

## Assignment - 1 (2023-24)

Class : XI

**SCIENCE**

### **ENGLISH (301)**

1. Prepare one A4 sheet for your class magazine on the theme 'Unity in Diversity'. You can use paper of any colour, material and decorate it.
2. Tracing the roots: Prepare a PPT tracing your family's ancestry and take a trip down the memory lane. Talk to your grandparents and find out about their roots and whereabouts.

### **PHYSICS (042)**

1. A particle travels first half of the total distance with speed  $v_1$ . In second half distance, constant speed in  $1/3$ rd time is  $v_2$  and in remaining  $2/3$ rd time constant speed is  $v_3$ . Find average speed during the complete journey.
2. A stone is released from an elevator going up with an acceleration of  $g/2$  what is the acceleration of the stone just after release?
3. A particle travels first half of the total time with speed  $v_1$  and second half with speed  $v_2$ . Find the average speed during the complete journey.
4. The velocity ' $V$ ' of a particle depends upon the time  $t$  according to the equation " $V = a + bt + c / (d + t)$ ". Write the dimensions of  $a$ ,  $b$ ,  $c$  and  $d$ .
5. The frequency ( $f$ ) of a stretched string depends upon the tension  $F$  (Dimension of force), length ' $l$ ' of the string and the mass per unit length  $\mu$  of the string. Derive the formula for frequency.
6. Write any four limitations of dimensional analysis.
7. A particle is projected vertically upwards with velocity 40 m/s. Find the displacement and distance travelled by the particles in (a) 2s (b) 4s (c) 6s
8. A man has to go 50 m due north, 40m due east and 20m due south to reach a field?  
(a) What distance he has to walk to reach the field?  
(b) What is his displacement from his house to the field?
9. An athlete takes 2.0 s to reach his maximum speed of 18.0 km/h. What is the magnitude of his average acceleration.
10. A bullet travelling with a velocity of 16m/s penetrates a tree trunk and comes to rest in 0.4 m. Find the time taken during the retardation.

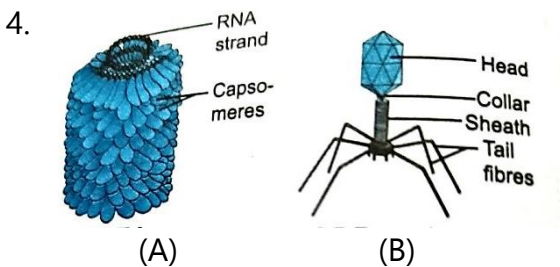
### **CHEMISTRY (043)**

1. The atomic number of nitrogen is 7 and that of H is 1. How many electrons are there in the ammonium ion,  $\text{NH}_4^+$ ?
2. State and explain Pauli's Exclusion Principle.
3. Give the important postulates of Bohr's theory of an atom.
4. What are the frequency and wavelength of a photon emitted during a transition from  $n=5$  state to the  $n=2$  state in the hydrogen atom?
5. Answer the following questions: -
  - a) What are quantum Numbers?
  - b) What is photo-electric effect?
6. State and explain "the law of multiple proportion" with one example.
7. In three moles of ethane ( $\text{C}_2\text{H}_6$ ), Calculate (i) Number of moles of carbon (ii) Number of moles of hydrogen atoms (iii) Number of molecules of ethane.

- Calculate the molarity of nitric acid ( $\text{HNO}_3$ ) in a sample which has density, 1.41g/ml and mass percent of nitric acid in it being 69%.
- An ion with mass number 37 possesses one unit of negative charge. If the ion contains 11.1% more neutrons than the electrons, find the symbol of the ion.
- A welding fuel gas contains carbon and hydrogen only. Burning a small sample of it in Oxygen gives 3.38g  $\text{CO}_2$ , 0.690g of  $\text{H}_2\text{O}$  and no other products. A volume of 10.0L at S.T.P of this welding gas is found to weigh 11.6g. Calculate (i) empirical formula (ii) molar mass of the gas and (iii) molecular formula.

### **BIOLOGY (044)**

- Plants and Animals grow by mitotic cell divisions. What differences do they exhibit in their growth?
- Illustrate the taxonomical hierarchy with suitable examples of a plant and an animal.
- Draw a well labelled diagram of Binary fission in a Bacterium.



- Identify the above pictures A and B.
- Write down two points for each

### **STANDARD MATHEMATICS (041)**

#### **(SECTION A-1 mark questions)**

- Write the roster form of  $H = \{x: x \in N \text{ and } 5 < x^2 < 50\}$ .
- Give example of two sets whose intersection is an empty set.
- How many subsets a set has containing 5 elements.
- If  $n(A) = 8$  and  $n(B) = 4$  and B is a subset of A then find  $n(A \cap B)$ .
- Define power set.

#### **(Section B- 2 mark questions)**

- Write all the subsets of the set  $\{\phi, 1\}$ .
- Find sets A, B and C such that  $A \cap B$ ,  $B \cap C$  and  $A \cap C$  are non empty sets and  $A \cap B \cap C = \phi$ .
- Two finite sets having m and k elements. If the total number of subsets of the first set is 56 more than the total number of subsets of second set, then find m and k.
- For all sets A, B and C, is  $(A \cap B) \cup C = A \cap (B \cup C)$ ? justify your answer.
- If  $U = \{1, 2, 3, \dots, 10\}$ ,  $A = \{x: x \text{ is prime}\}$ ,  $B = \{x: x \text{ is even integer}\}$ . Then write the value of  $A \cap B$ .

