

Time Allowed: 2.40 Hours"Section - B"Marks: 36

Q-2. Attempt any nine (9) parts:-

- (i) Solve the equation  $\frac{x^2}{3} - \frac{x}{12} = \frac{1}{24}$  using quadratic formula.
- (ii) Solve  $\sqrt{5x+21} = x+3$ .
- (iii) Evaluate  $(1+w-w^2)^7$ .
- (iv) If the roots of  $x^2-7x+k=0$  are differ by unity, then find k.
- (v) Gold and silver are mixed in 7:4 if 36 grams of silver is used. How much gold is used?
- (vi) Prove that  $a/b = c/d = e/f = \frac{\sqrt{a^2+c^2+e^2}}{b^2+d^2+f^2}$
- (vii) Resolve into partial fractions  

$$\frac{3x-2}{2x^2-x}$$
- (viii) Prove associative property of intersection for  $A = \{1,2,3\}$ ,  $B = \{2,3,4\}$  and  $C = \{3,4,5\}$
- (ix) If  $A = \{1,2,3\}$ ,  $B = \{4,5\}$  then (i) write three binary relations from A to B.
- (x) Find the standard deviation for 6,8,10,12,14.
- (xi) Prove that  $\cos^4 x - \sin^4 x = 1 - 2\sin^2 x$ .
- (xii) Find the area of a sector with circular angle of  $60^\circ$  in a circular region whose radius is 5cm.

"Section - C"Marks: 24

Note: Attempt any three (3) questions:-

- Q-3. A light house is 150m above the sea level. Angle of depression of a boat from its top is  $60^\circ$ . Find the distance between the boat and light house.
- Q-4. Construct a triangle with sides 2cm, 2.5cm and 3cm. Also draw its circumcircle.
- Q-5. Prove that two tangents drawn to a circle from a point outside it, are equal in length.
- Q-6. The angle in a segment greater than a semicircle is less than a right angle. Prove it.