

C-2-B

Roll No.

Total No. of Questions : **36**

[Total No. of Printed Pages : **16**

10th ARJKLK23

9402-B

SCIENCE

Time : 3 Hours]

[Maximum Marks : 80

General Instructions :-

- (a) This question paper has four Sections—A, B, C and D. There are thirty six questions in the question paper and all questions are compulsory.
- (b) Section—A (Q. Nos. **1** to **20**). All questions and parts thereof are of 1 mark each. These questions contain multiple choice questions, very short answer type questions and assertion and reason type questions. Answer to these should be given in one word or one sentence.

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- (c) Section-B (Q. Nos. **21** to **26**) are short answer type questions carrying 2 marks each.
- (d) Section-C (Q. Nos. **27** to **33**) carrying 3 marks each.
- (e) Section-D (Q. Nos. **34** to **36**) are long answer type questions carrying 5 marks each.
- (f) There is no overall choice. However internal choices have been provided in some questions. A student has to attempt only *one* of the alternatives in such questions.
- (g) Wherever necessary, neat and properly labelled diagram should be drawn.

Section-A

1. An object placed at F of a concave mirror forms an enlarged image.

What is the position and nature of this image ?

1

2. Define principal focus of a convex mirror. 1
3. Draw a ray diagram showing convergence of refracted rays of light.

Or

- What type of mirror is used by a dentist in dental procedures ? 1
4. Which of these regulates the amount of light entering the eye ?
- (A) Pupil
- (B) Optic nerve
- (C) Conjunctiva
- (D) Iris 1
5. Draw the symbol of a closed plug key. 1
6. Write a balanced chemical equation for the decomposition reaction of ferrous sulphate into the products on heating. 1

7. Copper and oxygen combine together and copper oxide is formed :



This reaction is an example of :

- (A) Reduction reaction
 - (B) Redox reaction
 - (C) Displacement reaction
 - (D) Decomposition reaction
- 1
8. In nature carbon is a very interesting element. It exhibits different forms. In one of the form, each carbon atom is bonded to three other carbon atoms in the same plane giving a hexagonal array, thus satisfying the valency. What is this form of carbon ?

Or

Carbon can make compounds with other elements like halogens, oxygen and hydrogen. In such cases the element that replaces hydrogen from a hydrocarbon chain forms a specific group. What is this group called ? Name any *one* such group.

1

9. Which of the following does not exist as solid at room temperature ?

(A) Sodium

(B) Magnesium

(C) Mercury

(D) Zinc

1

10. Electrovalent compounds are generally soluble in :

(A) Kerosene

(B) Petrol

(C) Water

(D) All of these

1

11. Give an example of an alloy.

1

12. When chlorine acts on dry slaked lime $[\text{Ca}(\text{OH})_2]$, a very usable

chemical is formed. What is the chemical in general called ?
Calcium hypochlorite

13. Name any *two* Hormones.

Note : From question numbers 14 to 16, two statements (Assertion–A and Reason–R) are given.

Select the correct answer to these questions from codes (A), (B), (C) and (D) as given below :

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

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

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

(D) (A) is false but (R) is true.

1

14. **Assertion (A) :** If trait 'A' exists in 10% of a population of an 'asexually' reproducing species and a trait B exists in 60% of the same population.

Reason (R) : It indicates that the trait 'B' has arisen earlier in the population.

1

15. **Assertion (A)** : It is seen that there are higher levels of pesticides in certain food items like fruits.

Reason (R) : The condition is due to the bio-accumulation of pesticides through different trophic levels. 1

16. **Assertion (A)** : The ozone (O_3) is formed in the higher levels of atmosphere.

Reason (R) : The UV radiations here split the O_2 into free oxygen, which then combines with molecular oxygen to form ozone (O_3). 1

17. Read the following passage and answer any *four* questions :

An electric current through a metallic conductor produces a magnetic field around it. The pattern of which depends on the shape of the conductor. The magnetic field lines can be drawn as concentric circles around the conductor. The direction of the field can also be checked as well as the explanation is there in Fleming's Right hand rule.

