

Assignment-1: Science (Grade- 11)

Chemistry

Group : A

1. State Pauli's exclusion principle.
2. What is Mendeleev's periodic law? Mention any two limitations of Mendeleev's periodic table.
3. Define iso-electronic ions with examples.
4. What is catenation property of Carbon ?
5. Write down the IUPAC nomenclatures of following organic compounds.
a) $\text{CH}_3\text{CH}(\text{Br})\text{CH}(\text{NH}_2)\text{COOH}$ b) $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}(\text{Br})\text{COOH}$

Group : B

6. State and explain Hund's rule of maximum multiplicity. Also, write the electronic configurations of Carbon ($Z = 6$) and Oxygen ($Z = 8$) on the basis of this rule.
7. What do you mean by ionization energy/potential ? Explain the factors affecting the ionization energy of elements.
8. Define structural Isomerism. Write down the all possible isomers of C_5H_{12} along with their IUPAC nomenclatures.
9. What are oxides ? Describe any five different types of oxides.

Group : C

10. What is Rutherford's α -scattering experiment ? Explain this experiment with diagram. Also, write any two limitations of Rutherford's nuclear model of atom.
11. a) Describe the manufacture of HNO_3 by Ostwald's process with well labelled diagram.
b) Why HNO_3 is stored in dark bottle ?
c) Write the action of HNO_3 on noble metals.
d) Write the action of i) hot and conc. and ii) cold and dilute HNO_3 on Copper metal.

Mathematics

1. Represent the solution of set x of $-2 \leq 2x+4 \leq 10$ in interval form.
2. Evaluate: $\lim_{n \rightarrow a} \frac{x^5 - a^5}{x^4 - a^4}$
3. Given $A = [-2, 3]$ and $B = [1, 4]$, find $A \cap B$
4. Find the derivatives of: $\frac{1}{\sqrt{(ax^2 + bx + c)}}$
5. Prepare a truth table for the compound statement $p \vee \sim (p \wedge q)$. what would you conclude from the truth table.
6. Find the ratio in which the perpendicular from (4,1) to the line segment joining (2,-1) and (6,1) divides the segment.
7. Find the derivatives of: $x^2y^2 = x^2 + y^2$
8. For what value of k will make the three points (1,4) (-3,16) and (k,-2) collinear?
9. Find the derivatives of: $x^3 + y^3 = 3xy^2$
10. Find the derivatives of: $x^2y^2 = x^2 + y^2$
11. Find the equation of the straight line which passes through the point (3,4) and makes intercept on the axes, the sum of whose length is 14.
12. If A, B and C are any three non empty sets : prove that $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
13. Calculate the following limit: $\lim_{n \rightarrow 0} \frac{x \sin 0 - 0 \sin x}{x - 0}$
14. Calculate the following limit: $\lim_{n \rightarrow 0} \frac{x \cot 0 - 0 \cot x}{x - 0}$
15. A function (f) is defined as follows $f(x) = \begin{cases} x^2 + 2, & \text{for } x < 5 \\ 20, & \text{for } x = 5 \\ 3x + 12 & \text{for } x > 5 \end{cases}$
Show that f(x) has removable discontinuity at $x=5$.

16. Prove that the equation of the straight line which passes through the point $(a \cos^3 \theta, a \sin^3 \theta)$ and is perpendicular to the straight line $(x \sec \theta + y \csc \theta = a)$ is $x \cos \theta - y \sin \theta = a \cos 2\theta$.

17. P and Q are two points on the line $x-y+1=0$ and are at distance 5 from the origin. Find the area of the triangle OPQ.

Botney

Answer in very short

1. Define taxonomy.
2. Write down the scientific name of potato and mustard.
3. Write down the reserve food materials of bacteria.
4. Give two examples of minerals.
5. Give the names of important organic life components.
6. Define biodiversity.
7. Write two functions of protein.
8. Who proposed the double stranded helically coiled structure of DNA?
9. Define saturated fatty acid.
10. Define species.

Answer in brief

1. Write down the function of lipid.
2. Describe the biological role of water.
3. Differentiate between RNA and DNA.
4. Write down the types of bacteria on the basis of shape.
5. List the rules of binomial nomenclature.
6. Differentiate between Gram positive and Gram negative bacteria.
7. List the characteristics of kingdom Monera.

Long answer questions.

1. What is carbohydrate? Describe the types of carbohydrates and their properties.
2. Mention the merits and demerits of five kingdom system of classification.

Or

Explain about the structure and functions of bacterial cell.

Physics

1. Taking force, length and time as fundamental quantities, find the dimensions of density.
2. Can the sum of two equal vectors be equal to either of the vectors? Explain.
3. Fishes stay alive in frozen ponds in winter. Explain.
4. State and prove the triangle law of vector addition.
5. Describe Dulong and Petit's experiment to find out the coefficient of real expansion of liquid.
6. A steel wire 8m long and 4mm in diameter is fixed to two rigid supports. Calculate the increase in tension when the temperature falls by 10°C (linear expansivity of steel $=12 \times 10^{-6}/\text{K}$, Young's modulus for steel is $2 \times 10^{11} \text{N/m}^2$).

Zoology

1. Answer the questions in very short.

- Who is known as the father of zoology?
- Define Histology.
- What do you mean by Ornithology?
- Define Biodiversity.
- What is meant by marine?
- Why is Paramecium called slipper animalcule?
- Give two examples of Flagellates.

2. Answer the questions in brief.

- Write the relation of Biology with Physics.
- Write any three scopes of Zoology.
- Write about the role of human being in the protection of the Earth.
- Write about the species diversity.
- Mention any three characteristic features of class Sporozoa.

