# MODEL QUESTION SET

Class: VII                                                                Maximum Marks: 100
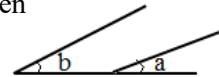Subject: Mathematics                                              Time: 3 hrs.

*Candidates are required to answer in their own words as far as practicable. Credit shall be given to originality in expression, creativity and neatness in hand, not to rote learning.*

**Attempt all the questions.**

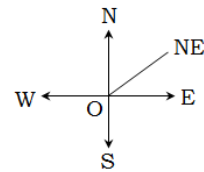## Group-A          [5 × (1+1) = 10]

**1.** (a)   State whether the angles 'a' and 'b' are adjacent or not in the figure given alongside.
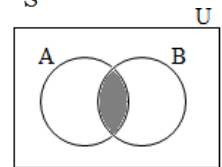
   (b)   If the radius of a circle is x cm, what is the length of its circumference?

**2.** (a)   Write down the coordinates of a point which lies in the second quadrant and 6 units far from both the axes.

   (b)   What is the compass bearing of NE in the given figure?

**3.** (a)   What does the shaded portion represent in the given Venn-diagram?

   (b)   In the given data, what is the frequency of 20?

   20, 15, 20, 25, 20, 25, 10, 25, 10, 30, 20, 30, 25, 20, 15, 20, 30, 25, 40, 20, 25, 40
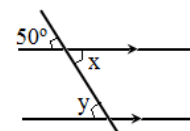
**4.** (a)   For $x \neq 0$, what is the value of $(7x)^0$ ?
   (b)   Factorize: $16 - a^2$

**5.** (a)   If the sum of x and 3 is 10, what is the value of x?
   (b)   Write down the integers between -2 and 2.

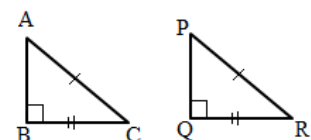## Group-B          (17 × 2 = 34)

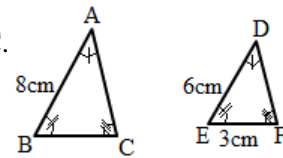**6.** (a)   Find the values of x and y in the given figure.

   (b)   If the angles of a quadrilateral are in the ratio 1:2:3:4, find the size of its each angle.

   (c)   By what axiom, ΔABC and ΔPQR are congruent to each other? Also, write a pair of corresponding angles.

**7.** (a) In the given figure, if $\triangle ABC \sim \triangle DEF$, find the length of BC.



(b) A rectangular carpet is 4.5m long and 3.5m wide. How much floor does it cover? Find.

(c) Draw a net of cone.

**8.** (a) A book is 25cm long, 18cm wide and 2 cm thick. Find its surface area.

(b) Plot the points A (1, 2) and B (5, 4) on a graph paper. Join them and find the coordinates of mid-point of line segment AB.

(c) If A = {2, 4, 6, 8, 10} and B = {1, 2, 5, 10, 20}, find A – B and show it in a Venn-diagram by shading.

**9.** (a) Convert 216 into binary number system.

(b) The rate of cost of potato is increased from Rs 40 per kg to Rs 50 per kg. Find the percentage of increase in the price.

(c) The ages (in years) of 6 children are given below. If the average age of the children is 9 years, find the value of p.

$$9, \quad 6, \quad 8, \quad 7, \quad p, \quad 13$$

**10.** (a) If $x = 7^{a-b}$ and $y = 7^{b-a}$, show that xy = 1.

(b) Simplify: $\dfrac{6.7 \times 6.7 - 2.3 \times 2.3}{6.7 - 2.3}$

(c) Find the H.C.F. of 2x – 4 and $x^2 - 4$

**11.** (a) Solve the inequality $3x + 1 \le 7$ and show in a number line.

(b) Solve: $\dfrac{x-1}{x+2} = \dfrac{2}{5}$

## Group-C       (14 × 4 = 56)

**12.** Construct a square ABCD in which diagonal AC = 6 cm.

**13.** Verify experimentally that the sum of adjacent angles in linear pair is always $180^0$. (Two figures of different measurement are necessary)

**14.** The vertices of $\triangle ABC$ are A (1, 2), B (4, 1) and C (3, 4). Find the coordinates of vertices $\triangle A'B'C'$ under reflection about x-axis. Draw both the triangles on the same graph paper.

**15.** A and B are the subsets of a universal set U. If U = {1, 2, 3, … , 10}, A = {even numbers} and B = {factors of 12}, find $\overline{A \cup B}$ and show it in a Venn-diagram.

**16.** The perimeter of a square field is 88ft.

(i) Find its side length.

(ii) Find its area.

(iii) Find the cost of growing grass in the field at the rate of Rs 20 per sq. ft.

**17.** Three bells ring at an interval of 10, 15 and 20 minutes respectively. If they all ring altogether at 6:00 a.m., at what time will they again ring together?

**18.** Simplify: $\dfrac{3}{8} \div \left[ 4 - \left\{ \dfrac{5}{6} \div 5\dfrac{1}{3}\left( \dfrac{3}{4} - \dfrac{5}{6} + \dfrac{1}{8} \right) \right\} \right]$

**19.** If 20 workers can build a house in 24 days, in how many days would 15 workers build the same house?

**20.** Shashwat has just celebrated his 4th birthday. On this occasion his father deposited Rs 20,000 in a bank for him at the rate of 6% p.a. How much amount will he receive in his 7th birthday? Find it.

**21.** The marks obtained by the students of class VII in the class test of Mathematics are given in the table below. Find the average marks.

| Marks obtained | 10 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|
| No. of students | 3 | 6 | 10 | 7 | 4 |

**22.** Simplify: $\dfrac{x^{a+b} \times x^{b+c} \times x^{c+a}}{(x^a \times x^b \times x^c)^2}$

**23.** If $m + \dfrac{1}{m} = 3$, find the value of: (i) $\quad m^2 + \dfrac{1}{m^2}$  (ii)  $\left( m - \dfrac{1}{m} \right)^2$.

**24.** The area of rectangular field is $(x^2 + 9x + 20)m^2$ and its length is $(x + 5)m$

    (i)    Find its breadth

    (ii)    If x = 10 m, find the actual length, breadth and the area of the land.

**25.** There are 555 students in a school. If the number of boys is 55 more than the number of girls, find the number of boys and girls.

**The End**