

INTERNATIONAL INDIAN SCHOOL –DAMMAM

GSS

ANNUAL_PRACTICE PAPER (2023-24)

CLASS: X

Chemistry- Carbon and its Compounds

SELECT AND WRITE ONE MOST APPROPRIATE OPTION OUT OF THE FOUR OPTIONS GIVEN FOR EACH OF THE QUESTIONS

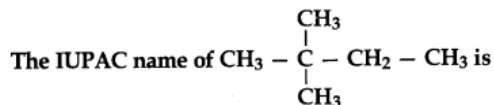
1. Which of the following is the molecular formula of cyclobutane?

- a) C_4H_{10}
- b) C_4H_6
- c) C_4H_8
- d) C_4H_4

2. Which of the following belongs to a homologous series of alkenes?

- (a) C_6H_6
- (b) C_2H_6
- (c) C_2H_4
- (d) C_3H_4

3.



- (a) 2-ethyl-2-methyl propane
 - (b) 2, 2-dimethyl butane
 - (c) 1,1,1-trimethyl propane
 - (d) 2, 2-methyl butane
4. C_3H_8 belongs to the homologous series of
- (a) Alkynes
 - (b) Alkenes
 - (c) Alkanes
 - (d) Cyclo alkanes

5. How many single bonds are present in propane?

- (a) Nine
- (b) Ten
- (c) Eight
- (d) Twelve

6. A hydrocarbon should have a minimum of _____ carbon atoms to show isomerism.

- (a) Three
- (b) Four
- (c) Fived
- (d) Six

7. The number of isomers of Hexane is
- 2
 - 3
 - 4
 - 5
8. Name the functional group present in $\text{CH}_3\text{CH}_2\text{CHO}$.
- Alcohol
 - Carboxylic acid
 - Ketone
 - Aldehyde
9. Identify 'X' in the following reaction:
 $\text{CH}_3\text{COOH} + \text{Na}_2\text{CO}_3 \rightarrow \text{X} + \text{CO}_2 + \text{H}_2\text{O}$
- CH_3COONa
 - $\text{CH}_2(\text{Na})\text{COOH}$
 - NaOH
 - NaHCO_3
10. Which of the following will undergo addition reactions?
- CH_4
 - C_3H_8
 - C_2H_6
 - C_2H_4
11. A hydrocarbon has four carbon atoms. Give its molecular formula if it is an alkyne.
- C_4H_{10}
 - C_4H_8
 - C_4H_6
 - C_4H_4
12. Give the IUPAC name of $\text{CH}_3\text{COOC}_2\text{H}_5$.
- Ethyl ethanoic acid
 - Butanoate
 - Ethyl ethanoate
 - Ethyl methyl carboxylic acid
13. The second member of the alkyne homologous series is
- propyne
 - ethyne
 - ethene
 - propene
14. A soap molecule has a
- hydrophobic head and hydrophobic tail
 - hydrophobic head and hydrophilic tail
 - hydrophilic head and hydrophilic tail
 - hydrophilic head and hydrophobic tail
15. A student studies that a soap molecule has two ends, one of which is an ionic end, and the other is the carbonic chain. Which option explains the interaction of a soap molecule with oil?
- Ionic end of the soap interacts with the oil

- (b) The closest end of the soap interacts with the oil
- (c) Carbonic chain end of the soap interacts with the oil
- (d) Ends of the soap randomly interact with the oil

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- (a) Both 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):** Soaps are not suitable for washing purpose when water is hard.

Reason (R): Soaps have relatively weak cleansing action.

17. **Assertion(A):** Alkenes give addition reaction.

Reason (R) : Addition reactions are a characteristic property of saturated hydrocarbons.

18. **Assertion (A):** Saturated hydrocarbons are chemically less reactive.

Reason (R): All the valencies of carbon atom are satisfied by single covalent bonds.

19. **Assertion(A):** Ethanol is first member of the alcohol homologous series.

Reason (R): A homologous series can be represented by a general formula.

20. **Assertion(A):** Covalent compounds are generally poor conductor of electricity.

Reason (R): They consist of molecules and not ions which cannot transfer charge.

VERY SHORT ANSWER QUESTIONS

- 21. What are covalent bonds? Show their formation with the help of electron dot structure of methane
- 22. Covalent compounds have low melting and boiling point. Why?
- 23. State the reason why carbon can neither form C^{4+} cations nor C^{4-} anions, but forms covalent compounds.
- 24. Gas is evolved when ethanol reacts with sodium. Name the gas evolved and write the balanced chemical equation of the reaction involved.
- 25. Draw the structural formula of propyne.
- 26. Give the differences between saturated and unsaturated hydrocarbons with one examples each.
- 27. Write the formula and draw the electron dot structure of carbon tetrachloride.
- 28. Write the next homologue of each of the following:
 - (i) C_2H_4
 - (ii) C_4H_6
- 29. Write the respective chemical equations to show what happens when
 - (i) ethanol is heated with concentrated sulphuric acid at 443 K ?
 - (ii) ethanol reacts with ethanoic acid in the presence of an acid acting as a catalyst?

