D:-26|09|2016

FYBCOM-SUB-MATHS- SEM II SEPT 2016 75 MARKS-2 ½ HOURS

Q.1 Attempt any three (15 marks)

a > For the supply function $S = P^2 + P - 1$, Find the SUPPLY, when price is 15.

Also find the price when supply is 21.

b Find the total revenue function for $P = 30 + 10x - x^2$, at $x = 4$. Also find the total revenue.

c > Find $\frac{d^2y}{dx^2}$ for $Y = 7x^5 - 4x^2 + 6$.

d > If $R = 20D - D^2$ and $\eta = 1$, find D and AR.

Q.2 Attempt any three (15 marks)

a > If Rs. 2,400 amounts to Rs. 2,760 at S.I. in 3 years, find the rate of interest.

b > Find the Amount of an annuity of Rs. 6,000, payable at the end of each quarter for 2 years, the interest rate being 8%, compounded quarterly.

c > Find the present value of an ordinary annuity of Rs. 1,500 per half year, for 4 years at 8%, to be calculated half-yearly.

d > Sejal invested Rs. 6,000 in kisan vikas patra maturing to Rs. 12,000 in 8 years 6 months. Calculated the rate of interest if the compound interest was calculated quarterly.

$(\sqrt[34]{2} = 1.021)$.

Q.3 Attempt any (15 marks)

a > Calculate the correlation coefficient between the X and Y from the following data and comment.

X	1	2	3	5	4	3
Y	2	4	5	5	3	1

b > Using the spearman's formula, find the rank correlation coefficient for the given data

Marks 1	30	80	70	60	50	90
Marks 2	70	61	87	45	40	57

C > From the information given below, Find

(i) The Regression Coefficients

(ii) The lines of Regression

(iii) Estimate Y for a given X and estimate X for a given Y.

$\bar{X} = 25, \bar{Y} = 20$, $\sigma_x = 4$, $\sigma_y = 3$, $r = 0.5$, also estimate Y when X=10 and X when Y=15.

d > The two regression lines are $2x - 3y + 25 = 0$ and $9x - y - 15 = 0$. Estimate x when y = 60 and y when x = 40.

Q.4 Attempt any three (15 marks)

a> Obtain the trend values of the following time series by taking the period of moving average as four year.

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	20
Industrial (output in 1ooo units)	2412	2440	2486	2424	2450	2405	2486	2502	2510	25

b > Fit a linear trend for the following series. Estimate the number of production units for 2002.

Year	1995	1996	1997	1998	1999	2000	2001
No. of production	125	128	133	135	140	142	143

c > Find the Cost of living index number for the given data:

Year	2001	2002	2003	2004	2005
Price in Rs.	105	126	189	245	343

d > Give that the Laspeyre's and Drobish-Bowley's price index numbers are145.21 and

148.37 respectively , Find Paasche's price index number.

Q.5 Attempt any three (15 marks)

a > For a Poisson Distribution, if P(1) = P(2) , Find P(3) .(Taking $e^{-2} = 0.135$)

b > A has won 20 out of 30 games of chess with B. In a new series of six games, what is the probability that A would win (a) 4 or more games, (b) only 4 games?

c > The first and third quartiles of a normal distribution are 90 and 126 respectively . Find Mean and Standard deviation.

d > The Mean and Standard deviation of a normal Distribution are 100 and 15.Find the quartiles , Mean Deviation, Quartile Deviation and coefficient of variation.