

SUMMER VACATION ASSIGNMENT

CLASS XI

ENGLISH

- I. In the chapter “Discovering Tut: The saga continues”, the constellation Orion is associated with the legend of Osiris, the god of the afterlife. Make a PPT on the astronomical descriptions and legends associated with the following:-
 - a) Ursa Major
 - b) Polaris
 - c) Pegasus
 - d) Sirius
 - e) Gemini[PPT must have 10-12 slides excluding introduction of the group and the topic]
- II. Write any ten figures of speech with examples from your prescribed textbooks (Hornbill and Snapshot). [Use A4 size sheet]
- III. Make a colorful book cover on any of the following topic
 - (a) King Tut
 - (b) Any of the Novels written by the novelist Khushwant Singh [Use A4 size sheet]

Note: Compile the activities II and III in a file.

HINDI

ACCOUNTANCY

Visit your nearby Bank and collect documents such as KYC form, Withdrawal slip, Deposit slip, Demand draft, NEFT/RTGS form & Nomination form.

- Write a short description of the bank along with its logo.
- What is the role of a bank in our life?
- Attach all documents mentioned above along with their usage. (Example- **KYC form** is essential for individuals who wish to open a Demat and stock trading account, a bank

account, fixed deposit account and any other financial transactions with a registered body.)

Complete your Activity as discussed in the class.

AI

1. Earthquake Magnitude Prediction for Andaman-Nicobar Islands
 - a. In the above-mentioned Earthquake Magnitude prediction model, which AI Modelling techniques/technologies can be used. Do research about the models/techniques that can be used and write about the technologies using appropriate examples. Also write how these techniques or models could have been helpful in earthquake magnitude prediction in Andaman & Nicobar Islands.
 - b. Which Machine Learning Technique suits this problem the best according to you? How?
2. Which factors do you think will drive the interest of a tourist to travel to Andaman-Nicobar Islands? Design a Quantitative (Scale 1-5) survey (using Google forms) to understand the factors in which their decision of choosing Andaman & Nicobar as a tourist destination will depend upon.
3. What kind of a Problem under supervised learning will it be? Justify.

BIOLOGY

1. Select a topic for investigatory project report and make a report including the following headings:
 - Theory
 - Materials Required
 - Procedure
 - Observations/Observation Table
 - Conclusion
 - Result
2. Do the given assignment in your Biology notebook:

ASSIGNMENT

1. As we go from species to kingdom in a taxonomic hierarchy, the number of common characteristics:
 - a. Will decrease
 - b. Will increase

- c. Remain same
 - d. May increase or decrease
2. Which of the following 'suffixes' used for units of classification in plants indicates a taxonomic category of 'family'?
 - a. -Ales
 - b. -Onae
 - c. -Aceae
 - d. -Ae
 3. The term 'systematics' refers to:
 - a. Identification and study of organ systems
 - b. Identification and preservation of plants and animals
 - c. Diversity of kinds of organisms and their relationship
 - d. Study of habitats of organisms and, their classification
 4. Genus represents:
 - a. An individual plant or animal
 - b. A collection of plants or animals
 - c. Group of closely related species of plants or animals
 - d. A group of plants in a given area.
 5. The taxonomic unit 'Phylum' in the classification of animals is equivalent to which hierarchical level in classification of plants:
 - a. Class
 - b. Order
 - c. Division
 - d. Family

Directions: These questions consist of two statements each, printed as Assertion and Reason. While answering these

questions, you are required to choose any one of the following four responses.

A. If both Assertion and Reason are True and the Reason is a correct explanation of the Assertion.

B. If both Assertion and Reason are True but Reason is not a correct explanation of the Assertion.

C. If Assertion is True but the Reason is False.

D. If both Assertion and Reason are False.

6. **Assertion:** Character of family is more general as compared to character of genus.

Reason: Genera aggregates closely related species.

7. **Assertion:** New names in binomial nomenclature are derived from Latin or are Latinized.

Reason: Latin is a technical language.

8. **Assertion:** A morphology-based approach to taxonomy is called 'alpha taxonomy' and it is old fashioned.

Reason: A multi-disciplinary approach to taxonomy called 'omega taxonomy' is favoured in recent years, as it excludes morphological features.

BIOTECHNOLOGY

3. List out any 5 equipments which are used in biotechnology. Write their details on A4 size sheets along with their pictures.
4. Do the given assignment in your biotechnology notebook:

ASSIGNMENT

- Give a comparative account of ancient and modern biotechnology.
- Elaborate on the role of biotechnology with respect to the following:
 9. Gene therapy and its applications
 10. Crops with insect resistance
 11. Environmental protection
- Explain the contribution of ancient biotechnology in human welfare.
- "Modern biotechnology is based on recombinant DNA technology." Justify the statement.

CHEMISTRY

- Complete the assignment given below:

Ques 1: State the law of reciprocal proportions.

Ques 2: Write the limitations of Dalton's Atomic Theory.

Ques 3: Calculate the weight of quick lime obtained by heating 2000kg of 95% pure lime stone.

Ques 4: 4L of dinitrogen reacts with 22.7L of dioxygen and 45.4L of nitrous oxide was formed. Which law is being obeyed in this experiment? Write the statement of the law.