SHORT ANSWER QUESTIONS

- 30. Write the chemical equations to show what happens when
 - (i) sodium hydroxide is added to ethanoic acid?

- (ii) solid sodium hydrogen carbonate is added to ethanoic acid?
 (iii) ethanol reacts with sodium?
31. (a) What is a homologous series? Explain with an example.
 (b) Define the following terms giving one example of each.
 (i) Esterification (ii) Substitution reaction
32. Write the name and molecular formula of an organic compound having its name suffixed with 'ol' and having two carbon atoms in its molecule. Write balanced chemical equation to indicate what happens when this compound is heated with excess cone. H_2SO_4 and the name of main product formed. Also state the role of cone. H_2SO_4 in the reaction.
33. Write the structural formulae of all the isomers of hexane.
34. Name the compound and functional groups present in the following compounds
 (a) $\text{CH}_3\text{COCH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
 (b) $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$
 (c) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CHO}$
 (d) $\text{CH}_3\text{CH}_2\text{OH}$

LONG ANSWER QUESTIONS

35. (a) In a tabular form, differentiate between ethanol and ethanoic acid under the following heads:
 (i) Physical state
 (ii) Taste
 (iii) NaHCO_3 test
- (b) Differentiate between addition reaction and substitution reaction. Give one example of each.
36. Soaps and detergents are both, types of salts. State the difference between the two. Write the mechanism of the cleansing action of soaps. Why do soaps not form lather (foam) with hard water? Mention any two problems that arise due to the use of detergents instead of soaps.
37. A carboxylic acid (molecular formula, $\text{C}_2\text{H}_4\text{O}_2$) reacts with an alcohol in the presence of an acid catalyst to form a compound 'X'. The alcohol on oxidation with alkaline KMnO_4 followed by acidification gives the same carboxylic acid $\text{C}_2\text{H}_4\text{O}_2$. Write the name and structure of (i) carboxylic acid, (ii) alcohol and (iii) the compound 'X' and also the balanced chemical equations for the above reactions.

CASE - BASED/DATA -BASED QUESTION

38. Read the following and answer any four questions from (i) to (v).

The compounds which have the same molecular formula but differ from each other in physical or chemical properties are called isomers and the phenomenon is called isomerism. When the isomerism is due to difference in the arrangement of atoms within the molecule, without any reference to space, the phenomenon is called structural isomerism. In other words, structural isomers are compounds that have the same molecular formula but different structural formulas, i.e., they are different in the order in which different atoms are linked. In these compounds, carbon atoms can be linked together in the form of straight chains, branched chains or even rings.

(i) Which of the following sets of compounds have same molecular formula?

- (a) Butane and iso-butane

- (b) Cyclohexane and hexene
- (C) Propanal and propanone
- (d) All of these

(ii) In order to form branching, an organic compound must have a minimum of

- (a) four carbon atoms
- (b) three carbon atoms
- (c) five carbon atoms
- (d) any number of carbon atoms.

(iii) Which of the following is an isomeric pair?

- (a) Ethane and propane
- (b) Ethane and ethene
- (c) Propane and butane
- (d) Butane and 2-methylpropane

(iv) Among the following the one having longest chain is

- (a) neo-hexane
- (b) 3,3-dimethylpentane
- (c) 2-methylhexane
- (d) 2,2-dimethylbutane.

(v) The number of isomers of pentane is

- (a) 2
- (b) 3
- (c) 4
- (d) 5

INTERNATIONAL INDIAN SCHOOL

GSS

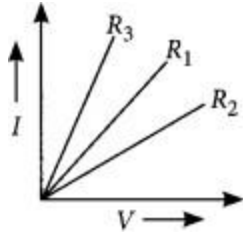
ANNUAL - PRACTICE PAPER – 2023-24

TOPIC – ELECTRICITY

CLASS-X

I) MULTIPLE CHOICE QUESTIONS

1. A cylindrical conductor of length 'l' and uniform area of cross section 'A' has resistance 'R'. The area of cross section of another conductor of same material and same resistance but of length '2l' is
 - (a) $A/2$
 - (b) $3A/2$
 - (c) $2A$
 - (d) $3A$
2. Two devices are connected between two points say A and B in parallel. The physical quantity that will remain the same between the two points is
 - (a) current
 - (b) voltage
 - (c) resistance
 - (d) None of these
3. If R_1 and R_2 be the resistance of the filament of 40 W and 60 W respectively operating 220 V, then
 - (a) $R_1 < R_2$
 - (b) $R_2 < R_1$
 - (c) $R_1 = R_2$
 - (d) $R_1 \geq R_2$
4. If the current flowing through a fixed resistor is halved, the heat produced in it will become:
 - A. Double
 - B. Half
 - C. One-fourth
 - D. Four times
5. A car headlight bulb working on a 12 V car battery draws a current of 0.5 A. The resistance of the light bulb is:
 - A. 0.5Ω
 - B. 6Ω
 - C. 12Ω
 - D. 24Ω
6. What is the maximum resistance which can be made using five resistors each of $1/5 \Omega$?
 - (a) 5Ω
 - (b) 10Ω
 - (c) $1/5 \Omega$
 - (d) 1Ω
7. A student plots V-I graphs for three samples of nichrome wire with resistances R_1 , R_2 and R_3 . Choose from the following the statements that holds true for this graph



