CHOITHRAM SCHOOL, MANIKBAGH, INDORE

Class :XII **Subject : Mathematics** **Assignment no : IV**

Date of Assignment: 17/11/17 **Date of Submission: 22/11/17**

Q No.	Question	Level
Q1	Form the differential equation of family of the circles touching y axis at origin.	Knowledge
Q2	Find the particular solution of the differential equation : $X(x^2 - 1)\frac{dy}{dx} = 1$; y = 0 when x = 2	Under standing
Q3	Solve the following differential equation : $x\,dy - y\,dx = \sqrt{x^2 + y^2}\,dx$	H.O.T.
Q4	Form the differential equation of the family of circles in the second quadrant and touching the coordinate axes.	Knowledge
Q5	Solve the following differential equation : $\sqrt{1 + x^2 + y^2 + x^2y^2} + xy\frac{dy}{dx} = 0$	Under-standing
Q6	Solve the following differential equation : $\cos^2 x\frac{dy}{dx} + y = \tan x$	logic
Q7	A merchant plans to sell two types of personal computers – a desktop model and a portable model that will cost Rs 25000 and Rs 40000 respectively. He estimates that the total monthly demand of computers will not exceed 250 units. Determine the number of units of each type of computers which the merchant should stock to get maximum profit if he does not want to invest more than Rs 70 lakhs and if his profit on the desktop model is Rs 4500 and on portable model is Rs 5000.	H.O.T.
Q8	Two cards are drawn simultaneously (without replacement) from a well – shuffled pack of 52cards. Find the mean and variance of the number of red cards.	Under-standing
Q9	A random variable X has the following probability distribution. X: 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 P (X): 0 | k | $2k$ | $2k$ | $3k$ | k^2 | $2k^2$ | $7k^2 + k$ Determine (i)k (ii) P (X < 3) (iii) P (X > 6) (iv) P (0 < X < 3)	Multi-Concept
Q10	A family has 2 children. Find the probability that both are boys, if it is known that (i) at least one of the children in a boy, (ii) the elder child is a boy.	Under-standing
Q11	A dietician wishes to mix two types of food P and Q in such a way that the vitamin contents of the mixture contain at least 8 units of vitamin A and 11 units of vitamin B. Food P costs Rs 60/kg and Food Q costs Rs 80/kg. Food P contains 3 units /kg of vitamin A and 5 units /kg of vitamin B while food Q contains 4 units /kg of vitamin A and 2 units /kg of vitamin B. Determine the minimum cost of the mixture?	H.O.T.
Q12	Given three identical balls I,II,III each containing two coins. In box I, both coins are gold coins, in box II , both are silver coins and in box III , there is one gold and one silver coin. A person chooses a box at random and takes out a coin. If the coin is gold, what is the probability that the other coin in the box is also of gold ?	Logic