Ques 5: In the reaction $2A + 4B \rightarrow 3C + 4D$, when 5 moles of A react with 6 moles of B, then identify the limiting reagent.

Ques 6: calculate the mass % of the every element in potassium permanganate, sodium phosphate, potassium aluminate.

Ques 7: Determine the empirical formula of the compound having composition 24% C, 7% H, 38% F, 31% P.

Ques 8: What is the molar mass of the alcohol ROH, if it's 2×10^3 molecules weigh 1.063×10^{-19} gm.

Ques 9: Calculate the mass of sodium carbonate which will have the same no. of molecules as contained in 12.3 gm of $MgSO_4 \cdot 7H_2O$.

Ques 10. Calculate the mass % of benzene and carbon tetrachloride if 22g of benzene is dissolved in 122 gm of carbon tetrachloride.

Ques 11: The cost of sugar and table salt are Rs 6/kg and Rs 3/kg. Calculate the cost per mole.

Ques 12: Calculate the amount of acetic acid required for preparing 250ml of 0.15 M solution in methanol.

Ques 13: A solution of glucose in water is labelled as 10% m/m. what would be the molality and mole fraction of glucose. If the density of the solution is 1.2 g/ml what would be its molarity?

Ques 14: Out of molarity and molality which is a preferred method of expressing concentration?

Ques 15: A sample of NO_2 gas weighs 10 mg, if 1.8×10^{-19} molecules of NO_2 are removed from this sample. How many moles NO_2 are left?

PHYSICS

Make a project file as per the specifications on any one of the following topics

- Noble Laureates in Physics, their life and accomplishments (any 5)
 - The story of Black Holes (origin, types, Event horizon telescope etc)
 - Physics- From Fiction to Reality (Explain/ discuss any 5 innovations/ technological advancements based on Physics which will become a reality in the near future)
- Specifications for the project-
- Work to be done on one side of the page only
 - For the text- Times New Roman. Font size- 15,
 - The presentation should be supported with pictures and drawings

ECONOMICS

Complete the notes provided to you in your register (200 pages)

Part A: Statistics for Economics: Unit 2: Collection, Organisation and Presentation of Data.

- Write all the formula from the text book "Statistics for Economics" in a separate notebook chapter wise as per the syllabus.
- Revise and learn the topics done before holidays.

In case of any query contact on my mail ID: poonamsharma1008@rediffmail.com

GEOGRAPHY

- Prepare a PPT on any one topic given below :
 1. Solar system
 2. Any one planet
 3. Asteroid Belt
 4. Moon
 5. Sun
 6. Nebular Hypothesis
 7. Big Bang
 8. Formation of Galaxies
- Make a chart on ' Geography as an integrated science'.
- Learn question answers of chapter 1 & chapter 2.

BUSINESS STUDIES

Project work in Business studies will develop practical approach by using traditional and modern technologies. (DETAILED INSTRUCTIONS WILL BE PROVIDED IN CLASS BEFORE VACATION)

- Inculcate skills of team work, problem solving, time management, information collection, processing, analysis and synthesizing relevant information.
- Make students learn how to invest and start a small scale Business.
- Make your studies enjoyable and cherish.
- Get involved in the process of research work, demonstrate your capabilities.

A group of students will select any one product

- *Making of Pickles-Mango, Lemon or Chilli
- *Making cloth or jute bags
- * Decorative Diyas
- * Candles
- *Fancy Pencils/hair bands

Presentation and Submission of Project Report at the end of the stipulated term, each student will prepare and submit his/her project report.

Following essentials are required to be fulfilled for its preparation and submission.

1. The total length of the project will be of 25 to 30 pages.
2. The project should be handwritten.

3. The project should be presented in a neat folder.
4. The project report should be developed in the following sequence- Cover page should include the title of the Project, student information, school and year. List of contents. Acknowledgement and preface (acknowledging the institution, the places visited and the persons who have helped). Introduction. Topic with suitable heading. Planning and activities done during the project, if any. Observations and findings of the visit.

Conclusions (summarized suggestions or findings, future scope of study). Photographs of each process/steps are must which will be later on prove as an evidence and will be part of your report.

NOTE:-This project will continue in next term also.

ANY QUERY OR CONFUSION WILL BE CLEARED DURING VACATION (CONTACT ME ON WHATSAPP BY MESSAGE OR MAIL ME AT mridula1512@gmail.com)

COMPUTER SCIENCE/INFORMATICS PRACTICES

1. THEME BASED :-Collect data about at least five top tech Startups in Andaman and Nicobar Islands, India in 2023. Write a program in python to show the data with print statement and make use of data type as collections and mapping to store information.

s='Eternal Andamans is a tour operator and travel agent in Andaman who publishes information about the islands in Andaman. '

web='www.eternalandamans.com'

techstart1={'Company Name':'Eternal Andaman','About':s,'WebSite':web,
"Location";"Port Blair", 'Industries' : 'Online Travel and Adventure Travel'}

E,g #Sample Output

Top Tech Startups in Andaman and Nicobar Islands, India in 2023

Company Name :Eternal Andaman

About : Eternal Andamans is a tour operator and travel agent in Andaman who publishes information about the islands in Andaman.

