

MATHEMATICS

I. Choose the correct answer: 10x1=10

1. If  $B \subseteq A$  then  $n(A \cap B)$  IS \_\_\_\_\_.  
 a)  $n(A-B)$       b)  $n(B)$       c)  $n(B-A)$       d)  $n(A)$
2. For any three sets A, B and C,  $(A-B) \cap (B-C)$  is equal to \_\_\_\_\_.  
 a) A only      b) B only      c) C only      d)  $\emptyset$
3. If  $A = \{1, 2, 3, 4, 5, 6, 7, 9, 11\}$ , then  $n(A) =$  \_\_\_\_\_.  
 a) 7      b) 8      c) 5      d) 6
4. If a rational number  $\frac{p}{q}$ ,  $q \neq 0$  can be expressed in the form \_\_\_\_\_.  
 a)  $\frac{p}{2^n \times 5^m}$       b)  $\frac{q}{2^n \times 5^m}$       c)  $\frac{p}{2^m \times 5^n}$       d)  $\frac{q}{2^m \times 5^n}$
5. An irrational Number between 2 and 2.5 is \_\_\_\_\_.  
 a)  $\sqrt{11}$       b)  $\sqrt{5}$       c)  $\sqrt{2.5}$       d)  $\sqrt{8}$
6. The centroid divides each median in the ratio \_\_\_\_\_ from the vertex.  
 a) 2:1      b) 1:2      c) 3:1      d) 1:3
7. The distribution having more than three mode is called \_\_\_\_\_.  
 a) unimodal      b) bimodal      c) trimodal      d) multimodal
8. A particular result of an experiment is called \_\_\_\_\_.  
 a) Trial      b) Simple event      c) compound event      d) outcome
9. Probability lies between \_\_\_\_\_.  
 a) -1 and +1      b) 0 and 1      c) 0 and 1      d) 0 and  $\infty$
10. Two events E and E' are said to be complementary events if  $P(E) + P(E') =$  \_\_\_\_\_.  
 a) 0      b) 1      c) 2      d) 3

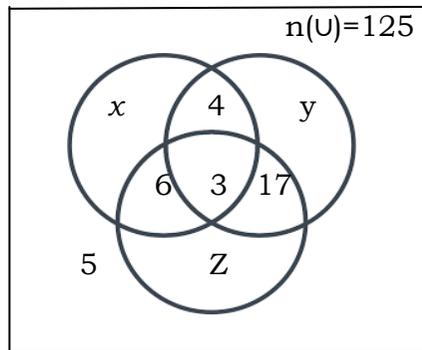
II. Answer any four of the following: 4x2=8

11. Represent the following as decimal form i)  $\frac{-4}{11}$  ii)  $\frac{11}{75}$
12. If  $P = \{x: x = 3n + 2, n \in \mathbb{W} \text{ and } x < 15\}$ , then find  $n(P)$ .
13. If  $A = \{b, e, f, g\}$ ,  $B = \{c, e, g, h\}$  then verify  $A \cup B = B \cup A$

14. When two coins are tossed, what is the probability that two heads are obtained?
  15. Find the mode of the given data:  
 3.1, 3.2, 3.3, 2.1, 1.3, 3.3, 3.1
  16. Express the following decimal expression into rational number -5.132.
- III. Answer any four of the following: 4x3=12
17. Write the following:  
 i) Commutative property.  
 ii) demorgan's law for complementation.
  18. Represent the number  $6.\bar{4}$  (upto 3 decimal places) in number line.
  19. If  $n(A) = 300$ ,  $n(A \cup B) = 500$ ,  $n(A \cap B) = 50$  and  $n(B') = 350$ , then find  $n(B)$  and  $n(U)$ .
  20. Find whether x and y are rational or irrational.  
 $a = 2 + \sqrt{3}$      $b = 2 - \sqrt{3}$
  21. If a probability of winning a particular tennis match is 0.72. What is the probability of the player loosing the match?
  22. Two dice are rolled, find the probability that the sum is  
 i) equal to 1    ii) equal to 4    iii) less than 13
- IV. Answer any four of the following: 4x5=20
23. In recent years, of the 1184 centum scorers in various subjects in tenth standard public exams, 233 were in mathematics, 125 in Social Science and 106 in Science. If one of the student is selected at random, find the probability of that selected student.  
 i) is a centum scorer in Mathematics,  
 ii) is not a centum scorer in Science.
  24. Find the mode for the following data:

Marks	1-5	6-10	11-15	16-20	21-25
No.of Students	7	10	16	32	24

25. Find any 5 rational numbers between  $\frac{1}{4}$  and  $\frac{1}{5}$
26. Verify  $A - (B \cap C) = (A - B) \cup (A - C)$  using Venn diagram.
27. If  $A = \{x : x = 2^n, n \in \omega \text{ and } n < 4\}$   
 $B = \{x : x = 2n, n \in \mathbb{N} \text{ and } n \leq 4\}$  and  
 $C = \{0, 1, 2, 5, 6\}$ , then verify the associative property of intersection of sets.
28. In the adjacent diagram, if  $n(U) = 125$ ,  $y$  is two times  $x$  and  $z$  is 10 more than  $x$ , then find the value of  $x$ ,  $y$  and  $z$ .