- (i) The magnetic field lines form concentric circles, when the conductor is :
- (A) Circular
 - (B) Solenoid
 - (C) Straight
 - (D) None of these
- (ii) The direction of the magnetic field can be checked by using :
- (A) Copper wire
 - (B) Compass
 - (C) Iron Fehlings
 - (D) Right hand thumb only
- (iii) With increase in current, the deflection of needle :
- (A) Remains same
 - (B) Decreases
 - (C) Increases
 - (D) First increases then decreases

(iv) With a decrease in distance from the conductor, the magnetic field :

(A) Decreases

(B) Increases

(C) Moves westward only

(D) All of these

(v) According to Right hand thumb rule, the thumb points towards the direction of the :

(A) Magnetic field

(B) Force

— (C) Current

(D) None of these

1×4=4

18. Read the following passage and answer any *four* questions :

Modern periodic table is designed with groups and periods. The elements in any group have the same number of valence electrons and that there is an increasing trend in respect of Atomic no. through the periods.

- (i) Number of periods in modern periodic table is :
- (A) 18 (B) 7
(C) 12 (D) 6
- (ii) The groups in the periodic table are the Rows that are :
- (A) Vertical (B) Horizontal
(C) Diagonal (D) Zig-zag
- (iii) The elements in the modern periodic table are arranged on the basis of increasing :
- (A) Valency (B) Atomic size
(C) Atomic mass (D) Atomic no.
- (iv) The number of valence electrons in the group 17 elements is :
- ~~(A) 1~~ (B) 7
(C) 8 (D) Zero
- (v) The elements of this group are usually called 'Inert (noble) gases' :
- (A) 11 (B) 16
(C) 17 (D) 18

1×4=4

19. Read the following passage and answer any *four* questions :

All acids have similar chemical properties because hydrogen is common to them. The bases on the contrary can generate $\text{OH}^-(\text{aq.})$ ion. The strength of acids and bases can be measured on the basis of H^+ and OH^- concentration.

(i) The acidic solution in respect of electricity is :

- | | |
|--------------------|-------------------|
| (A) Good conductor | (B) Bad conductor |
| (C) Semi-conductor | (D) None of these |

(ii) The acid can give H^+ ion with :

- | | |
|----------------|------------------|
| (A) Base | (B) Water |
| (C) Weak acids | (D) All of these |

(iii) Alkali is a :

- | | |
|-----------------|---------------|
| (A) Strong acid | (B) Base |
| (C) Salt | (D) Weak acid |

Turn Over

(iv) The solution with pH value slightly higher than 7 is :

- | | |
|-------------|--------------------|
| (A) Acidic | (B) Basic (strong) |
| (C) Neutral | (D) Weaker basic |

(v) An alkali is soluble in :

- | | | |
|------------------|------------------|-------|
| (A) Strong acids | (B) Ether only | |
| (C) Water | (D) All of these | 1×4=4 |

20. Read the following passage and answer any *four* questions :

Natural resources have been there to support life since times immemorial. Forests, wildlife, mineral deposits and other resources were used sustainably. However, with the arrival of Industrial progress the over-exploitation has put these resources at an alarming threat.

(i) Which of the following is not a natural resource ?

- | | |
|-------------|-------------|
| (A) Water | (B) Wind |
| (C) Plastic | (D) Forests |

(ii) Which of the following natural resources is important for energy ?

(A) Wildlife

(B) Sunlight

(C) Vegetation in a forest

(D) None of these

(iii) Amrita Devi Bishnoi sacrificed her life for the protection of :

(A) Teak

(B) Pine tree

(C) Khejri tree

(D) Eucalyptus

(iv) Forests are the source of :

(A) Fodder

(B) Timber

(C) Paper

~~(D)~~ All of these

(v) Local people in forests use it in making slats for huts :

(A) Pine

(B) Bamboo

(C) Teak

(D) None of these

1×4=4

Section-B

21. Name any *two* substances which are non-biodegradable in our local environment.

Or

Disposal of solid waste is everybody's concern at domestic level.