Website url :www.eternalandamans.com

Location:Port Blair

Industries :Online Travel ,Adventure Travel

- B. Do unsolved exercises of chapter python fundamentals from the textbook in your register.

PHYSICAL EDUCATION

WRITE THE FOLLOWING PRACTICALS IN YOUR FILE. SUBMIT IT BY 15 JULY 2023.

1. Any one game of your choice. Labelled diagram of field and equipment rules, terminologies & skills (basketball, football, kabaddi, kho-kho, volleyball, handball, cricket and children with special needs)
2. Fitness tests administration. (SAI Khelo India Test)
3. Procedure for Asanas, benefits and contraindication for any 5 asanas for each lifestyle disease.
4. Sports Injuries .

*Make a chart of any one game of your choice.. Labelled diagram of field and equipment rules, terminologies & skills (basketball, football, kabaddi, kho-kho, volleyball, handball, cricket and children with special needs)

POLITICAL SCIENCE

General instructions

- Read the questions carefully and answer them
- Complete this worksheet on A4 size white sheet
- This assignment carries marks

Q-1 Who made the constitution of India?

- a. A British parliament
- b. The King of England
- c. Constituent Assembly
- d. Indian parliament

Q-2 Which of these is not a function of constitution?

- a. it gives a guarantee of the rights of the citizen
- b. it specifies roles, responsibilities and functions of the government and its institutions
- c. it ensures good people come into power
- d. it expresses basic ideals of the society

Q-3 The idea of our preamble is borrowed from-

- a. Canada constitution
- b. U.K constitution
- c. U.S constitution
- d. French constitution

Q-4 which of the following provisions of the Indian constitution was passed without any debate?

- a. universal adult franchise
- b. parliament democracy

c. fundamental rights

d. directive principles of state policy

Q-5 freedom of speech and expression falls under

a. article 17

b. article 16

c. article 19

d. article 18

Q-6 Explain the composition of constituent assembly of India.

Q-7 Describe the main points of objective resolution. (Refer to ncert pg. no- 20)

Q-8 Make a tabular representation of various provisions adapted by Indian constitution from constitutions of different countries. (Refer to ncert pg. No- 22)

Q-9 Write down fundamental rights enshrined in constitution of India in a table. (Refer to ncert pg. no-31)

Q-10 Why do we need a constitution? Explain.

PSYCHOLOGY

Make a colourful presentation on the scopes in the field of psychology on a chart paper for display on class display board.

OR

Elaborate on the perspectives/schools of psychology with the help of graphical representation on a chart paper for display on class display board.

1. Talk to 10 people and try to note down their response to the question-

“What is psychology?”

- 2 school teachers
- 2 bank officials
- 2 shopkeepers
- 2 home makers
- 2 school going adolescents

Present your observation on coloured pastel sheets and then compile them in a folder.

HOLIDAYS HOMEWORK

(CLASS XI – APPLIED- MATHEMATICS, 2023)

Instructions :

- Please do solve these questions.
- Prepare a chart of Trigonometric formula (from book on page no. 82 to 84).
- Do all Maths Activities at appendix in activity file.

CHAPTER 1 – SETS (ASSIGNMENTS)

SET A

1. Describe the set $\{x \in \mathbb{N} : x \text{ is a prime number, } 10 < x < 20\}$ in Roster form. 3
2. Describe the set $\{0\}$ in set builder form. 3
3. Which of the following sets are equal :
 $P = \{2, 1, 1\}$, $Q = \{1, 3, 1\}$, $R = \{1, 2\}$, $S = \{x \in \mathbb{N} \mid x < 3\}$, $T = \{x : x \text{ is an odd natural number less than } 3\}$. 4
4. State "True" or "False", for each of the following :
 (i) $\{a\} \in \{a, b, c\}$ (ii) $1 \in \{1, 2\}$ (iii) $\{x \in \mathbb{N} \mid x + 8 = 8\} = \phi$
 (iv) $\{b, c\} \subset \{a, \{b, c\}\}$ (v) $\phi \subseteq \{2, 3\}$ 3
5. Let $U = \{x \in \mathbb{N} \mid x \leq 9\}$; $A = \{x : x \text{ is an even number, } 0 < x < 10\}$; $B = \{2, 3, 5, 7\}$.
 Verify that, $(A \cup B)' = A' \cap B'$. 4
6. Two finite sets have m and n elements. The total number of subsets of the first set is 56 more than the total number of subsets of the second set. Find the value of m and n . 4
7. If A, B, C are any three sets, then prove that :
 $A - (B \cap C) = (A - B) \cup (A - C)$. 3
8. In a group of 50 people, 35 speak Hindi and 25 speak both Hindi and Urdu and all the people speak at least one of the two languages. How many people speak only Urdu ? How many people speak Urdu ? 4
9. In a survey conducted on a group of 2000 people it is found that 1450 people liked product A and 1720 people liked product B. What is the least number of people who liked both the products A and B ? 3
10. In a survey of 25 students, it was found that 15 had taken Mathematics, 12 had taken Physics and 11 had taken Chemistry; 5 had taken Mathematics and Chemistry, 9 had taken Mathematics and Physics and 4 had taken Physics and Chemistry and 3 had taken all the three subjects. Find the number of students that had taken none of the subjects. 4