- (a) $R_1 = R_2 = R_3$
- (b) $R_1 > R_2 > R_3$
- (c) $R_3 > R_2 > R_1$
- (d) $R_2 > R_1 > R_3$

II) Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below

- (a) Both 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.

8. **Assertion (A):** Tungsten metal is used for making filaments of incandescent lamps.
Reason (R): The melting point of tungsten is very low

9. **Assertion (A):** If a graph is plotted between the potential difference and the current flowing, the graph is a straight line passing through the origin.
Reason (R): The current is directly proportional to the potential difference

10. **Assertion (A):** The connecting wires are made of copper.
Reason (R): The electrical conductivity of copper is high

11. **Assertion (A):** The fuse is placed in series with the device.
Reason (R): Fuse consists of a piece of wire made of a metal or an alloy of appropriate melting point.

12. **Assertion (A):** When the resistances are connected end-to-end consecutively, they are said to be in series.
Reason (R): In case the total resistance is to be increased, then the individual resistances are reconnected in series.

III) ANSWER THE FOLLOWING

13. A current of 10 A flows through a conductor for two minutes.
- (i) Calculate the amount of charge passed through any area of cross-section of the conductor.
 - (ii) If the charge of an electron is $1.6 \times 10^{-19} \text{ C}$, then calculate the total number of electrons flowing

14. a) Why are metals good conductors of electricity whereas glass is a bad conductor of electricity? Give reason

b) What are the features of a series combination of resistance?

15. A copper wire has diameter 0.5mm and resistivity $1.6 \times 10^{-8} \Omega \text{m}$. 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?

16. (a) Three 2Ω resistors A, B and C are connected in such a way that the total resistance of the combination is 3Ω . Show the arrangement of the three resistors and justify your answer

(b) You have four resistors of 8Ω each. Show how would you connect these resistors to have effective resistance of 8Ω ?

17. A torch bulb is rated 5V and 500 mA. Calculate its

- (i) power
- (ii) resistance
- (iii) energy consumed when it is lighted for 2 1/2 hour

18. In a house 3 bulbs of 100 watt each lighted for 5 hours daily, 2 fans of 50 watt each used for 10 hours daily and an electric heater of 1.00 kW is used for half an hour daily. Calculate the total energy consumed in a month of 31 days and its cost at the rate of Rs 3.60 per kWh.

19. (i) State one difference between kilowatt and kilowatt hour. Express 1 kWh in joules.

(ii) A bulb is rated 5V; 500mA. Calculate the rated power and resistance of the bulb when it glows.

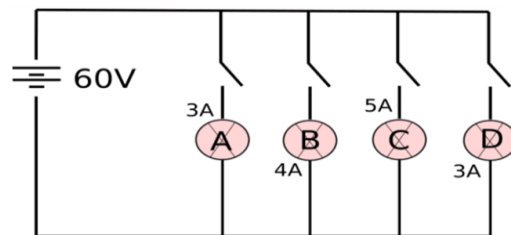
(iii) Establish the relationship between 1 kWh and SI unit of energy.

20) (a) If the radius of a current carrying conductor is halved, how does current through it change?

(b) A 6Ω resistance wire is doubled on itself. Calculate the new resistance of the wire.

21) Why are the electric bulbs filled with chemically inactive nitrogen or argon gas?

22) In the given circuit, A, B, C, and D are four lamps connected with a battery of 60V.



Analyze the circuit to answer the following questions.

i. What kind of combination are the lamps arranged in (series or parallel)?

ii. Explain with reference to your above answer, what are the advantages of this combination of lamps.

iii. Explain with proper calculations which lamp glows the brightest?

iv. Find out the total resistance of the circuit.

23. (a) Express ohm's law by a mathematical formula.

(b) Draw a circuit diagram to verify ohm's law.

(c) Present the relationship between the voltage applied across a conductor and the current flowing through it graphically.

24. (a) Three resistors of resistances R_1 , R_2 and R_3 are connected in (i) series, and (ii) parallel. Write expression for the equivalent resistance of the combination in each case.

(b) Two identical resistances of 12Ω each are connected to a battery of $3V$.

Calculate the ratio of the power consumed by the resulting combinations with minimum resistance and maximum resistance.