Suggest any *two* ways of its management.

2

22. What is Myopia ?

2

23. How does a convex lens correct farsightedness ?

Or

The objects at or between a certain distance are visible to human eye.

So, there is always a near and far point. What is this near and far point for a normal young human adult ?

2

24. Draw a circuit diagram showing three resistors in series.

2

25. Plant leaf bears small pores for gaseous exchange required for photosynthesis. What are these pores called and which cells control their opening and closing ?

2

26. Regeneration is used as a means of asexual reproduction. Name any *two* organisms showing regeneration.

2

Section-C

27. Explain the structure of human female reproductive system.

Or

What is Pollination ? Describe the reproductive parts of a flowering plant.

3

28. What do you mean by dominant and recessive characters ? Illustrate with the help of an example.

3

29. Plants produce different types of hormones. Discuss any *one* type of hormone with its physiological role. <https://www.jkboseonline.com>

3

30. Write a short note on extraction of metals.

3

31. With the help of an example, discuss the phenomenon of corrosion.

3

32. What is the basic difference between the thermal and hydel power plants ?

3

33. An electric bulb is connected to a 220 V generator. The current is 0.75 A. Calculate the power of the bulb.

3

Section-D

34. Discuss the nature, size and position of the image formed by a convex lens, when the object is placed at :

- (a) Infinity
- (b) Focus F_1
- (c) Between focus F_1 and optical centre o.

Or

Describe refraction through a rectangular glass slab. Write down the laws of refraction of light. Also draw the diagram. 5

35. What are Hydrocarbons ? Describe the saturated carbon compounds.

Or

Define Allotropy. Describe the various allotropic forms of carbon with their properties. 5

36. What is Respiration ? Describe the structure of respiratory system of man. Draw a diagram also.

Or

What is Heterotrophic Nutrition ? Describe the process of photosynthesis. 5

A-5-Z

Roll No.....

Total No. of Questions : 36]

[Total No. of Printed Pages : 16

XARJKUT23

9305-Z

SCIENCE

Time : 3 Hours]

[Maximum Marks : 80

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- (a) This question paper has four Sections-A, B, C and D. There are thirty six questions in the question paper and all questions are compulsory.
- (b) Section-A (Q. Nos. 1 to 20) all questions and parts thereof are of 1 mark each. These questions contain multiple choice questions, very short answer type questions and assertions-reason type questions. Answer to these should be given in one word or one sentence.
- (c) Section-B (Q. Nos. 21 to 26) are short answer type questions carrying 2 marks each.
- (d) Section-C (Q. Nos. 27 to 33) carry 3 marks each.

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Turn Over

A-5-Z

- (e) Section-D (Q. Nos. 34 to 36) are long answer type questions carrying 5 marks each.
- (f) There is no overall choice. However internal choices have been provided in some questions. A student has to attempt only *one* of the alternatives in such questions.
- (g) Wherever necessary, neat and properly labelled diagrams should be drawn.

Section-A

1. Name the mirror which can give an erect and diminished image of an object.
2. A ray of light passes from air into glass, Is the angle of refraction greater or less than the angle of incidence ?
3. Which type of lenses are thicker in the middle than at the edges ?

Or

A concave lens produces an image 20 cm from the lens of an object placed 30 cm from the lens. Find the focal length of the lens.

XARJKUT23-9305-Z

A-5-Z

4. A beam of white light falling on a glass prism cannot be :
- (A) deviated
 - (B) dispersed
 - (C) focused
 - (D) refracted
5. In household circuits, is a fuse wire connected in series or in parallel ?
6. What type of generator is used at power stations ?
7. In Mendeleev's periodic table, gap was not left for one of the following elements. This element is :
- (A) Gallium
 - (B) Beryllium
 - (C) Germanium
 - (D) Scandium

Turn Over

8. What is the common name of propanone ?

Or

Name the gas evolved when ethanoic acid is added to sodium carbonate.