ANSWERS

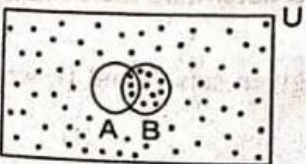
1. $\{11, 13, 17, 19\}$ 2. $\{x \in \mathbb{I} \mid x + 5 = 5\}$ 3. P, R, S
4. (i) False (ii) True (iii) True (iv) False (v) True
6. $m = 6, n = 3$ 8. 15; 40 9. 1170
10. 2

CHAPTER 1 – SETS (ASSIGNMENTS)

SET B

1. Which of the following are sets ? Justify your answer.
 - (a) A set of students of class XI, Montfort School, Delhi. 4
 - (b) A set of difficult topics in Mathematics. 3
2. Write the set $\left\{\frac{1}{3}, \frac{3}{5}, \frac{5}{7}, \frac{7}{9}, \frac{9}{11}, \frac{11}{13}\right\}$ in set builder form. 3
3. Which of the following sets are empty sets :
 - (a) $\{x \in \mathbb{R} \mid x^2 + 3 = 0\}$ (b) $\{x : x \text{ is an even prime number}\}$. 3
4. If $A = \{a, b, c\}$. Find the power set of set A. 4
5. Let $A = \{1, 2, \{3, 4\}, 5\}$. State with reasons, which of the following statement is "True" or "False".
 - (a) $1 \in A$ (b) $\{3, 4\} \subset A$ (c) $\{\{3, 4\}\} \subset A$ 3
 - (d) $\{1, 2, 5\} \subset A$ (e) $\{1, 2\} \in A$. 3
6. If A and B are two given sets, then represent the set $(A - B)'$, using venn diagram. 4
7. If A and B are two given sets, then prove that $A - B = A \cap B'$ 3
8. In a group of 950 persons, 750 can speak Punjabi and 460 can speak English. Find (i) how many can speak both Punjabi and English (ii) how many can speak Punjabi only (iii) how many can speak English only. 4
9. In an examination, question number 1 was attempted by 67 students, question number 2 by 46 students and question number 3 by 40 students. 28 students attempted both question numbers 1 and 2, 8 attempted both question number 2 and 3; 26 attempted both question numbers 1 and 3 and 2 students attempted all the three questions. Find how many attempted question number 1 but not question 2 and 3. 3
10. 35 children of a class draw a map. 26 use blue colour and some use green colour. If 19 use both the colours. Find the number of children, who use the green colour ? 4

ANSWERS

1. (a) It is a set. (b) It is not a set.
2. $\left\{\frac{2n-1}{2n+1} : n \text{ is a natural number less than } 7\right\}$.
3. (a) Empty set (b) Not an empty set.
4. $\{\phi, \{a\}, \{b\}, \{c\}, \{a, b\}, \{b, c\}, \{c, a\}, \{a, b, c\}\}$.
5. (a) True (b) False (c) True (d) True (e) False.
6. 
8. (i) 260 (ii) 490 (iii) 200.
9. 15
10. 28

MATHS ACTIVITIES

ACTIVITY 1

OBJECTIVE

To find the number of subsets of a given set and verify that if a set has n number of elements, then the total number of subsets is 2^n .

MATERIAL REQUIRED

Paper, different coloured pencils.

METHOD OF CONSTRUCTION

1. Take the empty set (say) A_0 which has no element.
2. Take a set (say) A_1 which has one element (say) a_1 .
3. Take a set (say) A_2 which has two elements (say) a_1 and a_2 .
4. Take a set (say) A_3 which has three elements (say) a_1 , a_2 and a_3 .

DEMONSTRATION

1. Represent A_0 as in Fig. 1.1

Here the possible subsets of A_0 is A_0 itself only, represented symbolically by ϕ . The number of subsets of A_0 is $1 = 2^0$.

2. Represent A_1 as in Fig. 1.2. Here the subsets of A_1 are ϕ , $\{a_1\}$. The number of subsets of A_1 is $2 = 2^1$

3. Represent A_2 as in Fig. 1.3

Here the subsets of A_2 are ϕ , $\{a_1\}$, $\{a_2\}$, $\{a_1, a_2\}$. The number of subsets of A_2 is $4 = 2^2$.

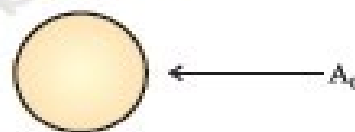


Fig. 1.1

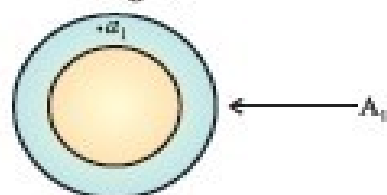


Fig. 1.2

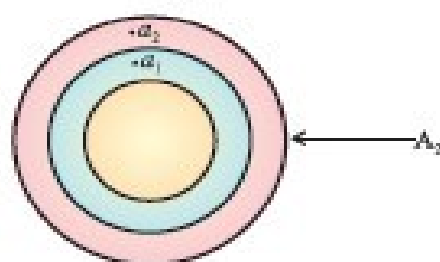


Fig. 1.3

4. Represent A_3 as in Fig. 1.4

Here the subsets of A_3 are ϕ , $\{a_1\}$, $\{a_2\}$, $\{a_3\}$, $\{a_1, a_2\}$, $\{a_2, a_3\}$, $\{a_3, a_1\}$ and $\{a_1, a_2, a_3\}$. The number of subsets of A_3 is $8 = 2^3$.