25. Two resistors, with resistance 10Ω and 15Ω , are to be connected to a battery of $12V$ so as to obtain:

(i) minimum current (ii) maximum current

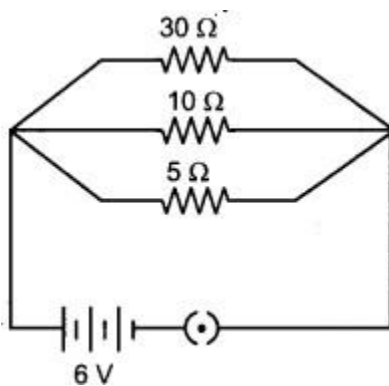
(a) Describe the mode of connecting the resistances in each case.

(b) Calculate the strength of the total current in the circuit in each case

26. How does use of a fuse wire protect electrical appliances?

27. Define 1 volt. Express it in terms of SI unit of work and charge. Calculate the amount of energy consumed in carrying a charge of 1 coulomb through a battery of $3V$.

28. For the electric circuit given below calculate:



i) Current in each resistor,

(ii) Total current drawn from the battery, and

(iii) Equivalent resistance of the circuit.

29. What is meant by electric current? Name and define its SI unit. In a conductor electrons are flowing from B to A. What is the direction of conventional current?

Give justification for your answer.

IV) CASEBASEDOUESTIONS

30) The heating effect of current is obtained by the transformation of electrical energy into heat energy. Just as mechanical energy used to overcome friction is covered into heat, in the same way, electrical energy is converted into heat energy when an electric current flows through a resistance wire. The heat produced in a conductor, when a current flows through it is found to depend directly on (a) strength of current (b) resistance of the conductor (c) time for which the current flows.

The mathematical expression is given by $H = I^2 R t$.

The electrical fuse, electrical heater, electric iron, electric geyser, etc. all are based on the heating effect of current.

- i)** What are the properties of heating elements?
 - (a) High resistance, high melting point
 - (b) Low resistance, high melting point
 - (c) Low resistance, high melting point
 - (d) Low resistance, low melting point
- ii)** (ii) What are the properties of an electric fuse?
 - (a) Low resistance, low melting point
 - (b) High resistance, high melting point.
 - (c) High resistance, low melting point
 - (d) Low resistance, high melting point
- iii)** A fuse wire melts at 5A. It is desired that the fuse wire of the same material melt at 10

a) 4 times	(b) 2 times
(c) 6 times	(d) 8 times

A. The new radius of the wire is

- iv)** When a current of 0.5 A passes through a conductor for 5 min and the resistance of the conductor is 10 ohm, the amount of heat produced is

a) 250J	(b) 5000J
(c) 750J	(d) 1000J

- v)** State a difference between the wire used in the element of an electric heater and in a fuse wire.

INTERNATIONAL INDIAN SCHOOL- DAMMAM

CLASS-X

GSS ANNUAL- PRACTICE PAPER – 2023-24

MAGNETIC EFFECT OF ELECTRIC CURRENT

Q1) A plotting compass is placed near the south pole of a bar magnet. The pointer of the plotting compass will:

- (a) Point away from the south pole
- (b) Point parallel to the south pole
- (c) Point towards the south pole
- (d) Point at right angles to the south pole

Q2) Which of the following statements is incorrect regarding magnetic field lines?

- (a) The direction of the magnetic field at a point is taken to be the direction in which the north pole of a magnetic compass needle points.
- (b) Magnetic field lines are closed curves.
- (c) If magnetic field lines are parallel and equidistant, they represent zero field strength.
- (d) Relative strength of the magnetic field is shown by the degree of closeness of the field lines.

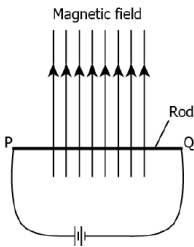
Q3) A strong bar magnet is placed vertically above a horizontal wooden board. The magnetic lines of force will be:

- (a) Only in the horizontal plane around the magnet
- (b) Only in the vertical plane around the magnet
- (c) In horizontal as well as vertical planes around the magnet
- (d) In all the planes around the magnet

Q4) A soft iron bar is introduced inside a current-carrying solenoid. The magnetic field inside a solenoid:

- a) Decrease b) Will increase
 c) Will become zero d) Will remain unaffected

Q5) A metal rod PQ is placed in the magnetic field. The ends of the rod are connected to a battery using wires.



Where will the rod move?

- (a) Upward (b) Downwards
 (c) Into the field (d) Out of the field

Q6) A positive charge is moving upwards in a magnetic field directed towards the north, the particle will be deflected towards

- (a) west (b) north
 (c) south (d) east

Q7) What is the most important safety method used for protecting home appliances from short circuiting or overloading?

- (A) Earthing (B) use of fuse
 (C) use of stabilizers (D) use of electric meter

Q10) Earth wire carries

- (a) Current (b) voltage
 (c) No current (d) heat

ASSERTION REASON

8.Assertion: If direction of velocity of charge is parallel to applied magnetic field, then the force experienced by moving charge will be maximum.

