dioxide

24. Write the formula of cyclopentane and draw its electron dot structure.

25. What would you observe when zinc is added to a solution of Iron (II) sulphate ? Write the chemical reaction that takes place.

26. How is the concentration of hydroxide ions affected when excess base is dissolved in a solution of sodium hydroxide ?

27. Under what soil conditions do you think a farmer would treat the soil of his fields with quick lime (calcium oxide) or slaked lime (calcium hydroxide) or chalk (calcium carbonate) ?

28. How does our body respond when adrenaline is secreted into the blood ?

Section–C 3 each

Note :– In this Section from Q. Nos. **29** to **37**, there will be *nine* questions with internal choice, each of 3 marks.

29. The potential difference between the terminals of an electric heater is 60 V when it draws a current of 4 A from the source. What current will the heater draw if the potential difference is increased to 120 V ?

Or

An electric iron of resistance 20 Ω takes a current of 5 A. Calculate the heat developed in 30 seconds.

30. Define Magnetic Field. List any *three* sources of magnetic field.

Or

What is an Electromagnet ? State any *two* points of difference between an electromagnet and a permanent magnet.

31. Differentiate between combination and decomposition reactions with the help of examples.

Or

What is a balanced chemical equation ? Why should chemical equations be balanced ?

32. Differentiate between minerals and ores with the help of examples.

Or

In an electrolytic refining of a metal M, what would you take as the anode, the cathode and the electrolyte

33. What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining oxygen for respiration ?

Or

Differentiate between aerobic and anaerobic respiration. Name any *two* organisms that use the anaerobic mode of respiration.

34 Some diabetic patients are treated by giving insulin injections. Why ?

Or

Which animal or plant hormone is associated with the following ?

(i) Develop secondary sexual characters at puberty in boys.

(ii) Inhibits growth of plants

(iii) Goitre

35. Chances of fertilization are more if copulation has taken place during the middle of the menstrual cycle. Give reason.

Or

Give reasons for the following :

(i) Petals of flowers are variously coloured

(ii) Some plants are propagated only by vegetative methods.

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

Or

What factors could lead to the rise of a new species ?

37. How can you help in reducing the problem of waste disposal at local level ? Give any *two* methods.

Or

What are the problems caused by the non-biodegradable wastes that we generate ?

Section–D 5 each

Note **:–** In this Section from Q. Nos. **38** to **40**, there will be *three* long answ : type questions with internal choice, each of 5 marks.

38. Draw a ray diagram in each of the following cases to show the formation of image when the object is placed :

(i) Between centre of curvature and principal focus of a concave mirror

(ii) At the focus of a concave mirror

(iii) Between focus and pole of the concave mirror

Or

An object of size 7.0 cm is placed at 27 cm in front of a concave mirror of focal length 18 cm. At what distance from the mirror should a screen be placed, so that a sharp focused image can be obtained ? Find the size and the nature of the image.

39. Draw the structures for the following compounds :

(i) Bromopentane

(ii) Hexanal

(iii) Propene

(iv) 2, 3-dimethyl butane

(v) 2-Propanol

Or

Explain the following reactions with examples :

(i) Combustion reaction

(ii) Substitution reaction

40. Describe the structure and functioning of nephron.

Or

Describe transport of the following materials in plants :

(i) Water

(ii) Minerals

(iii) Food