5. Continuing this way, the number of subsets of set A containing n elements a_1, a_2, \dots, a_n is 2^n .

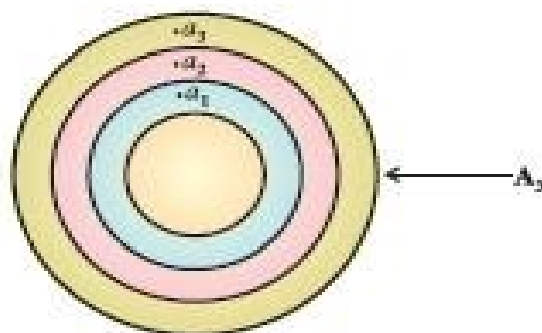


Fig. 1.4

OBSERVATION

1. The number of subsets of A_0 is _____ = 2^{\square}
2. The number of subsets of A_1 is _____ = 2^{\square}
3. The number of subsets of A_2 is _____ = 2^{\square}
4. The number of subsets of A_3 is _____ = 2^{\square}
5. The number of subsets of A_{10} is = 2^{\square}
6. The number of subsets of A_n is = 2^{\square}

APPLICATION

The activity can be used for calculating the number of subsets of a given set.

ACTIVITY2

OBJECTIVE

To represent set theoretic operations using Venn diagrams.

MATERIAL REQUIRED

Hardboard, white thick sheets of paper, pencils, colours, scissors, adhesive.

METHOD OF CONSTRUCTION

1. Cut rectangular strips from a sheet of paper and paste them on a hardboard. Write the symbol U in the left/right top corner of each rectangle.
2. Draw circles A and B inside each of the rectangular strips and shade/colour different portions as shown in Fig. 3.1 to Fig. 3.10.

DEMONSTRATION

1. U denotes the universal set represented by the rectangle.
2. Circles A and B represent the subsets of the universal set U as shown in the figures 3.1 to 3.10.
3. A' denote the complement of the set A , and B' denote the complement of the set B as shown in the Fig. 3.3 and Fig. 3.4.
4. Coloured portion in Fig. 3.1. represents $A \cup B$.

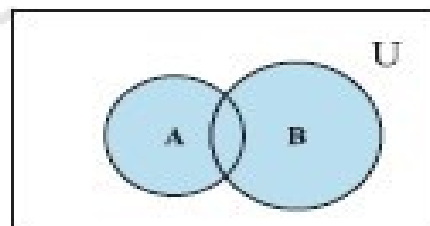


Fig. 3.1

5. Coloured portion in Fig. 3.2. represents $A \cap B$.

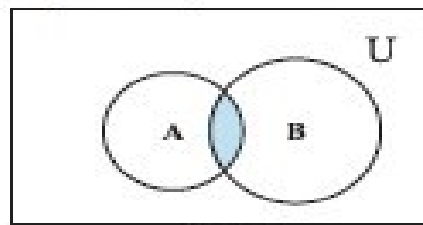


Fig. 3.2

6. Coloured portion in Fig. 3.3 represents A'

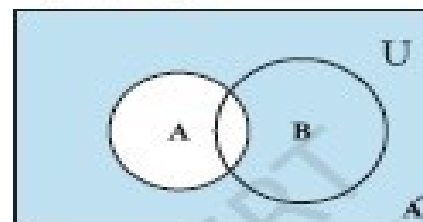


Fig. 3.3

7. Coloured portion in Fig. 3.4 represents B'

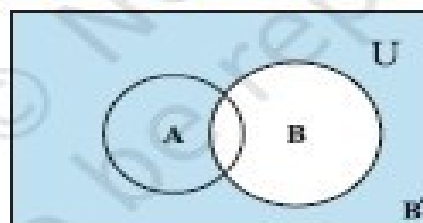


Fig. 3.4

8. Coloured portion in Fig. 3.5 represents $(A \cap B)'$

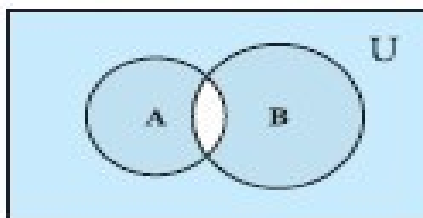


Fig. 3.5

HOLIDAYS HOMEWORK

(CLASS XI – MATHEMATICS, 2023)