Reason: Force on moving charge is independent of direction of applied magnetic field.

9. Assertion: Steel core is used as an electromagnet.

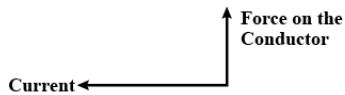
Reason: Steel gets permanently magnetized when the current flows through the coil wound around.

10. Assertion: It is easier to bring North pole of a magnet to South pole of other magnet.

Reason: There is a force of attraction between unlike poles of magnet.

VERY SHORT ANSWER QUESTIONS

12. Draw magnetic field lines around a bar magnet? Give one point of difference between uniform and non- uniform magnetic field.
13. Name and state rule used to determine the direction of magnetic field produced around a straight conductor carrying current?
14. State the direction of magnetic field in the following case.



15. State important features of the magnetic field obtained inside the solenoid. Write one use of solenoid.
16. What is the purpose of the soft iron core used in making an electromagnet? How is it different from the permanent magnet?
17. What are the factors which govern the force experienced by a current carrying conductor?

SHORT ANSWER QUESTION

18. What is overloading? State the cases of overloading.
19. State one main difference between A.C and D.C. Why A.C is preferred over D.C for long range transmission of electric power. What is the frequency of A.C. in India?
20. What are magnetic field lines? Justify the following statements
(a) Two magnetic field lines never intersect each other.
(b) Magnetic field lines are closed curves.
21. i) State Maxwell's right-hand thumb rule.
(ii) PQ is a current carrying conductor in the plane of the paper as shown in the figure. Mention the direction of magnetic fields produced by it at points A and B. Given $r_1 < r_2$, where will the strength of the magnetic field be larger?



LONG ANSWER QUESTION

Q22. Draw the pattern of magnetic field lines around a current carrying straight conductor. How does the strength of the magnetic field produced change:

- (i) with the distance from the conductor?
- (ii) with an increase in current in a conductor?

Q23. (a) With the help of a labelled diagram, describe an activity to show that a current carrying conductor experiences a force when placed in a magnetic field. Mention the position when this force is maximum.

(b) Name and state the rule which gives the direction of force acting on the conductor.

CASE BASE/DATA BASE

A compass needle gets deflected from N-S orientation when placed near a current carrying conductor. The magnetic field produced around the conductor exerts mechanical force on the needle & sets it in motion. According to Ampere, the magnet should also exert some force on the conductor which is equal & opposite. The experiment performed verified Ampere's assertion that when current carrying conductor is kept in external magnetic field, a force acts on it.

A. The direction of force acting on current carrying conductor in external magnetic field is given by-

- a) Right hand thumb rule
- b) Fleming's left hand rule
- c) Fleming's right hand rule
- d) Right hand thumb rule

B. The force acting conductor is directly proportional to-

- a) Strength of magnetic field
- b) Strength of electric current
- c) Length of conductor
- d) All of these

C. The maximum force is exerted on the conductor when angle between its direction and that of magnetic field is-

- (a) Zero degree
- (b) Forty-five degree
- (c) Ninety degree
- (d) One eighty degree

D. A current carrying wire has no tendency to rotate in magnetic field what does it mean?

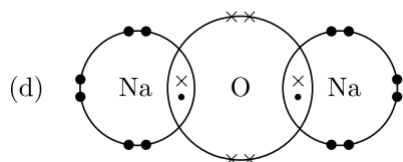
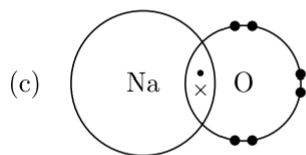
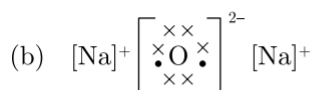
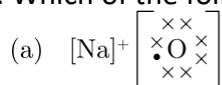
- (a) Wire is parallel to direction of magnetic field-
- (b) Wire is perpendicular to direction of field
- (c) Magnetic field is very strong
- (d) Magnetic field is very weak.

INTRNATIONAL INDIAN SCHOOL DAMMAM
CLASS-X
GSS ANNUAL PRACTICE PAPER- 2023 - 24

METALS AND NON METALS

SECTION-A

1. Which of the following is the correct electronic arrangement of sodium oxide?



2. Which one of the following metals do not react with cold as well as hot water?

- (a) Na
- (b) Mg
- (c) Ca
- (d) Fe

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

- (a) FeO
- (b) Fe₂O₃
- (c) Fe₃O₄
- (d) Fe₂O₃ and Fe₃O₄

4. Generally metals react with acids to give salt and hydrogen gas. Which of the following acids does not give hydrogen gas on reacting with metals (except Mn and Mg)?

