Question Bank (G scheme)

Name of subject: AppliedMathematics **Unit Test :II**
Subject code: 17301 **Course :CH/CM/EJ/IE/IF/IS/ME**
Semester: III

Chapter 1 (APPLICATION OF INTEGRATION)[8 MARKS]

3 marks-

1) Find the area bounded by the curvey = 3x – 2from x = 1 to x = 3.
2) Find the area bounded by the parabola y= x^2 – 2x with x- axis.
3) Find the area bounded under the curvey= x^3 – $5x^2$ + 4xfrom x = 0 to x = 3.
4) Find the area bounded by the parabola y^2= 4ax with its latus-rectum.

4 marks-

1) Find the area of the circle $x^2 + y^2 = 25$ using integration.
2) Find the area of the ellipse $9x^2 + 4y^2 = 36$ using integration.
3) Find the area bounded by the parabola y^2= 4xand the line 2x – y = 4.
4) Find the area of the circle y^2– 2x = 0 and $y^2 + 4x - 12 = 0$.
5) Find the area between the curves y = sin x and y = cos x for [0, 90^0].

Chapter- 2(DIFFERENTIAL EQUATION)[20 MARKS]

3 marks:

1) Find the order and degree of
   i) $\frac{d^2y}{dx^2} = \sqrt{1 + (\frac{dy}{dx})^3}$ ii) i) $x^2(\frac{d^2y}{dx^2})^2 + y\,(\frac{dy}{dx})^3 + y^2 = 0$---- **(3M Each)**
2) Form a differential equation by eliminating constants from
   i)xy = a^2 ii) y^2= 4ax. **---- (3M Each)**
3) Solve $\sec^2 x \tan y\, dx + \sec^2 y \tan x\, dy = 0$.
4) Solve $\frac{dy}{dx} = e^{3x-2y} + x^2 . e^{-2y}$

4 marks:

1) Solve $xy \log y\, dx + (1 + x^2)dy = 0$
2) Solve $\frac{dy}{dx} = (4x + y + 1)^2$
3) Solve $(x^2 + y^2)dx - 2xydy = 0$
4) Solve $y^2 + x^2 \frac{dy}{dx} = xy \frac{dy}{dx}$

5) Solve $x \log x \frac{dy}{dx} + y = 2 \log x$
6) Solve $\frac{dy}{dx} + y \tan x = \cos^2 x$
7) Solve $x \frac{dy}{dx} + y = \log x$
8) Solve $\frac{dy}{dx} = \frac{x-2y}{2x-4y}$

Chapter 3 (PROBABILITY)[8 MARKS]

3 marks-

1) If A & B are two events such that P(A) = 1/2, P(B) = 1/3 & P(A∩B) = 7/12 find P(A U B)
2) If three coins are tossed simultaneously, find the probability of getting almost 2 heads.
3) Two dice are rolled. Find the probability of getting a prime number as the sum of numbers on the top of dices.

4 marks-

1) From a pack of 52 cards, find the probability of getting 1 queen and 1 ace if two cards are drawn randomly.
2) A room has three electronics lamps. From a collection of 15 bulbs, 10 are good, 3 are selected at random and put in lamps. Find the probability that the room is lightened by at least one bulb.
3) An urn contains 10 red, 5 white and 5 black balls. Two balls are drawn at random. Find the probability that they are not of same colour.

Chapter- 4 (PROBABILITY DISTRIBUTION)[12 MARKS]

3 marks:

1) An unbiased coin is tossed 5 times, find the probability of getting at least 4 heads.
2) In poisson distribution, if P(3) = P(4), find P(1).
3) Fit a Poisson distribution to set of following observations

x_i	0	1	2	3	4
f_i	122	60	15	2	1

4 marks:

1) If 30% of the bulbs are defective, find the probability that out of 4 bulbs

Selected a) one is defective b) at the most two are defective.

2) Using poisson distribution, find the probability that the ace of spade will bedrown from a pack of cards at least once in 104 consecutive trials.
3) Assuming that 2 in 10 industrial accidents are due to fatigue, find the

probability that exactly 2 out of 8 accidents will be due to fatigue.

4) A multiple choice test contains 20 questions. Each question has five choices for correct answer. What is the probability of making an 80% with randomguessing.
5) 95% of students at college are between 1.1 m and 1.7m fall. Find mean and S. D., assuming normal distribution.