Sample Paper 2

Section A

1. **Choose the correct option:**

i) $156 =$

$a)$ $2^3 \times 3^2 \times 13$ $b)$ $2^2 \times 3 \times 13$

$c)$ $2 \times 3^2 \times 13$ $d)$ $2^2 \times 3^2 \times 13$

ii) find the number of zeroes of $y = p(x)$ in the given figure.

$a)$ 2 $b)$ 0 $c)$ 1 $d)$ 3

iii) The graph of quadratic poly $p(x) = ax^2 + bx + c$ is an upper parabola if

$a)$ $a = 0$ $b)$ $a \neq 0$ $c)$ $a < 0$ $d)$ $a > 0$

iv) The equations $a_1x + b_1y + c_1 = 0, a_2x + b_2y + c_2 = 0$ are inconsistent if

$a)$ $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ $b)$ $\frac{a_1}{a_2} = \frac{b_1}{b_2}$ $c)$ $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ $d)$ $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

v) Which of the following is a quadratic equation?

$a)$ $x(x - 1) = x^2$ $b)$ $(x + 1)(2x + 3) = x + 5$

$c)$ $2x^2 - 3x = 2x(x + 1)$ $d)$ $3x^2 - 1 = \frac{2}{x}$

vi) The common difference of AP $4, 7, 10, \dots \dots \dots \dots \dots \dots \dots$ is

$a)$ 4 $b)$ 7 $c)$ 3 $d)$ -3

vii) If $\Delta ABC \sim \Delta QRP$ then which of the following is false?

$a)$ $\angle B = \angle R$ $b)$ $\frac{AB}{QR} = \frac{BC}{RP}$ $c)$ $\frac{AC}{QP} = \frac{BC}{PQ}$ $d)$

$\angle C = \angle P$

viii) $cos\theta . sec\theta = $ _____

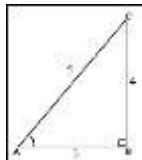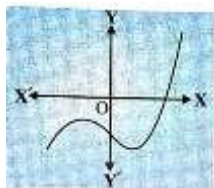$a)$ 1 $b)$ 2 $c)$ 0 $d)$ $\sqrt{2}$

ix) In the given fig, $sinA = $

$a)$ $\frac{3}{5}$ $b)$ $\frac{3}{4}$ $c)$ $\frac{4}{3}$ $d)$ $\frac{4}{5}$

x) How many tangents of a circle have?

$a)$ 1 $b)$ 2 $c)$ 0 $d)$ Infinite

xi) The region of a circle enclosed between two radius and corresponding arc is:

$a)$ Segment $b)$ chord $c)$ Sector $d)$ circumference

xii) The volume of a cuboid of size $1.5\text{m} \times 10\text{ m} \times 3\text{ m}$

$a)$ 450 m^3 $b)$ 45 m^3 $c)$ 42 m^3 $d)$ 4.5 m^3

xiii) A sphere is of maximum size is cut from a cube of side 7cm then radius of sphere is:

$a)$ 7 cm $b)$ 14 cm $c)$ 7.5 cm $d)$ 3.5 cm

xiv) The mode of 2, 5,8, 5,4, 2,3, 5, 3

$a)$ 2 $b)$ 3 $c)$ 4 $d)$ 5

xv) Which of the following is true ?

$a)$ $0 < P(E) < 1$ $b)$ $0 \leq P(E) \leq 1$

$c)$ $0 < P(E) \leq 1$ $d)$ $0 \leq P(E) < 1$

xvi) If the prob of occurring an event is $\frac{2}{7}$ then the prob of not occurring that event is:

$a)$ 0 $b)$ 1 $c)$ $\frac{5}{7}$ $d)$ $\frac{3}{7}$

2. Choose True/False :

i) LCM of two coprime numbers is 1.

ii) If in linear equations, we have $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ then the system has a unique solution.

iii) A quadratic equation has real roots if D > 0.

iv) The mid point of the line segment joining (x_1, y_1) and (x_2, y_2) is $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

v) $cosA$ is the short form of $cosecA$.

vi) The tangents drawn from an external point are equal in length.

vii) In a frequency distribution, Mean $= A + \frac{\sum f d'}{\sum f} \times h$

3. **Fill in the blanks :**

i) The solution of the equations $x - 2y = 4, 3x + 6y = 5$ is .....

ii) The next term of AP $5, 9, 13, \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ is..............

iii) If $\Delta ABC \sim \Delta DEF$ then $\frac{AB}{DE} = \frac{CB}{\ldots\ldots}$

iv) The distance between the points $(3, 0)$ and $(0, -4)$ is...........

v) Area of sector $= \cdots \ldots \ldots \ldots \ldots \ldots . \times \frac{\theta}{360}$

vi) Lateral surface area of cone $=$ ....

vii) The probability of an impossible event is ....

Section B

4. Find HCF and LCM of 26 and 91. Also verify the relation Product of two numbers $=$ HCF $\times$ LCM

5. Form a quadratic polynomial whose sum of zeroes is -5 and product of zeroes is 3.

6. Find the area of sector of a circle of radius 4cm and central angle is $30°$.

7. From a well shuffled pack of 52 cards, a card is drawn at random. Find the probability that drawn card is not a face card.

Section C

8. Check whether the equation $2x^2 + x - 3 = 0$ has real roots or not, if so then find the roots.

9. How many three digit numbers are there which are divisible by 7?   **OR**   find the sum of first 18 terms of AP $2, 7, 12, \ldots \ldots$

10. Check whether these vertices $A(5, -2), B(6, 4)$ and $C(7, -2)$ are of an isosceles triangle.   **OR**
Find the coordinates of point which divides the line segment joining $(-4, 5)$ and $(3, -4)$ in 3:4.

11. In ΔABC, $\angle B = 90^0$ and $\tan A = 1$, Prove that $2\sin A . \cos A = 1$

   OR   Prove that $\sqrt{\frac{1+\sin A}{1-\sin A}} = \sec A + \tan A$

12. From a point P on the ground, the angle of elevation of 10m high building is $30°$. There is a flagstaff on the top of the building and the angle of elevation of top of the flagstaff from P is $45°$. Find (i) length of flagstaff (ii) distance of P from building.

13. Two cubes, each of volume 64 cm^3, is joined end to end and form a solid. Find the surface area of such solid.

Section D

14. Check whether the equations $3x + 4y = 2, 2x + 3y = 1$ have a unique sol or not, if so then find solution.   **OR**
Five years ago, Hardeep's age was three times Gurdeep's age. After 10 years, Hardeep's age will be twice of Gurdeep's age. Find their present ages.

15. State and Prove Thales Theorem.   **OR**
Prove that the tangent at any point of a circle is perpendicular to the radius.

16. Find the arithmetic mean of the following

Class interval	10 – 25	25 – 40	40 – 55	55– 70	70-85	85-100
F	2	3	7	6	6	6

OR   Find the median of the following:

Weight	40-45	45-50	50-55	55-60	60-65	65-70	70-75
F	2	3	8	6	6	3	2