9. The electrons present in the valence shell of a noble gas atom can be :
- (A) 8 only
 - (B) 2 only
 - (C) 8 or 4
 - (D) 8 or 2
10. The acid produced naturally in our stomach is :
- (A) Acetic acid
 - (B) Citric acid
 - (C) Hydrochloric acid
 - (D) Sulphuric acid

11. In which part of the digestive system is water absorbed ?
12. Name the process by which plant parts like roots, stems and leaves get oxygen required for respiration.
13. What are the male sex cells in humans called ?

From question Nos. 14 to 16, two statements (Assertion-A and Reason-R) are given. Select the correct answer from codes A, B, C and D as given below :

- (A) Both A and R are true and R is correct explanation of the assertion.
- (B) Both A and R are true but R is not the correct explanation of the assertion.
- (C) A is true but R is false.
- (D) A is false but R is true.

14. **Assertion (A) :** Spores are unicellular bodies.

Reason (R) : The parent body simply breaks up into smaller pieces on maturation.

Turn Over

15. **Assertion (A)** : Natural resources need to be used carefully.

Reason (R) : Resources are finite in supply and human population is tremendously increasing.

16. **Assertion (A)** : The sex of a child is determined by the mother.

Reason (R) : Humans have two types of chromosomes : XX and XY.

17. Read the following passage and answer any *four* questions :

All the electrical heating appliances have a heating element which helps in converting most of electrical energy into heat energy.

(i) The elements of electrical heating devices are usually made of :

(A) Tungsten

(B) Bronze

(C) Nichrome

(D) Argon

(ii) Which of the following characteristics is not suitable for a fuse wire ?

(A) Thin and short

(B) Thick and short

(C) ~~Low~~ Low melting point

(D) Higher resistance

(iii) The heat produced by passing an electric current through a fixed resistor is proportional to the square of :

(A) Resistance of wire

(B) Current

(C) Temperature of resistor

(D) Time for which current is passed

(iv) If the current flowing through a fixed resistor is halved, the heat produced in it will become :

(A) Double

(B) One half

(C) One fourth

(D) Four times

(v) An electric fuse works on the

- (A) Chemical effect of current
- (B) Magnetic effect of current
- (C) Lighting effect of current
- (D) Heating effect of current

18. Read the following passage and answer any *four* questions :

An acid is a substance which dissociates on dissolving in water. To test for acids, indicators are used.

(i) The indicators which turn red in acid solution are :

- (A) Turmeric and litmus
- (B) Phenolphthalein and litmus
- (C) Litmus and methyl orange
- (D) Phenolphthalein and methyl orange

- (ii) The property which is common between vinegar and curd is that they :
- (A) have sweet taste
 - (B) are tasteless
 - (C) have bitter taste
 - (D) have sour taste
- (iii) The indicator which produces a pink colour in an alkaline solution is :
- (A) Methyl orange
 - (B) Turmeric powder
 - (C) Phenolphthalein
 - (D) Litmus paper
- (iv) One of the following is not an organic acid. This is :
- (A) Ethanoic acid
 - (B) Formic acid
 - (C) Citric acid
 - (D) Carbonic acid

Turn Over

(v) The property which is not shown by acid is :

- (A) they have sour taste (B) they feel soapy
(C) they turn litmus red (D) their pH is < 7

19. Read the following passage and answer any *four* questions :

Both plants and animals react (respond) to various stimuli around them but the method is not similar in plants and animals. The control and coordination in higher animals takes place through nervous system.

(i) Which of the following helps in maintaining posture and balance of the human body ?

- (A) Cerebellum (B) Cerebrum
(C) Medulla (D) Pons

(ii) The number of pairs of nerves which arise from the spinal cord is :

- (A) 21 (B) 41
(C) 31 (D) 51

(iii) The spinal cord originates from :

- (A) Cerebrum (B) Cerebellum
(C) Medulla (D) Pons

- (iv) The involuntary actions in the body are controlled by :
- (A) Medulla in forebrain (B) Medulla in hindbrain
(C) Medulla in spinal cord (D) Medulla in mid brain
- (v) Cerebellum, medulla and pons are the parts of :
- (A) midbrain (B) hindbrain
(C) forebrain (D) spinal cord

20. Read the following passage and answer any *four* questions :

Food contains energy and this energy can be transferred from one organism to other through food chains :

(i) Which of the following constitutes a food chain ?

