SD DAV PUBLIC SCHOOL, JAMTARA

Summer Vacation Assignment (2024-25)

Class:- XI(SCIENCE)

Mathematics

1) Write the solution set of the equation $x^2 - 9=0$ in roster form. ...
2)Write the set B = {1, 3, 5, 7, 9, . . . } in set-builder form. ...
3)Write an example of a finite and infinite set in set builder form. ...
4)Write an example of equal sets. ...
5) Write the subsets of {2,4,6}.
6). If B = {4, 6, 8, 10, 12}, C = {8, 10, 12, 14}, D = {12, 14, 16}. Find B ∩ (C ∪ D).
7) Write the following sets in the roster form.
(i) A = {x | x is a positive integer less than 10 and 2^x – 1 is an odd number}
(ii) C = {x : x^2+ 7x – 8 = 0, x ∈ R}
8) A wheel makes 360 revolutions in one minute. Through how many radians does it turn in one second?
9) Find the value of √3 cosec 20° – sec 20°.
10) Find the radian measures corresponding to the following degree measures:
(i) 25° (ii) – 47° 30′ (iii) 240°
11) Prove that $\sin^2 6x - \sin^2 4x = \sin 2x \sin 10x$.
12) Prove that. (sin 3x + sin x) sin x + (cos 3x – cos x) cos x = 0
13) Prove that cos8° - sin8°/cos8° + sin8° = tan37°.
14) Prove that cos4x+ cos3x+cos2x/sinx+sin3x+sin2x=cot3x.
15) Activity 9
To prepare a model to illustrate the values of sine function and cosine function for different angles which are multiples of π/2 and π.

Sub--Physics

Qn1 What is the necessity of selecting some units as fundamental units?
Qn2 Why do we treat length mass and time as basic or fundamental quantities in mechanics?
Qn3 Write seven fundamental quantities and their S. I. units.
Qn4 Write the dimensional formulae for following quantities.
a) Area b) Volume c) Speed d) Acceleration e) Force f) Work
g) Power h) Pressure
Q5 Convert one Newton into dyne.
Q6. The mass m of the heaviest stone that can be moved by the water flowing in a river depends on the speed of water v, density dd of water, and the acceleration due to gravity g.
Then m is proportional to:
A. $v2$ B. v^4 C. v^6 D. v^8

Q7. If force F, work W and velocity V are taken as fundamental quantities, then what would the dimensional formula of time be?
A. $F^{-1}W^{-1}V$ B. $F^{-1}WV^{-1}$ C. $FW^{-1}V$ D. $FW^{-1}V^{-1}$
Q8. What are the dimensions of a/b in the relation F = a$\sqrt{x}$+ bt^2, where F is force, x is distance and t is time ?
A. $[ML^2T^{-2}]$ B. $[L^{-1/2}\ T^2]$ C. $[L^{-1/2}\ T^{-1}]$ D. $[LT^{-2}]$

Q9.[AIIMS 2012] Dimensional formula of ΔQ, heat supplied to a system, is given by:

A. $M^1L^2T^{-2}$ B. $M^1L^1T^{-2}$ C. $M^1L^2T^{-1}$ D. $M^1L^1T^{-1}$

Q10. [AIIMS 2014] If the units of length, mass and force are chosen as fundamental units, the dimensions of time would be:

A. $M^{1/2}L^{-1/2}F^{1/2}$ B. $M^{1/2}L^{1/2}F^{1/2}$ C. $M^{1/2}L^{1/2}F^{-1/2}$ D. $M^{1/2}L^{-1/2}F^{-1/2}$

Q11. Derive all three motions of Kinematics by (i) Graphical Method (ii) Calculus.

CHEMISTRY

ANSWER THE FOLLOWING QUESTIONS

1.) Calculate the mass percent of different elements present in sodium sulphate.

2.) Calculate the amount of carbon dioxide that could be produced when
   i) 1 mole of carbon is burnt in air.
   ii) 1 mole of carbon is burnt in 16 g of dioxygen.
   iii) 2 moles of carbon are burnt in 16 g of dioxygen

3.)Determine the molecular formula of an oxide of iron , in which the mass percent of iron and oxygen are 69.9 and 30.1 respectively.

4) Express the following in the scientific notation:--
i) 0.0048 ii) 234.000 iii)8008 iv)500.0 v)6.0012

5.)How many significant figures are present in the following?
i)0.0025 ii)208 iii)5005 iv)126.000 v)500.0

6.)Calculate the number of atoms in each of the following
i) 52 moles of Ar ii) 52 u of He iii)52 g of He

7.)Calculate the molarity of a solution of ethanol in water. In which the mole fraction of ethanol is 0.040 (assume the density of water to be one)

8.)What is the concentration of sugar in mol L if its 20 g are dissolved in enough water to make a final volume up to 2 L?