- (a) H₂SO₄
- (b) HCl
- (c) HNO₃

(d) All of these

5. Which of the following are not ionic compounds?

- A. KCl
- B. HCl
- C. CCl₄
- D. NaCl

- (a) A and B
- (b) B and C
- (c) C and D
- (d) A and C

6. Which of the following metals exist in their native state in the nature?

- A. Cu
- B. Au
- C. Zn
- D. Ag

- (a) A and B
- (b) B and C
- (c) B and D
- (d) C and D

7. Metals are refined using different methods. Which of the following metals are refined by electrolytic refining?

- A. Au
- B. Cu
- C. Na
- D. K

- (a) A and B
- (b) A and C
- (c) B and C
- (d) C and D

8. Generally metals are solid in nature. Which one of the following metals is found in liquid state at room temperature?

- (a) Na
- (b) Fe
- (c) Cr
- (d) Hg

9. **Assertion (A):** Al_2O_3 is an amphoteric oxide.

Reason (R): Al_2O_3 reacts with acid as well as base to form salt and water.

- (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.

10. **Assertion (A):** Nitrogen is a non-metal.

Reason (R): Nitrogen has 5 valence electrons.

- (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.

SECTION-B

11. A metal that exists as a liquid at room temperature is obtained by heating its sulphide in the presence of air. Identify the metal and its ore and give the reaction involved.

12. Give the formulae of stable binary compounds that would be formed by the combination of following pairs of elements:

- (a) Mg and N_2
- (b) Al and Cl_2
- (c) Li and O_2
- (d) K and O_2

13. What happens when: (a) ZnCO_3 is heated in the absence of oxygen?
(b) a mixture of Cu_2O and Cu_2S is heated?

SECTION-C

14. An element A reacts with water to form a compound B which is used for whitewashing. The compound B on heating forms oxide C which on treatment with water gives back B. Identify A, B and C and give the reactions involved.

15. A metal A, which is used in thermit reaction, when heated with oxygen gives oxide B. Which is the amphoteric in nature? Identity A and B. Write down the reactions of oxide B with HCl and NaOH.

16. During extraction of metals, electrolytic refining is used to obtain pure metals.

- Which material will be used as anode and cathode for refining silver metal by this process?
- Suggest a suitable electrolyte.
- In this electrolytic cell, where do we get pure silver after passing electric current?

17. Compound X and Aluminium are used to join railway tracks.

- Identify compound X.
- Name the reaction.
- Write down its reaction.

SECTION-D

18. (a) What is reactivity series? How does the reactivity series help in predicting the relative activity of various metal?

(b) Suggest different chemical processes used for obtaining a metal from its oxides of metals in the middle and top of reactivity series. Support your answer with one example.

19. (a) Write the steps involved in the extraction of pure metals in the middle of the activity series from their carbonate ores?

(b) How is copper extracted from its sulphide ore? Explain the various steps supported by chemical equations. Draw labelled diagram for the electrolytic refining of copper.

SECTION-E

20. A student took four metals P, Q, R and S and carried different experiments to study the properties of metals. Some of the observations were:

- All metals could not be cut with knife except metal R
- Metal P combined with oxygen to form M_2O_3 oxide which reacted with both acids and bases.
- Reaction with water.

P - Did not react either with cold or hot water but reacted with steam.

Q - Reacted with hot water and the metal started floating

R - Reacted violently with cold water

S - Did not react with water at all

Based on the above observations answer the following:

(a) Out of the given metals, the one which needs to be stored using kerosene is:

- A. P
- B. R
- C. S
- D. Q

(b) Out of the given metals, the metal Q is:

- A. Iron
- B. Magnesium
- C. Zinc
- D. Potassium

(c) Metal which forms amphoteric oxides is:

- A. P
- B. Q
- C. R
- D. S

(d) The increasing order of the reactivity of 4 metals:

- A. $P < Q < R < S$
- B. $S < R < Q < P$
- C. $S < P < Q < R$
- D. $P < R < Q < S$

INTERNATIONAL INDIAN SCHOOL DAMMAM
ANNUAL (BIOLOGY) PRACTICE QUESTIONS (2023-2024)

L-8 HOW DO ORGANISMS REPRODUCE?

(SEXUAL REPRODUCTION)

1. The part of a seed which grows and develops into root on germination is
 - (a) Cotyledon
 - (b) Plumule
 - (c) Follicle
 - (d) Radicle

2. Pollen are formed from:
 - (a) anther
 - (b) ovary
 - (c) filament
 - (d) thalamus

3. The correct sequence or reproductive stages seen in flowering plants is
 - (a) gametes, zygote, embryo, seedling
 - (b) zygote, gametes, embryo, seedling
 - (c) Seedling, embryo, zygote, gametes
 - (d) gamete, embryo, zygote, seedling

4. **ASSERTION:** Papaya, water melon, etc. bear unisexual flowers.

REASON: The flowers of papaya, water melon, etc. contain either stamen or carpel.