- (A) Grass, Wheat and Mango (B) Goat, Cow and Elephant
(C) Grass, Goat and Human (D) Grass, Fish and Goat

(ii) In a food chain, the initial organism is usually :

- (A) Photosynthetic (B) Herbivore
(C) Saprophytic (D) Parasitic

(iii) In a food chain, the third trophic level is always occupied by :

- (A) Carnivores (B) Decomposers
(C) Herbivores (D) Producers

Turn Over

(iv) One of the following is not a consumer this one is :

(A) Giraffe

(B) Antelope

(C) Algae

(D) Alligator

(v) In the food chain comprising of a snake, grass, insect and frog, the secondary consumer is :

(A) Insect

(B) Snake

(C) Frog

(D) Grass

Section-B

21. There are two types of light sensitive cells in the human eye ;

(i) Where are they found ?

(ii) What is each type called ?

Or

Make the diagram to explain refraction and dispersion.

22. What is atmospheric refraction ? Give its cause.

23. Two resistors with resistances 2Ω and 4Ω respectively are to be connected to a battery of e.m.f. 6 V so as to obtain maximum current flowing. Find the current in that case.

Or

Find the energy transferred by a 100 W electric bulb in 1 minute.

24. What is the principle of an electric motor ? Name *two* devices in which electric motor is used.

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

26. What are Metals ? State *two* physical properties of metals.

Section-C

27. Why are fossil fuels classified as non-renewable sources of energy ?

Or

What is Biomass ? Give *three* examples of it.

28. Define a combination reaction. Give *two* examples of combination reaction.

29. How does the size of atom generally vary in going from left to right in a period of the periodic table ? Why does it vary this way ?

30. What is the difference between a mineral and an ore ? Name *one* ore of sodium. Write the chemical formula of sodium compound present in this ore.

31. Explain Vegetative propagation with the help of *two* examples. List *two* advantages of it.

Turn Over

32. What is meant by acquired and inherited traits ? Explain with *one* example each.
33. Why should we conserve forests and wildlife ?

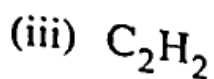
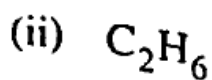
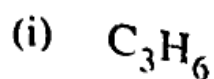
Section-D

34. (a) Construct a ray diagram to illustrate the formation of a virtual image using :
- (i) a converging lens
 - (ii) a diverging lens
- (b) What is the difference between the two images formed above ?

Or

- (a) State *three* characteristics of the image formed by a convex mirror.
- (b) An object 1 cm tall is placed 30 cm in front of a convex mirror of focal length 20 cm. Find the size and position of the image formed by the convex mirror.

35. (a) Give the molecular formula of one homologue of each of the following :



(b) What is the difference in the molecular mass of any *two* adjacent homologues ?

(c) By how many carbon atoms and hydrogen atoms do any *two* adjacent homologues differ ? <https://www.jkboseonline.com>

Or

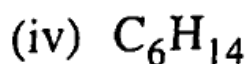
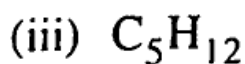
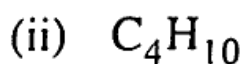
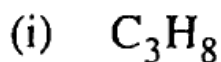
(a) Explain the term 'isomers'. Give an example of isomers.

(b) Write the following :

(i) Structural formula

(ii) Electron dot structure of any *one* isomer of C_7H_{16}

(c) How many isomers of the following hydrocarbons are possible ?



Turn Over

36. (a) Define Nutrition. Why is nutrition necessary for an organism ?
- (b) What are different modes of nutrition ? Explain each mode of nutrition with example.

Or

- (a) Name the various organs of the human excretory system and draw the diagram.
- (b) What is the function of excretory system in humans ?