9.)Calculate the mass of sodium acetate CH3COONa required to make 500 mL of 0.375 molar aqueous solution. Molar mass of sodium acetate is 82.0245 g per mol.

10.)Silicon forms a compound with chlorine in which 5.6 g of silicon is combined with 21.3 g of chlorine. Calculate the empirical formula of the compound (Atomic mass of Si= 28; Cl=35.5)

11.)The wavelength range of visible spectrum extends from violet (400 nm) to red (750 nm) Express these wavelengths in frequencies (Hz)

12)The number of electrons, protons and neutrons in aapecies are equal to 18,16 and 16 respectively. Assign the proper symbol of the species.

13.)The electronic configuration of a dipositiv ion is 2,8,14 and its atomic mass is 56 what is the number of neutrons in its nucleus ?

14.) Write the symbol for the nucleus with atomic number 56 and mass number 138.
15.)Draw a well labeled diagram of discovery of subatomic particle electron by discharge tube experiment.

PHYSICAL EDUCATION

1.Rohan, a student of class XI has taken up physical education as he is very interested in making his career in the field of Physical Education. When he was introduced to the career options available in the subject he became a bit hesitant about continuing in this field because for him physical education was just about playing so he approached his subject teacher to explain his position. On the basis of the given information given below are a few queries of Rohan and you have to give him the reply according to the information provided to you in your first chapter.

2.(A.) A child interested in reporting the sports event should further study _____.
(B.) For making a future in Officiating a person should do _____ course.
(C.) Teaching physical education to primary students requires _____ as qualification.
(D.) Designing and researching sports equipment is related to _____.
(E.) Sports journalism involves _____.

3. What is the plan of government under the vertical of 'Promotion of Sports Among Persons with Disabilities'?
4. Do you think 'Sports for Peace and Development' will work for restoration of peace in Jammu and Kashmir? Support your answer with evidence.
5. What is the vision and mission of Khelo India Programme?
6. Apart from a professional degree in Physical Education, what other key skills are required for opting for a career other than teaching?

Practical

1. Draw and write the ground measurement of any one the following games. Also write it's different skills, basic rules and regulations . (Kabaddi, Volleyball, Basketball, Badminton, Handball, Football, Khokho, Wrestling)

Biology

1.Diatoms are also called as 'pearls of ocean', why? What is diatomaceous earth?

2.A virus is considered as a living organism and an obligate parasite when inside a host cell. But virus is not classified along with bacteria or fungi. What are the characters of virus that are similar to non-living objects?

3.Are chemosynthetic bacteria autotrophic or heterotrophic?

4.Find out what the terms 'algal bloom' and 'red tides' signify.

5.What do the terms Phycobiont and Mycobiont signify?

6.Brinjal and potato belong to the same genus but different species. What separates the two species?

7.With reference to Brassica compestrislinn.
(i)Give the common name of the plant
(ii)What do the first two words of the name indicate?
(iii)Why is the scientific name written in italics?
(iv)What does "linn." mean?

8.Write the universal rule of nomenclature.

9.Name the International authority who gave scientific name to the plants.

10.Why are bryophytes considered amphibians of the plant kingdom?

11.Name three groups of plants that bear archegonia.

12.Mention the ploidy of the following:
protonemal cell of a moss; primary endosperm nucleus in dicot, leaf cell of a moss; prothallus cell of a fern; gemma cell in Marchantia;ovum of a liverwort, and zygote of a fern.

13.Which pteridophytes are useful in nitrogen fixation and how?

14.What is heterospory? Briefly comment on its significance. Give two examples.

15.Draw diagram of different types of protozoans.

English

Write each of the following questions.

1. Explain the reasons of changing relationship between the grandmother and the author.

2. Sketch the character of the grandmother (The Portrait of a lady).

3. Discuss the values highlighted in the chapter "The Portrait of a Lady".

4. Identify the poetic devices used in the poem "A Photograph" and discuss their meanings.

5. Human life is short-lived in contrast to nature. Comment on the statement in the light of the poem "A Photograph".

6. Can the act of stealing be ever justified? Give your views in the context of reading of "The Summer of the Beautiful White Horse".

7. Collect 50 New Words from the Newspaper and use them in sentences.

8. Write a letter to the Editor of The Times Newspaper, highlighting increasing technological addiction among the youth.

Informatics Practices

Project Work (Practical File)

1. WAP to Add any four numbers.
2. WAP to subtract any two numbers.
3. WAP to multiply any four numbers.
4. WAP to Divide any two numbers.
5. WAP to find area and perimeter of Rectangle
6. WAP to find area and perimeter of Square
7. WAP to find area and perimeter of scalene triangle.
8. WAP to find area and perimeter of right triangle.
9. WAP to find Simple Interest.
10. WAP to find Compound Interest.
11. WAP to find square and cube of any number.
12. WAP to add (concatenate) two strings.
13. WAP to create List, Tuple and Dictionary.