

I. Answer all the questions [each carries 2 mark]**2X5=10**

- 1) Evaluate $\Gamma\left(\frac{7}{2}\right)$
- 2) Integrate the following with respect to x $\frac{1}{9-16x^2}$
- 3) Find the area bounded by the line $y=x$, the X-axis and the ordinates $x=1, x=2$.
- 4) Find area bounded by the curve $y = x(4-x)$ between the limits 0 and 4 with x - axis.
- 5) The marginal cost function $MC = 2 + 5e^x$ (i) Find C, if $C(0)=100$ (ii) Find AC.

II. Answer all the questions [each carries 3 mark]**3X5=15**

- 6) Show that the equation $3x-2y=6$, $6x-4y=10$ are inconsistent.
- 7) Integrate the following with respect to x . $\sin^3 x$.
- 8) Find consumer's surplus if the demand function $p = 50 - 2x$ and $x = 20$
- 9) If $MR = 20 - 5x + 3x^2$, find total revenue function.
- 10) The price of a machine is 6,40,000 if the rate of cost saving is represented by the function $f(t) = 20,000 t$. Find out the number of years required to recoup the cost of the function.

III. Answer all the questions [each carries 5 mark]**5X5=25**

- 11) Solve the following equations by using Cramer's rule
 $x + y + z = 6$, $2x + 3y - z = 5$, $6x - 2y - 3z = -7$
- 12) Evaluate $\int_1^3 (2x + 3) dx$
- 13) Using integration find the area of the circle whose center is at the origin and the radius is 0 a units.
- 14) The price of a machine is ₹5,00,000 with an estimated life of 12 years. The estimated salvage value is ₹30,000. The machine can be rented at ₹72,000 per year. The present value of the rental payment is calculated at 9% interest rate. Find out whether it is advisable to rent the machine. ($e^{-1.08} = 0.3396$).
- 15) Find the consumer's surplus and producer's surplus for the demand function $p_d = 25 - 3x$ and supply function $p_s = 5 + 2x$.