5. **ASSERTION:** Testes are located outside the abdominal cavity in scrotum

REASON: Sperm formation requires a lower temperature than the normal body temperature.

6. Write two points of difference between asexual and sexual types of reproduction.

7. Describe why variations are observed in the offspring formed by sexual reproduction?

8. (a) List two sexually transmitted diseases in each of the following cases:
 - (i) Bacterial infections
 - (ii) Viral infections

- (b) How may be the spread of such diseases be prevented?
9. Draw a diagram of human female reproductive system and label the part:
- (a) that produces egg
 - (b) where fusion of egg and sperm take place
 - (c) where zygote is implanted
 - (d) what happens to human egg when it is not fertilised?
10. Sexual maturation of reproductive tissues and organs are necessary link for reproduction. Elucidate.
11. (a) How are variation useful for species if there is drastic alteration in species?
- (b) Explain how uterus and placenta provide necessary conditions for proper growth and development of the embryo after implantation?

CHAPTER – HERIDITY

- 1) Process of selecting individuals with desired characters by man is called
 - (a) Hybridization
 - (b) Reproduction
 - (c) Artificial selection
 - (d) Natural selection
- 2) A cross between a tall pea-plant (TT) and a short pea-plant (tt) resulted in progenies that were all tall plants because
 - (a) tallness is the recessive trait.
 - (b) shortness is the dominant trait.
 - (c) height of pea-plant is not governed by gene T or t.
 - (d) tallness is the dominant trait.
- 3) The number of pairs of sex chromosomes in the zygote of a human being is
 - (a) 2
 - (b) 3
 - (c) 1
 - (d) 4
- 4) A zygote which has an X-chromosome inherited from the father will develop into a
 - (a) girl
 - (b) boy

- (c) either boy or girl
 - (d) X-chromosome does not influence the sex of a child.
- 5) What does the progeny of a tall plant with round seeds and a short plant with wrinkled seeds look like?
- (a) All are tall with round seeds.
 - (b) All are short with round seeds.
 - (c) All are tall with wrinkled seeds.
 - (d) All are short with wrinkled seeds.
- 6) Which of the following decides the sex of the child?
- (a) male gamete, i.e., sperm
 - (b) female gamete, i.e., ovum
 - (c) both sperm and ovum
 - (d) mother

Pure-bred pea plant A is crossed with purebred pea plant B. It is found that the plants which look like A do not appear in F₁ generation but re-emerge in F₂ generation. Which of the plants A and B are tall and dwarf?

- (e) A are tall and B are dwarf.
 - (f) A are tall and B are also tall.
 - (g) A are dwarf and B are also dwarf
 - (h) A are dwarf and B are tall
- 7) In humans if gene B gives brown eyes and gene b gives blue eyes, what will be the colour of eyes of the persons having combinations (i) Bb and (ii) BB?
- (a) (i) Blue and (ii) Brown
 - (b) (i) Brown and (ii) Blue
 - (c) (i) Brown and (ii) Brown
 - (d) (i) Blue and (ii) Blue
- 8) A cross between two individuals results in a ratio of 9 : 3 : 3 : 1 for four possible phenotypes of progeny. This is an example of a
- (a) Monohybrid cross
 - (b) Dihybrid cross
 - (c) Test cross
 - (d) F₁ generation
- 9) If a round, green seeded pea-plant (RRyy) is crossed with a wrinkled yellow seeded pea-plant (rrYY), the seeds produced in F₁ generation are
- (a) round and green
 - (b) round and yellow
 - (c) wrinkled and green
 - (d) wrinkled and yellow

ASSERTION – REASONING

Following questions consist of two statements – Assertion (A) and Reason (R).

Answer these questions selecting the appropriate option given below:

- (a) Both 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.

- 1) **Assertion (A):** Variations are seen in offspring produced by sexual reproduction.
Reason (R): DNA molecule generated by replication is not exactly identical to original DNA.
- 2) **Assertion (A):** Mutation is sudden change in the genetic material.
Reason (R): Variation is useful for the survival of species over time.
- 3) **Assertion (A):** The sex of a child is determined by the mother.
Reason (R): Humans have two types of sex chromosomes: XX and XY.
- 4) **Assertion:** Traits like tallness and dwarfness in pea plant are inherited independently.
Reason: When a homozygous tall pea plant is crossed with dwarf pea plant, medium sized pea plant is obtained in F₁ generation.
- 5) **Assertion:** Accumulation of variation in a species increases the chances of its survival in changing environment.
Reason: Accumulation of heat resistance in some bacteria ensure their survival even when temperature in environment rises too much.
- 6) **Assertion:** Monohybrid cross deals with inheritance of one pair of contrasting characters.
Reason: Dihybrid cross deals with inheritance of two pairs of contrasting characters.
- 7) **Assertion:** Pea plant is considered ideal for hybridization experiments.
Reason: Pea is self-pollinating plant with short life cycle and bears visible contrasting traits.
- 8) **Assertion:** If blood group of both mother and father is O then the blood group of children will also be O.
Reason: Blood group in humans is determined by many alleles of a gene viz. I^A, I^B, I^O.