3. Draw the labelled diagram of Paramecium caudatum and describe its external structure.

4. What is cilia? Write any seven general characteristics of phylum Protozoa.

Computer Science

Chapter 1: Introduction and evolution of computer

- What is computer? Explain its functional unit.
- What is computer hardware? Name basic hardware components of a computer system.
- Differentiate between the term hardware, software and firmware.
- Explain characteristics of a computer system.
- Explain the features of different generation of computers.
- Mention the application of computer.
- Different between data and information.
- What is Abacus and Napier's bones?

Chapter 2: Categories of computer

- Explain the different categories of computer.
- Discuss the different types of digital computers based on their size and performance.
- Classify the computer on the basis of working mechanisms.
- Different between analog computer and digital computer.
- Classify the computer on the basis of brand.
- Different between IBM PC and IBM Compatible.
- Classify the computer on the basis of size and performance. Also mention their features.
- What is mobile computing? List the advantages and disadvantages of mobile computing.

Chapter 3: Number system and their conversion

- What is number system? What are the types of number system used in computer?
- What is the difference between positional and non positional number system?
- What is binary, decimal, octal and hexadecimal number system?
- Convert the following as indicated: a) $(10011)_2 = (?)_{10}$ b) $(1001.110)_2 = (?)_{10}$ c) $(17.35)_{10} = (?)_2$ d) $(104)_{10} = (?)_2$ e) $(417)_8 = (?)_{10}$ f) $(160)_{10} = (?)_8$ g) $(1101010)_2 = (?)_8$ h) $(31D)_{16} = (?)_{10}$ i) $(?)_2 = (?)_8$
- What is 1s and 2s complement of a binary number system?
- Write the steps for subtraction using 1s and 2s complement method.
- Subtract using 1s complement and 2s complement method:
a) $(110101)_2 - (10011)_2$ b) $(1010.11)_2 - (1001.01)_2$

Chapter4:Logic function and Boolean Algebra

- 1) Define logic function and Boolean algebra?
 - 2) What is logic gate? Discuss different types of logic gate.
 - 3) What is universal gate. Realize the basic gate using universal gate.
 - 4) Different between NAND gate and NOR gate?
 - 5) What is basic gate. Explain its types.
 - 6) Different between OR gate and AND gate?
 - 7) Explain the law of Boolean algebra.
 - 8) Explain De Morgan's Theorem.
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English

1. (a) Put the following words in alphabetical order.
Compulsory , company , comfortable , compare , complete , complex
(b) In which quarter of the dictionary will you find the following words.
(i) yellow (ii) Kitchen (iii) animal (iv) mango
2. (a) Put the following words into the correct order to make suitable sentences :
(i) she / a/hoped/hospital/a/in/become/to /doctor.
(ii) years /she/English/Four /was/For/compulsory/studying.
(b) Write antonyms for the following words
(i) Happy (ii) bright (iii) Slow (iv) black (v) irregular (vi) short
3. Describe about any historical place.
4. Answer the following questions
(a) Write the story of "**The Recurring Dream**" in your own words.
(b) Describe about Carmen and Evangeline. ("**The Lost Doll**")
5. Answer the following questions :
(a) Why does Janet want to take Kimberly to her parents farm for a few days ? ("**The Recurring Dream** ")
(b) Describe the lane and the house . (**The Recurring Dream**)
(c) How were Carmen and Evangeline alike ? ("**The Lost Doll**")
6. Read the following passage and answer the questions given below :
Everyday millions of us climb into our cars and set off on journey to work to the shops or just to enjoy ourselves . And once inside our cars ,Few of us are inclined to spare a thought for the environmental impact of driving in heavy traffic. Advertising consistently portrays cars as a symbols of personal status and freedom and sources of comfort and convenience. But the costs of our car - dependent life styles are becoming increasingly serious . The lengthening traffic jams, demand for new roads increasing air pollution and threat of climate change are all issues . We must tackle sooner rather than later. Nearly all countries have traffic problem which can be hard to solve . It is a well - known fact that cars and buses unlike bicycles use lots of petrol and create a great deal of pollution. Local people can reduce some of the problem by choosing to walks rather than to drive . If we can't get people to walk or share vehicles , we should put more pressure on scientist to build solar - power or electric engines.
(a) Why do people climb into their cars ?
(b) What does advertising portray cars as ?
(c) What serious should we tackle sooner or later ?
(d) How can local people reduce the problem of traffic jam ?
(e) Give an appropriate title for the passage .
7. Answer the two of the following questions :
(a) Write an article on the good and bad effects of "Mobile phone" .
(b) Write a letter to your friend describing a "Trade Fair" (Mela) you have visited.
(c) Write a job application for the post of an accountant at school . Mention

your experience , educational qualification and relevant training .

8. Give five suggestion to your friend who is going to mountain climbing in winter vacation .
9. Write a sentence each saying how often Nikesh does different things .
 - (a) Eat out (Tuesday , Saturday)
 - (b) Change job (1976 , 1978 , 1980 , 1982)
 - (c) Have hair cut (1 January , 15 January , 1 February)
 - (d) Visit friends (Sunday)
 - (e) Have bath .(morning , evening)
10. Rewrite the following sentences choosing the correct word from the pair given in the brackets.
 - (a) There were a few sheets of paper on the table . (loose / lose)
 - (b) The college was a popular person (principle / principal)
 - (c) Don't get of the bus until it is (stationery / stationary)
 - (d) Could you me some food , please ? (take / bring)
 - (e) John scored a in the football match (goal / gaol)
11. Explain what does people do .
 - (a) A butcher
 - (b) a receptionist
 - (c) a plumber
 - (d) an accountant
 - (e) a teacher .