Time: 2:30hrs   Max.Marks:75

FYBMS
Bus. Stat-
30/9/15

Instructions:

(1) All questions are compulsory.
(2) Each question carries the same marks.
(3) Only simple calculators are allowed.

Q1 Attempt any two out of three.   (15)

(a) The mean wage of 200 workers working in three shift in a factory is Rs.520. The average of 90 workers working in the first shift is Rs.500. The average of 60 workers working in the second shift is Rs. 450. What is the average of workers working in the third shift?

(b) The following table gives the distribution of 100 families according to expenditure. If mode of the distribution is 24, find the missing frequencies, x and y.

Expenditure in 100 Rs.	0-10	10-20	20-30	30-40	40-50
No. of families	14	X	27	Y	15

(c) At a competitive examination, at which 600 hundred students appeared, boys out-numbered girls by 96.Those qualifying for interview exceeded in number those failing to qualify by 310. The number of science graduate boys interviewed was 300 while among the arts graduate girls there were 25 who failed to qualify for interview. Altogether there were 25 who failed to qualify for interview. Altogether there were only 135 arts graduates and 33 among them failed to qualify. Boys who failed to qualify numbered 18.

Q2 Attempt any two out of three.   (15)

(a) The first of the two groups has 100 items with mean 45 and standard deviation 7. If the combined group has 250 items with mean 51, variance 130, find the mean and the standard deviation of the second group.

(b)Calculate the coefficient correlation (r) for the given data.

Age in years	40	45	50	55	60	65	70
B.P.	125	140	140	145	145	160	160

(c) Find the regression line of sales on advertising expenditure for the following data. Estimate the sales when advertising expenditure is Rs.19000.

Advt. expenditure (in 1000 Rs.)	10	11	13	13	15	17	20
Sales (in 10000 Rs.)	6	7.5	8	8.5	9	9.5	10

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Q3 Attempt any two out of three. (15)

(a) Fit a trend line to the following data giving the milk production of a cooperative society. Also find the expected production for the years 1991 and 1992.

Year	1985	1986	1987	1988	1989	1990
Milk production	20	25	27	35	38	41

(b) Find $P_{01}(L)$, $P_{01}(P)$, $P_{01}(F)$ and $P_{01}(D-B)$

commodity	Base year		Current year	
	Price	Quantity	Price	Quantity
A	12	50	20	120
B	10	100	12	70
C	14	60	15	70
D	16	30	18	50
E	15	40	18	40

(c)Find cost of living index number using family budget method for the following data. Suppose a person was earning Rs. 30000 in base year. What should be his salary in current year if his standard of living in that year is to be the same as base year.

Group	Price in Rs.		Quantity base year
	Base year	Current year	
A	6	9	25
B	16	20	100
C	2	2.5	5
D	25	30	30
E	5	8	10

Q4 Attempt any two out of three. (15)

(a) A box contains 5 blue, 6 black and 8 green marbles. If three marbles are drawn at random what is the probability that:
(i) two are blue and one black.
(ii) two are green one black.
(iii) all three are black.
(iv) one of each colour.

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(b) Mr. Kulkarni has just brought a TV from akruti services. Akruti service offers after sales service contract for Rs. 1000 for the next five year. Considering the experience of TV users, the following distribution of maintenance expenses for the next five years is formed. What is the expected value of the maintenance cost? Should Mr. Kulkarni pay Rs. 1000 for the contract?

Expenses	0	500	1000	1500	2000	2500	3000
Probability	0.35	0.25	0.15	0.10	0.08	0.05	0.02

(c) Given following pay off table suggest best action using.

(i)　　Maximin　　(ii) Maximax　(iii) Minimax Regret (iv) Hurwicz α-0.6

State of nature	Profit in lacs of Rs.			
	A_1	A_2	A_3	A_4
S_1	100	150	300	150
S_2	50	200	200	200
S_3	125	50	100	300
S_4	140	100	150	100
S_5	135	100	0	50

Q5 Attempt any three out of five.　　　　　　　　　　　　　　　　(15)

(a) Write the properties of arithmetic mean.

(b) Write in short on functions of statistics and limitations of statistics.

(c) The sum of squares of differences between ranks is found to be 60. The spearman's rank coefficient of correlation is 0.5. What is the number of pairs in the data?

(d) Find r for the given data:

$\sum x = 20$, $\sum y = 11.58$, $\sum x^2 = 90$, $\sum y^2 = 27.03$, $\sum xy = 47.13$, $n = 5$.

(e) Find three yearly moving averages and plot.

Year	1991	1992	1993	1994	1995	1996	1997	1998
Sales	8	7	9	8	10	8	7	9