

Date: 2082/06/04

Symbol No.:-.....

NEW MILLENNIUM ACADEMY

Second Terminal Exam - 2082

Subject: **MATHS**

Class: 7 (SEVEN)

Time : 2 hours

F.M: 50

Attempt all questions:

AREA: SETS AND STATISTICS

1. $U = \{1, 2, 3, 4, 5, 6\}$, $A = \{x: x \text{ is set of even numbers}\}$, $B = \{2, 3, 5\}$.

- (a) List the elements of set A. [1K]
(b) Write any two proper subsets of B [1U]
(c) Explain, which type of sets are **A** and **B**? [1HA]

2. The sales data of copies and pens in a stationery shop over one week is given below.

| Days | SUN | MON | TUE | WED | THU | FRI | SAT |
|---------|-----|-----|-----|-----|-----|-----|-----|
| Copies: | 55 | 35 | 45 | 25 | 30 | 20 | 40 |
| Pens: | 40 | 25 | 45 | 35 | 30 | 20 | 10 |

- (a) Show the above information in **Multiple Bar Diagram**. [2A]
(b) Show the above information in **Line Graph**. [1A]

AREA: ARITHMETIC

3. (a) The sequence of cube numbers is 1, 8, 27, ... Write the next cube number. [1K]

- (b) Two traffic lights blink at intervals of 40 seconds and 60 seconds. If they blink together at 7:00 AM, after how many seconds will they blink together again? [2A]

- (c) 580 is not a perfect square. Find the least number that must be subtracted from 580 to make it a perfect square. Hence, write the square number obtained. [2HA]

4. (a) Convert $0.\overline{24}$ into fraction. [2U]
(b) Find the H.C.F of 18 and 24. [1U]
(c) The given fraction is $\frac{22}{7}$. Find its decimal expansion up to 6 decimal places. [1U]
(d) $\frac{22}{7}$ is inform $\frac{p}{q}$ and $q \neq 0$, it is a rational number. Discuss about its decimal expansion. [1HA]

5. Ram is 12 years old, brother Shyam is 8 years old and there is younger one also. Their father gave them Rs. 250 to be divided among Ram and Shyam only in the ratio of their ages.

- (a) Write the ratio of their ages. [1K]
(b) How much money will Ram and Shyam each get from Rs. 250? [2A]
(c) Father says, age of my youngest son is “ $(-3) \times (-2) - (+2)$ ”. What is the age of youngest son? [1A]

AREA: MENSURATION

6. You have a triangular park and there is a fish pond in the middle of the park. The park has sides of length 15 meters, 20 meters, and 25 meters. The fish pond is in the shape of a rectangular cuboid with a length of 10 meters, a breadth of 4 meters, and a depth of 2 meters.

- (a) Write the formula to calculate the total surface area of cuboid with length (l), breadth (b) and height (h). [1K]
(b) Find the perimeter of triangular park. [1U]
(c) How many liters of water is needed to fill the fish pond? [$1m^3 = 1000 \text{ liters}$] [2A]

- (d) Is $42 m^2$ of net enough to cover the top of fish pond to prevent leaves to fall inside the pond? Justify. [1HA]

AREA: ALGEBRA

7. (a) Give one example of “Law of zero Index”. [1K]
 (b) Prove that: $x^{a-b+1} \times x^{b-c+1} \times x^{c-a+1} = x^3$ [2A]
8. (a) Write the expanded form of $(a + b)^2$. [1K]
 (b) If $a + \frac{1}{a} = 9$, find the value of: $a^2 + \frac{1}{a^2}$. [2A]
9. (a) Divide: $2x^2 - 3x + 1$ by $(x - 1)$ [2U]
 (b) Father has $(2a + b)^2 m^2$ of land area. He gave $(4a^2 + b^2) m^2$ of land to his son and remaining area of land to his daughter. Find the area of land received by the daughter. [2HA]

AREA: GEOMETRY

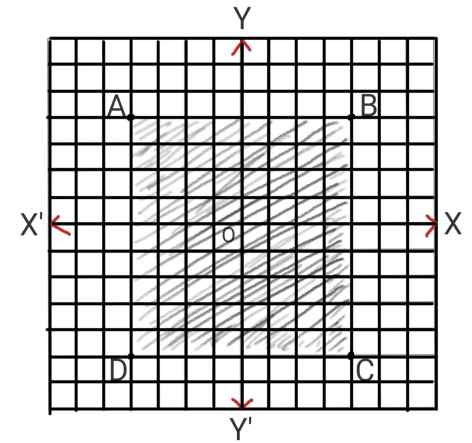
10. Study the given figure and answer the following questions.

- (a) Name the given solid object. [1K]
 (b) Draw the skeleton model of the given solid object. [2U]
 (c) Does this solid object verifies Euler’s formula? Show. [2HA]

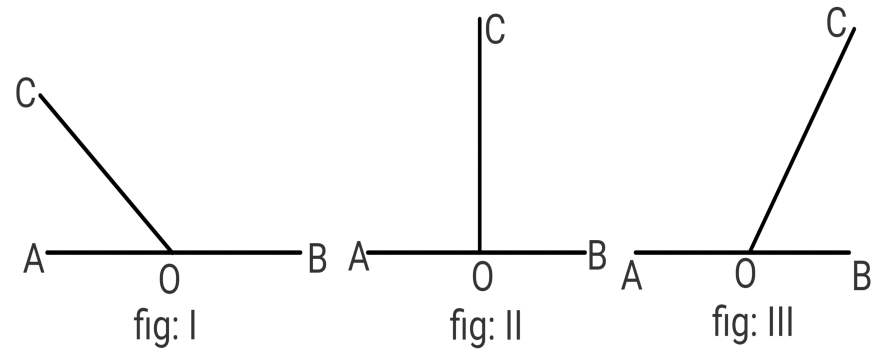


11. (a) Construct an angle of 90° with compass and label it. [2U]

- (b) Write the coordinates of vertices A, B, C and D. Also calculate the area of plane figure ABCD. [3A]



12. Answer the following questions based on given figure.



- (a) Write the measure of $\angle AOB$. [1K]
 (b) Complete the given table. [3A]

| Figure | $\angle AOC$ | $\angle BOC$ | Result |
|--------|--------------|--------------|--------|
| I | | | |
| II | | | |
| III | | | |

- (c) What conclusion can be derived from above observation? Write. [1HA]

BEST OF LUCK