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ANSWERS

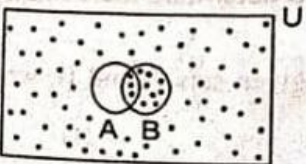
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2. $\{x \in \mathbb{I} \mid x + 5 = 5\}$
3. P, R, S
4. (i) False (ii) True (iii) True (iv) False (v) True
6. $m = 6, n = 3$
8. 15; 40
9. 1170
10. 2

CHAPTER 1 – SETS (ASSIGNMENTS)

SET B

1. Which of the following are sets ? Justify your answer.
 - (a) A set of students of class XI, Montfort School, Delhi. 4
 - (b) A set of difficult topics in Mathematics. 3
2. Write the set $\left\{\frac{1}{3}, \frac{3}{5}, \frac{5}{7}, \frac{7}{9}, \frac{9}{11}, \frac{11}{13}\right\}$ in set builder form. 3
3. Which of the following sets are empty sets :
 - (a) $\{x \in \mathbb{R} \mid x^2 + 3 = 0\}$ (b) $\{x : x \text{ is an even prime number}\}$. 3
4. If $A = \{a, b, c\}$. Find the power set of set A. 4
5. Let $A = \{1, 2, \{3, 4\}, 5\}$. State with reasons, which of the following statement is "True" or "False".
 - (a) $1 \in A$ (b) $\{3, 4\} \subset A$ (c) $\{\{3, 4\}\} \subset A$ 3
 - (d) $\{1, 2, 5\} \subset A$ (e) $\{1, 2\} \in A$. 3
6. If A and B are two given sets, then represent the set $(A - B)'$, using venn diagram. 4
7. If A and B are two given sets, then prove that $A - B = A \cap B'$ 3
8. In a group of 950 persons, 750 can speak Punjabi and 460 can speak English. Find (i) how many can speak both Punjabi and English (ii) how many can speak Punjabi only (iii) how many can speak English only. 4
9. In an examination, question number 1 was attempted by 67 students, question number 2 by 46 students and question number 3 by 40 students. 28 students attempted both question numbers 1 and 2, 8 attempted both question number 2 and 3; 26 attempted both question numbers 1 and 3 and 2 students attempted all the three questions. Find how many attempted question number 1 but not question 2 and 3. 3
10. 35 children of a class draw a map. 26 use blue colour and some use green colour. If 19 use both the colours. Find the number of children, who use the green colour ? 4

ANSWERS

1. (a) It is a set. (b) It is not a set.
2. $\left\{\frac{2n-1}{2n+1} : n \text{ is a natural number less than } 7\right\}$.
3. (a) Empty set (b) Not an empty set.
4. $\{\phi, \{a\}, \{b\}, \{c\}, \{a, b\}, \{b, c\}, \{c, a\}, \{a, b, c\}\}$.
5. (a) True (b) False (c) True (d) True (e) False.
6. 
8. (i) 260 (ii) 490 (iii) 200.
9. 15
10. 28

CHAPTER 12 – INTRODUCTION TO 3-D GEOMETRY (ASSIGNMENTS)

SET A

1. Using distance formula, show that the points $(-2, 3, 5)$, $(1, 2, 3)$ and $(7, 0, -1)$ are collinear. 3
2. Show that the points (a, b, c) , (b, c, a) and (c, a, b) are vertices of an equilateral triangle. 3
3. Find the locus of a point which is equidistant from the points $(3, 2, 1)$ and $(1, 2, 3)$. 3
4. Find the ratio in which the plane $x - 2y + 3z = 17$ divides the line joining the points $(-2, 4, 7)$ and $(3, -5, 8)$. Also obtain coordinates of point of intersection. 3
5. Find the ratio in which the line joining the points $(2, 4, 5)$ and $(3, 5, -4)$ is divided by the yz -plane. 3
6. Are the points $(3, 6, 9)$, $(10, 20, 30)$ and $(25, -41, 5)$ are the vertices of a right angled triangle? 4
7. Using section formula, show that the points $(-4, 6, 10)$, $(2, 4, 6)$ and $(14, 0, -2)$ are collinear. 4
8. Find the ratio in which the line segment joining the points $(4, 8, 10)$ and $(6, 10, -8)$ is divided by yz -plane. 4
9. The centroid of a triangle ABC is at the point $(1, 1, 1)$. If the coordinates of A and B are $(3, -5, 7)$ and $(-1, 7, -6)$ respectively. Find the coordinates of point C. 4
10. Find the lengths of the medians of the triangle ABC with vertices $A(0, 0, 6)$, $B(0, 4, 0)$ and $C(6, 0, 0)$. 4

| ANSWERS |

- | | |
|---|---|
| 3. $x - z = 0$. | 4. $3 : 10$ internally; $\left(-\frac{11}{13}, \frac{25}{13}, \frac{94}{13}\right)$. |
| 5. $2 : 3$ externally. | 6. No. |
| 8. $2 : 3$. | 9. $(1, 1, 2)$. |
| 10. Lengths of medians from A, B, C are $7, \sqrt{34}, 7$ respectively. | |

CHAPTER 12 – INTRODUCTION TO 3-D GEOMETRY (ASSIGNMENTS)

