Professor Vishwanathan Iyer's

HERAMB COACHING CLASSES

FYBCOM/ MATHS	**Marks: 100**	**Duration: 3Hrs**	**Date: 29/03/17**

Q.NO.1 ATTEMPT ANY THREE (20)

(i) Miss. Shobhana wants to invest a sum of Rs. 4000 in each option. In option A she invests for a period of 3 years at the rate of simple interest 5% per annum. If she wants the same interest in option B which is calculated at 6% simple interest how long he has to invest in this option

(ii) The difference between simple interest and compound interest compounded annually at the rate of 7% for 3 years is Rs. 45.12 only. Find the sum

(iii) Sangeeta buys washing machine worth Rs. 28,000 on instalment. She pays Rs. 8,000 at the time of purchase and balance in 4 equal annual instalments with 13% p.a. compound interest. Find the annual instalment

(iv) A person wants to borrow a loan of Rs. 10,00,000 for purchase of a farm house. Bank A offers at a rate of 6% a flat interest rate, while Bank B offers at a rate of 10% on monthly reducing balance for the same period of four years. Which bank the person should opt for?

Q.NO.2 ATTEMPT ANY THREE (20)

(i) If $(x) = x^2 - 5x + 7,$ then find $f(2)$ and $f(-3)$ and $f(\sqrt{2})$

(ii) diff. the following (a) $y = x^3 e^x + 3x. \log x$ (b) $y = \frac{4e^x + \log x}{(10^x + \sqrt{x})}$

(iii) A manufacturer can sell x items at a price of ` (330-$x$) each. The cost of producing $x$ items is `($x^2 + 10x+12$). Find the number of items to be sold so that the manufacturer can make maximum profit.

(iv) A firm produces an output of x units at a total cost $c = x3 - 4x^2 + 7x$. Find the output at which the average cost is minimum

Q.NO.3 ATTEMPT ANY TWO (12)

(i) Calculate the correlation coefficient for the following data:

x	12	9	8	10	11	13	7
y	14	8	6	9	11	12	3

(ii) From the following data, calculate coefficient of correlation:
No. of pairs of observations = 12.
Sum of x values = 35.
Sum of y values = 60.
Sum of squares of x values = 148.
Sum of squares of y values = 450.
Sum of products of x and y = 105.

(iii)   From the following data calculate coefficient of rank correlation :-

x :	63	70	45	59	75	59	35	70	59	50
y :	57	63	40	53	55	76	43	63	65	45

Q.NO.4 ATTEMPT ANY TWO (12)

(i) From the following bivariate data of X and Y, obtain the regression line of y on x and find the most probable value of Y when X = 25.

X = 10 15 14 20 30 22 20 28
Y = 60 80 75 65 90 65 70 85.

(ii) For a certain bivariate of X and Y, mean value of x is 50 and that of Y is 110. Variance of X is 64 while variance of Y is 121. Coefficient of correlation r=-0.3. Estimate the most probable value of:-
i) Y when X = 38   ii) X when Y = 100

(iii) For a bivariate data, the regression line of y on x is 5x - 6y + 90 = 0 and the regression line of x on y is 15x - 8y + 80 = 0. Find the coefficient of correlation between x and y.

Q.NO.5 ATTEMPT ANY TWO (12)

(i) The following data gives the annual sugar production of a sugar factory:

Year   1980   1981   1982   1983   1984
Production (in tones) 1,250   1,400   1,650   1,900   2,300

Compute the trend line by method of least squares, and estimate the annual sugar production for 1985

(ii) Fit a straight line trend by using the least square method of the following data:

Year   1980   1981   1982   1983   1984
Output   100   115   118   120   130

(iii)   Calculate 5 yearly moving average for the following time series:

Year   1   2   3   4   5   6   7   8   9
Annual Figure 78   67   107   142   152   155   160   177   155

Q.NO.6 ATTEMPT ANY TWO (12)

(i)   Commodity   :   A   B   C   D
          Price in 1970 :   2   5   7.5   10
          Price in 1972 :   3   7   15   12

Find simple aggregative index number &unweighted average of price relative

(ii) Calculate Laspeyere's, Paaschye's, Fisher's, Marshall Edge Worth's and DorbishBowley's Index Number for the year 1992.

Commodities   :   Rice   Wheat   Jowar   Pulses
   Price in 1990   :   9   8   5   18
   Price in 1992   :   12   10   6.5   22.5
Quantity in 1990   :   35   20   5   4
Quantity in 1992   :   40   25   8   5

(iii)   Calculate the index number using weighted average of price relative method.

Commodity   :   A   B   C   D   E
Base Year Price   :   2   3   5   8   5
Current Year Price   :   7   6   12   5   2
Weights   :   4   3   2   5   1

Q.NO.7 ATTEMPT ANY TWO (12)

(i) An ordinary coin tossed 4 times . Find the prob. Of getting(a)no heads (b)exactly one head (c) exactly three tails (d)two or more heads

(ii) The prob. that a student is not a swimmer is1/5 . Out of 5 student considered , find the prob. that (a)4 are swimmer (b)at least 4 are swimmer

(iii) Find mean and variance for(a)n=12 and p=1/3(b)n=10 and p=2/5(c)n=100 and p=0.1