/FYBMS/Bus stat/60

Q.P. Code :00887

[Time: $2\frac{1}{2}$ Hours] **[Marks:75]**

Please check whether you have got the right question paper.

N.B:
1. **All Questions are compulsory.**
2. **In Q.1 attempt both the sub- parts A and B**
3. **Figures to the right indicate marks**
4. **Use of non-programmable calculator is allowed.**
5. **Graph paper will be provided on request.**

Q.1 A) **Fill in the blanks with the correct alternative(attempt any eight)** (08)

i) The average that is affected by sampling fluctuations is ________.
(mean, median, mode)

ii) When two or more characteristics are to be represented simultaneously, ______ bar diagram is used.
(sub-divided, simple, multiple)

iii) When the data is classified with reference to time it is called_______ classification.
(quantitative, geographical, chronological)

iv) If the sample points of two events taken together constitute the sample space of an experiment, then such events are called______ events.
(exhaustive, mutually exclusive, dependent)

v) When the index number is calculated for more than one commodity it is called________.
(composite index, value index, simple index)

Vi) In _______ criterion we choose the strategy with maximum average pay-off as the best strategy.
(Maximum, Laplace, Maximax)

vii) _______ Variations occur due to weather or customs.
(cyclical, Irregular, Seasonal)

viii) When the regression equation of price on demand is used, price is the ________ variable.
(Independent, dependent, discrete)

ix) Mean deviation is ______ when calculated from median.
(maximum, least, zero)

x) For any probability mass function, sum of all the probabilities is equal to_______.
(-1,0,1)

Q.1 B) State whether the following statements are True or False. If the statement is false then give reason.(attempt any seven) (07)

i) Quartile deviation is an absolute measure of dispersion.

ii) Variance is the square of standard deviation.

iii) The coefficient of correlation is always positive.

iv) Median can be located graphically with the help of ogives.

v) With respect to Index number, the year for which comparisons are made or desired is called current year.

vi) In Maximin criterion we select the course of action with maximum value from amongst the minimum pay offs as the best action.

vii) A random variable which can take all possible values over an interval is called a discrete random variable.

viii) In decision theory probabilitie[illegible]re.

(2)

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ix) Sub-divided bar diagram is a two dimensional diagram.

x) The class mark of a class interval is $\frac{1}{2}$ (lower limit + upper limit).

Q.2 Attempt either A or B

Q.2 A)

p) Draw a more than ogive for the following data. (10)

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. fo students	4	6	10	15	25	22	11	7

Hence find i) Median Marks ii) No. of students securing Marks above 60.

q) The mean of 10 observations was found to be 20. Later on it was discovered that the observations 24 and 34 were wrongly noted as 42 and 54. Find the corrected mean. (05)

OR

Q.2 B)p) If the median for the following distribution is 33, find the missing frequency (07)

C lass Interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	10	15	30	-	25	20

Q.2 q)i Calculate the mode for the following data. (04)

Monthly wages(in hundreds)	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of employees	28	32	45	60	56	40	20

ii) The average salary of 120 employees in a factory is Rs.12000. the average salary of 20 officers is Rs.16000 and the average salary of 40 clerks is Rs.12400. find the average salary of the remaining employees. (04)

Q.3 Attempt either A or B

Q.3 A)

p) Calculate mean deviation from mean and its coefficient for the following data. (08)

Marks	0-10	10-20	20-30	30-40	40-50
No. of students	5	8	15	16	6

q) Calculate Spearman's rank correlation coefficient for the following data. (07)

X	53	98	95	81	75	71	59	55
Y	47	25	32	37	30	40	39	45

OR

Q.3 B)

P) Find in which of the following subjects, there is more variation in marks.(use coefficient of variation) (10)

Subject A	57	27	61	39	7	95	80	16	5	56
Subject B	21	16	78	70	41	43	57	35	14	22

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q) For a bivariate distribution, the following results are obtained: (05)

Mean value of X = 65, mean value of y = 53

Standard deviation of x =4.7, standard deviation of y = 5.2

Correlation coefficient = 0.78

Obtain the regression equation of x on y and hence obtain the most probable value of x when y = 50

Q.4 **Attempt either A or B**

Q.4 A)

p) The following table represents assets of a multi-national company in crores of Rs. Fit a straightline trend to the data and hence estimate the figures for the year 2008. (07)

Year	2001	2002	2003	2004	2005	2006
Assets	83	92	71	90	110	115

q) Calculate Dorbish Bowley's and Marshall Edgeworth's index number for the following data. (08)

Commodity	Base year		Current year	
	Price	Quantity	Price	Quantity
A	6	50	9	55
B	2	100	3	125
C	4	60	6	65
D	10	30	14	25

OR

Q.4 B)

p i) Calculate five yearly moving averages for the following data. (04)

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Sales	51	53	50	57	60	55	59	62	68	70

p ii) Calculate the real income for the following data. (03)

Year	2001	2002	2003	2004	2005
Income (in Rs.)	7000	8000	9000	10000	12000
Index no.	100	130	140	150	160

Q.4 q)i) Calculate the cost of living index number for the following data. (04)

Group	Index number	Weights
Food	360	48
Fuel and lighting	220	12
Clothing	230	9
Rent	160	12
Miscellaneous	190	15

(4)

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Q.4 q)ii) For the following data, calculate the index number by the following methods. (04)

a) Weighted average of price relatives method

b) Weighted aggregate method.

Commodity	Base year price(in Rs.)	Current year price (In Rs.)	Weights
A	4	5	30
B	6	12	40
C	5	8	10
D	2	3	20

Q.5 **Attempt either A or B**

A)

p) For the following conditional pay off table, select the best decision using EMV and EOL criteria (07)

	Event		
Action	S_1	S_2	S_3
A_1	80	60	110
A_2	40	0	50
A_3	100	-20	70
Probability	0.3	0.2	0.5

Q.5 q)i) A random variable X has the following probability distribution (04)

X	-2	-1	0	1	2	3
P(X=x)	0.1	K	0.2	2k	0.3	k

Find the value of k and hence find E(X) and V(X)

Q.5 q)ii From past experience it is known that A can solve 3 examples out of given 5 and B can solve 4 examples out of given 7. An example is given to both of them to solve independently. Find the probability that (04)

a) The example remains unsolved.

b) The example is solved

OR

Q.5 B) Write short notes on (attempt any three) (15)

I Histogram

II Functions of statistics

III Merits and Demerits of mean

IV Absolute and relative measures of Dispersion

V Requisites of a good questionnaire.