SET B

1. Find a point on zx -plane which is equidistant from the points $(1, -1, 0)$, $(2, 1, 2)$, $(3, 2, -1)$.
2. Find the locus of a point which is equidistant from the points $(0, 2, 3)$ and $(2, -2, 1)$.
3. Prove that the lines joining the vertices of a tetrahedron to the centroids of the opposite faces are concurrent.
4. If a point C with y -coordinate 2 lies on the line joining the points $A(-4, -4, 5)$ and $B(4, 6, -5)$. Find the coordinates of point C.
5. Show that the points $(-2, 3, 5)$, $(1, 2, 3)$, $(7, 0, -1)$ are collinear.
6. Find the equation of the path of P which moves such that $PA^2 + PB^2 = 2k^2$ where A and B are the points $(3, 4, 5)$ and $(-1, 3, -7)$ respectively.
7. Find the coordinates of the points which divides the join of the points $(1, -2, 3)$, $(3, 4, -5)$ in the ratio 2 : 3. (i) Internally, (ii) Externally.
8. Show that the points $(1, 2, 3)$, $(-1, -2, -1)$, $(2, 3, 2)$ and $(4, 7, 6)$ are the vertices of a parallelogram which is not a rectangle.
9. Find the equation of set of points P which moves so that its distances from points $(3, 4, -5)$ and $(-2, 1, 4)$ are equal.
10. Find the coordinates of a point on y -axis which is at a distance of $5\sqrt{2}$ from the point $(3, -2, 5)$.

ANSWERS

1. $\left(\frac{31}{10}, 0, \frac{1}{5}\right)$

2. $x - 2y - z + 1 = 0$.

4. $(2, 2, -1)$.

6. $2x^2 + 2y^2 + 2z^2 - 4x - 14y - 4z - 2k^2 + 109 = 0$

7. (i) $\left(\frac{9}{5}, \frac{2}{5}, \frac{-1}{5}\right)$ (ii) $(-13, -14, -19)$

9. $10x + 6y - 18z - 29 = 0$. 10. $(0, 2, 0); (0, -6, 0)$

MATHS ACTIVITIES

ACTIVITY 1

OBJECTIVE

To find the number of subsets of a given set and verify that if a set has n number of elements, then the total number of subsets is 2^n .

MATERIAL REQUIRED

Paper, different coloured pencils.

METHOD OF CONSTRUCTION

1. Take the empty set (say) A_0 which has no element.
2. Take a set (say) A_1 which has one element (say) a_1 .
3. Take a set (say) A_2 which has two elements (say) a_1 and a_2 .
4. Take a set (say) A_3 which has three elements (say) a_1 , a_2 and a_3 .

DEMONSTRATION

1. Represent A_0 as in Fig. 1.1

Here the possible subsets of A_0 is A_0 itself only, represented symbolically by ϕ . The number of subsets of A_0 is $1 = 2^0$.

2. Represent A_1 as in Fig. 1.2. Here the subsets of A_1 are ϕ , $\{a_1\}$. The number of subsets of A_1 is $2 = 2^1$

3. Represent A_2 as in Fig. 1.3

Here the subsets of A_2 are ϕ , $\{a_1\}$, $\{a_2\}$, $\{a_1, a_2\}$. The number of subsets of A_2 is $4 = 2^2$.

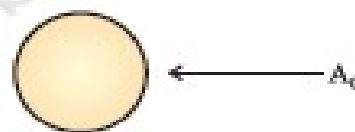


Fig. 1.1

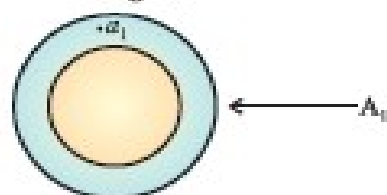


Fig. 1.2

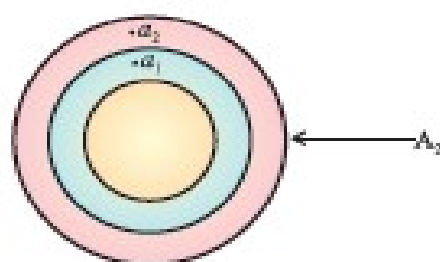


Fig. 1.3

4. Represent A_3 as in Fig. 1.4

Here the subsets of A_3 are ϕ , $\{a_1\}$, $\{a_2\}$, $\{a_3\}$, $\{a_1, a_2\}$, $\{a_2, a_3\}$, $\{a_3, a_1\}$ and $\{a_1, a_2, a_3\}$. The number of subsets of A_3 is $8 = 2^3$.

5. Continuing this way, the number of subsets of set A containing n elements a_1, a_2, \dots, a_n is 2^n .

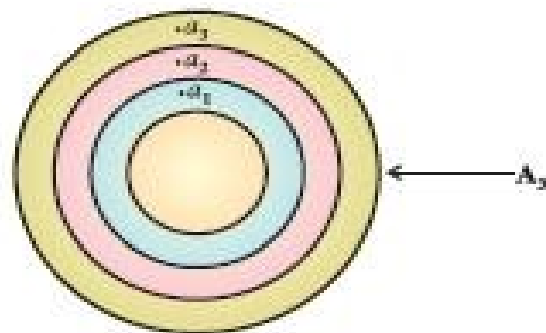


Fig. 1.4

OBSERVATION

1. The number of subsets of A_0 is _____ = 2^{\square}
2. The number of subsets of A_1 is _____ = 2^{\square}
3. The number of subsets of A_2 is _____ = 2^{\square}
4. The number of subsets of A_3 is _____ = 2^{\square}
5. The number of subsets of A_{10} is = 2^{\square}
6. The number of subsets of A_n is = 2^{\square}

APPLICATION

The activity can be used for calculating the number of subsets of a given set.