V. Answer the following: 1x10=10

- Construct the  $\Delta LMN$  such that  $LM = 7.5\text{cm}$ ,  $MN = 5\text{cm}$  and  $LN = 8\text{cm}$ , Locate its centroid.

I. Answer the following: 17x1=17

1. Thickness of a cricket ball is measured by \_\_\_\_\_.
2. Find the odd one out .  
a) Length      b) Time      c) Mass      d) Volume
3. 1 Angstrom ( $\text{A}^\circ$ ) = \_\_\_\_\_ m.
4. The area under velocity - time graph represents the  
a) velocity of the moving object.  
b) displacement covered by the moving object.  
c) speed of the moving object.  
d) acceleration of the moving object.
5. Speed is a \_\_\_\_\_ quantity whereas velocity is a \_\_\_\_\_ quantity.
6. An example of a substance that sublimates is \_\_\_\_\_.
7. Among the following \_\_\_\_\_ is a mixture.  
a) common salt      b) juice  
c) carbon dioxide      d) pure silver
8. Find the odd one out. (Hint: based on compound salt, sugar, air, water and mixture).
9. In petroleum refining, the method of separation used is \_\_\_\_\_.
10. State whether true or false.  
Buttermilk is an example of heterogeneous mixture.
11. Mesoglea is present in \_\_\_\_\_.  
a) Porifera    b) Coelenterata    c) Annelida    d) Arthropoda
12. Water vascular system is found in \_\_\_\_\_.
13. Aerenchyma is found in \_\_\_\_\_.
14. Say whether true or false:  
Fishes have two chambered heart.
15. Spiny anteater is an example for \_\_\_\_\_ mammal.
16. The animal without skull is  
a) Acrania    b) Acephalia    c) Apterida    d) Acoelomate

17. State whether true or false. If false, correct the statement.  
Vessels are found in collenchyma.

II. Answer the following in one or two sentences: 14x2=28  
Part - A (any four)

18. What do you know about pitch of screw gauge?
19. Define standard unit.
20. Assertion (A): Distance between two celestial bodies is measured in terms of light year.  
Reason (R): The distance travelled by the light in one year is one light year.  
a) A is true but R is false      b) A is false but R is true  
c) Both A and R are true but R is not the correct Reason  
d) Both A and R are true and R is the correct Reason.
21. Define velocity.
22. What do you understand about negative acceleration?
23. Define distance.

Part - B (any four)

24. Name the components in each of the following mixtures.  
i) Ice Cream      ii) Lemonade
25. Assertion and Reason:  
Assertion: Colloidal particles are moving constantly and rapidly in Zig-Zag directions.  
Reason: Movement of colloidal particles is due to the unbalanced bombardment of the particles by the molecules of dispersion medium.  
a) A and R are correct, R explains the A  
b) A is correct, R is wrong  
c) A is wrong, R is correct  
d) A and R are correct, R doesn't explain A
26. Which of the following are pure substances?  
Ice, Milk, Hydrochloric acid, Brick, Iron and Sand
27. Match the following:  
i) Suspension      -      Milk  
ii) Colloid      -      Sugar Solution  
iii) True Solution      -      Sand in water  
iv) Emulsion      -      Blood

28. Define Sublimation.  
29. Write the uses of fractional distillation.

Part - C (any six)

30. Define taxonomy.  
31. Match the following:

Phylum	Examples
a) Coelenterata	Snail
b) Platyhelminthes	Starfish
c) Echinodermata	Tapeworm
d) Mollusca	Hydra

32. What is nematocyst?  
33. List the respiratory organs of amphibians.  
34. What is complex tissue? name the various kinds of complex tissues.  
35. What are intercalary meristems?  
36. Define tissue.  
37. Draw and label the diagram of Fibres and Sclereids.

III. Answer in detail: 3x5=15

Part -A (any one)

38. Differentiate mass and weight.  
39. a) How will you measure the least count of Vernier Caliper?  
b) Draw the diagram of Vernier Caliper.

Part - B (any one)

40. Write the differences between elements and compounds and give an example for each.  
41. Compare the properties of True solution, colloidal solution and suspension.

Part - C (any one)

42. Give an account on Phylum Arthropoda  
43. Write the difference between Xylem and Phloem.