ANSWER THE FOLLOWING QUESTIONS

- 1) All the variations in a species do not have equal chances of survival. Why?
- 2) “Only variations that confer an advantage to an individual organism will survive in a population.” Justify this statement.
- 3) A Mendelian experiment consisted of breeding pea plants bearing violet flowers with pea plants bearing white flowers. What will be the result in F₁ progeny?
- 4) What is heredity?
- 5) Why is the progeny always tall when a tall pea plant is crossed with a short pea plant?

- 6) (a) Why did Mendel carry out an experiment to study inheritance of two traits in garden pea?
 (b) What were his findings with respect to inheritance of traits in F1 and F2 generation?
 (c) State the ratio obtained in the F2 generation in the above-mentioned experiment.
- 7) A green stemmed rose plant denoted by GG and a brown stemmed rose plant denoted by gg are allowed to undergo a cross with each other.
 (a) List your observations regarding :
 (i) Colour of stem in their F1 progeny
 (ii) Percentage of brown stemmed plants in F2 progeny if plants are self-pollinated.
 (iii) Ratio of GG and Gg in the F2 progeny.
 (b) Based on the findings of this cross, what conclusion can be drawn?
- 8) Name the plant Mendel used for his experiment. What type of progeny was obtained by Mendel in F1 and F2 generations when he crossed the tall and short plants? Write the ratio obtained in F2 generation plants.
- 9) How did Mendel's experiments show that different traits are inherited independently? Explain.
- 10) How did Mendel explain that it is possible that a trait is inherited but not expressed in an organism?
- 11) With the help of an example justify the following statement: "A trait may be inherited, but may not be expressed."
- 12) "Gene inherited from a male is responsible for the sex of the child in human beings". Give a genetic flow chart as a proof for the given statement.

CASE BASED STUDY

1. 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 fertilized 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.

2. The rules for inheritance of such traits in human beings are related to the fact that both the father and the mother contribute practically equal amounts of genetic material to the child. This means that each trait can be influenced by both paternal and maternal DNA. Thus, for each trait there will be two versions in each child. What will, then, the trait seen in the child be?

i) What were the contrasting traits used by Mendel?

ii) What was the phenotypic ratio of monohybrid cross?

iii) What was the genotypic ratio of monohybrid cross?

iv) How does the traits get expressed?

v) Write the monohybrid cross between tall and dwarf plants?

CHAPTER – OUR ENVIRONMENT

1. What phenomenon occurs due to the accumulation of certain pollutants that increase in concentration along the food chain?

- a) Eutrophication b) Pollution c) Deforestation d) Bio-magnification

2. In a food chain of frogs, grass, insects and snake, To which category of consumers do frogs belong to?

- a) Primary consumer (herbivore)
b) Primary consumer (primary carnivore)
c) secondary consumer(primary carnivore)
d) secondary consumer(secondary carnivore)

3. In the given food chain if the amount of energy at the fourth trophic level is 4 kJ, what will be the energy available at the producer level?

Grass → Grasshopper → Frog → Snake

- a. 4 kJ b. 40 kJ c. 400 kJ d. 4000 kJ

4. This is not a consequence of ozone depletion.

- (a) Malignant melanoma – skin cancer type

- (b) Increased ultraviolet radiations
 - (c) tides
 - (d) DNA mutation.
5. What is the order of the waste management hierarchy, from most to least favoured?
- a) Prevention-Recycle-Reuse-Disposal
 - b) Prevention-Reuse-Disposal-Recycle
 - c) Prevention-Disposal-Reuse-Recycle
 - d) Prevention-Reuse-Recycle-Disposal
6. 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
7. ASSERTION: Accumulation of harmful chemicals is higher in case of organisms at higher trophic level.
- REASON: In a food chain the number of trophic levels are limited to 4 - 5.
8. ASSERTION: ozone is formed naturally through the interaction of solar ultraviolet (UV) radiation with molecular oxygen (O₂)
- REASON: UV splits oxygen molecules into oxygen atoms. These single atoms then react with other oxygen molecules to produce ozone.

9. In a certain study conducted on occurrence of DDT along food chains in an ecosystem, the concentration of DDT in grass was found to be 0.5 ppm (parts per million), in sheep it was 2 ppm and in man it was 10 ppm. Why was the concentration of DDT maximum in case of man ?
10. In the following food chain, only 2J of energy was available to the peacocks. How much energy would have been present in Grass? Justify your answer.
Grass -Grass Hopper -Frog -Snake -Peacock.
11. Construct an aquatic food chain showing four trophic levels.
12. In the following food chain, plants provide 500J of energy to rats. How much energy will be available to hawks from snakes? Plants —> Rat—> Snakes —> Hawks