ACTIVITY2

OBJECTIVE

To represent set theoretic operations using Venn diagrams.

MATERIAL REQUIRED

Hardboard, white thick sheets of paper, pencils, colours, scissors, adhesive.

METHOD OF CONSTRUCTION

1. Cut rectangular strips from a sheet of paper and paste them on a hardboard. Write the symbol U in the left/right top corner of each rectangle.
2. Draw circles A and B inside each of the rectangular strips and shade/colour different portions as shown in Fig. 3.1 to Fig. 3.10.

DEMONSTRATION

1. U denotes the universal set represented by the rectangle.
2. Circles A and B represent the subsets of the universal set U as shown in the figures 3.1 to 3.10.
3. A' denote the complement of the set A , and B' denote the complement of the set B as shown in the Fig. 3.3 and Fig. 3.4.
4. Coloured portion in Fig. 3.1, represents $A \cup B$.

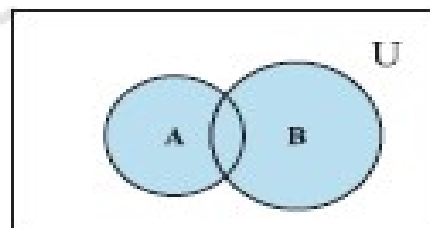


Fig. 3.1

5. Coloured portion in Fig. 3.2. represents $A \cap B$.

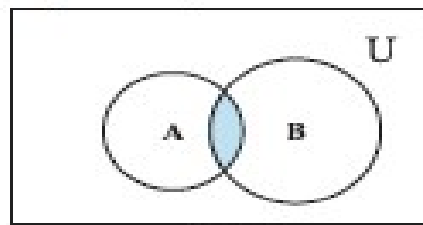


Fig. 3.2

6. Coloured portion in Fig. 3.3 represents A'

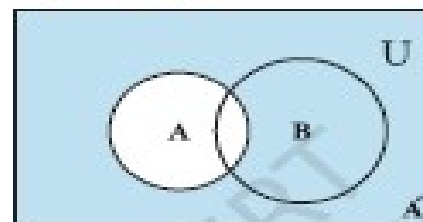


Fig. 3.3

7. Coloured portion in Fig. 3.4 represents B'

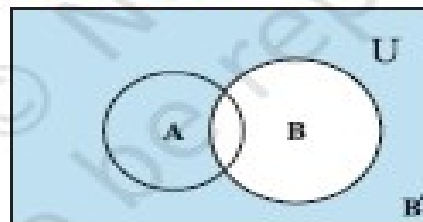


Fig. 3.4

8. Coloured portion in Fig. 3.5 represents $(A \cap B)'$

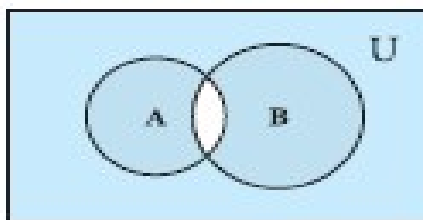


Fig. 3.5

कक्षा 11 हिंदी (2023-24)

ग्रीष्मकालीन गृह कार्य

सामान्य निर्देश:-

1. परियोजना कार्य A4 साइज शीट पर कीजिए.
2. सुंदर लेख ध्यान दीजिए
3. प्रथम पृष्ठ पर सभी विद्यार्थी अपना परिचय दीजिए.
4. परियोजना कार्य को MY CLEAR बैग में रखिए.

• निम्नलिखित विषयों पर लगभग 100 से 150 शब्दों में लेख लिखिए?

- 1:- महानगरों में प्रदूषण की समस्या
- 2:- प्रशासन में बढ़ता भ्रष्टाचार
- 3:- चुनाव प्रचार का एक दिन
- 4:- बस्ते का बढ़ता बोझ
- 5:- गांव से शहरों की ओर बढ़ रहा पलायन
- 6:- भारत में जी-20 सम्मेलन
- 7:- बढ़ती आबादी घटते संसाधन
- 8:- योग के माध्यम से हम शरीर तथा मन दोनों को स्वास्थ्य कर सकते हैं। जीवन में योग की अनिवार्यता तथा उससे मिलने वाले लाभों का वर्णन कीजिए।

परियोजना कार्य

- 1- हिंदी साहित्य को कितने कालों में बांटा गया है प्रत्येक काल के प्रमुख कवियों का उल्लेख करते हुए एक परियोजना कार्य तैयार कीजिए?
- 2 - G - 20 सम्मेलन क्या है इसकी विशेषता बताते हुए शामिल देशों देशों के नामों का उल्लेख करते हुए एक परियोजना कार्य तैयार कीजिए -