#### **(Section C – 4 mark questions)**

- A and B are two sets such that  $(A - B) = 14 + x$ ,  $(B - A) = 3x$  and  $(A \cap B) = x$ . Draw a Venn diagram to illustrate this information. If  $(A) = (B)$ , find (1) the value of x (2)  $(A \cup B)$ .
- A survey shows that 63% people watch news channel A whereas 76% watch news channel B. if x% watch both the channels, prove that  $39 \leq x \leq 63$ .
- If  $(A) = (B)$ , show that  $A = B$ .
- Let A and B be sets. If  $A \cap X = B \cap X = \phi$  and  $A \cup X = B \cup X$  for some set X, show that  $A = B$
- If A & B are two sets containing 12 and 20 elements respectively, what can be the minimum number of elements in  $A \cup B$ ? find also, the maximum number of elements in  $A \cup B$ .

### (SECTION D – 6 MARK QUESTIONS)

16. In a survey of 100 students, the number of students studying the various languages were found to be: English only 18, English but not Hindi 23, English and Sanskrit 8, English 26, Sanskrit 48, Sanskrit and Hindi 8, no language 24. Find how many students were studying Hindi.
17. In an examination 80% students passed in Maths, 72% passed in science and 13% failed in both the subjects. If 312 students passed in both the subjects, find the total number of students who appeared in the examination.
18. A college awarded 58 medals in football, 15 in basketball and 20 in cricket. If these medals went to a total of 58 men and only three men got medals in all the three sports, how many received medals in exactly two of the three sports.
19. Out of 100 students, 15 passed in English, 12 passed in Maths, 8 in Science, 6 in English and Maths, 7 in Maths and Science, 4 in English and Science and 4 in all three. Find how many passed in
  - 1) Maths and Science but not English.
  - 2) In more than one subject.
20. For sets A, B and C using properties of sets, prove that
  - 1)  $A - (B \cup C) = (A - B) \cap (A - C)$
  - 2)  $A - (B \cap C) = (A - B) \cup (A - C)$

### APPLIED MATHEMATICS (241)

1. Define binary number system and decimal number system
2. Convert the following number in binary number:-
  - a) 569
  - b) 10000
  - c) 2345
  - d) 12498
  - e) 12656
3. Convert into decimal number system.
  - a) 111011111
  - b) 1100001110001
  - c) 1110110011
  - d) 100000111
  - e) 11000111
4. Add the following binary number.
  - a) 111100011, 11010100
  - b) 10101111, 1111100
  - c) 1010111, 111100001
  - d) 1101111, 11111000
  - e) 10111011, 11110000
- 5) Subtract the following.
  - a) 11010 from 110101
  - b) 101 from 110
  - c) 1101001101 from 1110110010
6. What is characteristic and Mantissa.
7. Define natural logarithm and common logarithm.
8. Write all formulae of indices.
9. Find x:  $\log 3x = \log 2 + \log(x+4)$
10. Find x:  $\log(3+x) - \log(x-4) = \log 4$ .

### ECONOMICS (030)

#### STATISTICS FOR ECONOMICS

1. "Economics is a study of scarcity". Discuss.
2. Briefly discuss the meaning of economic and non-economic activities.
3. How will you choose the wants to be satisfied?
4. What is the central point of marshall's definition of economics?

## **MICRO ECONOMICS**

5. 'An economy may operate inside the PPC even if there is full employment of resources.' Defend or refute.
6. Economic slowdown in some parts of the world has led to a fall in demand for exports from India. What will be its effect on PPF of India?
7. Why the PPC is negatively sloped?
8. Explain the concept of Opportunity Cost and Marginal Rate of Transformation using Production Possibility Schedule based on the assumption that no resource is equally efficient in production of all goods.

## **COMPUTER SCIENCE (083)**

Create a PowerPoint presentation to explain about Decimal Number System, Binary Number System, Octal Number System & Hexadecimal Number System and conversion from one number system to another.

## **INFORMATION PRACTICE (065)**

1. Write a Python program to enter two numbers and swap their values according to the following conditions:-
  - I. Without using third variable
  - II. Using third variable
2. Write a Python program to calculate compound interest and amount payable by inputting the value of principal amount and rate from the user for a time period of 5 years.
3. Write a Python program to calculate quadratic equation.
4. Write a Python program to enter sides and calculate area of triangle.  
To be done in Computer Practical Copy

## **PHYSICAL EDUCATION (048)**

1. Write any three objectives of physical education.
2. Discuss the main objectives of Indian Olympic association.
3. Write the motto of the modern Olympic game.
4. Elaborate the objectives of 'Khelo India' Programme.
5. Ram had been suffering from stress, tension and anxiety for the last three year. Now along with these problems, he is also facing severe depression. He has already consulted many doctors but has not found an appropriate solution. Ultimately, he met our yoga instructor. The yoga instructor taught him to perform yogic asanas, pranayamas and yoganidra. After about three months of regular practice, he was feeling well

Based on the above passage, answer the following question:

- a. What is yoga?
- b. What was the problem of Ram?
- c. What did the yoga instructor teach Ram to overcome his problems?

