

FURMS / BWS - Stats / 140

15/11/16

Q.P. Code : 768101

(2½ Hours)

[Total Marks : 75

- N.B. : (1) All questions are **compulsory**.
(2) In Q.No.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**.

1. Attempt Both Subparts A AND B :

1. (A) Write the appropriate answer (Answer **Any Eight**) :

8

1. A data collected on numerically measurable characteristic is known as
 - (a) Qualitative data
 - (b) Quantitative data
 - (c) Descriptive data
 - (d) None of the above
2. Which of the following are not particulars of a useful table?
 - (a) Title
 - (b) Caption, Stub, Footnote
 - (c) Frequency density
 - (d) Source
3. The requirements of a good measure of dispersion should be
 - (a) rigidly defined
 - (b) based on all observations
 - (c) capable of further algebraic treatment
 - (d) All of the above
4. We can obtain mode graphically by plotting a
 - (a) Less than type ogive
 - (b) Frequency Curve
 - (c) Frequency Polygon
 - (d) Histogram
5. The difference between lower and upper limit of a class is called
 - (a) Class mark
 - (b) Length of class interval
 - (c) Class limit
 - (d) Midpoint of a class
6. Correlation coefficient equal to zero implies
 - (a) Strong positive relation between the two variables concerned
 - (b) Weak positive relation between the two variables concerned
 - (c) No linear relation between the two variables concerned
 - (d) None of the above
7. With respect to Time Series data, variation which cannot be predicted is called
 - (a) Irregular variation
 - (b) Cyclical variation
 - (c) Secular trend
 - (d) Seasonal variation

TURN OVER

Q.P. Code : 768101

2

8. Which of the following is a relative measure of dispersion ?
(a) Correlation coefficient (b) Rank Correlation coefficient
(c) Coefficient of Range (d) Mean Deviation
9. If a fair coin is tossed, which of the following statements is False?
(a) Head and Tail are mutually exclusive outcomes
(b) Head and Tail are equally likely outcomes
(c) Head and Tail are dependent outcomes
(d) Head and Tail are exhaustive outcomes
10. Which of the following statements is False?
(a) Variance is rigidly defined
(b) Quartile Deviation depends on extreme observations
(c) Range is used to measure variation in stock prices
(d) Standard Deviation is capable of further algebraic treatment

(B) Fill in the blanks (Answer **Any Seven**) :

7

1. When the investigator collects the data by himself, that data is called as _____.
2. A characteristic which is not measured numerically is called _____.
3. When frequencies are plotted against the midpoints of the class intervals and points are joined by line segments, then the graph plotted is called _____.
4. If the occurrence of an event A does not depend on the occurrence or non occurrence of another event B, then A and B are said to be _____ events.
5. If all observations are not equally important then we should find _____ mean.
6. Pie Diagrams are used as an alternative to _____ bar diagram.
7. Periodicals or magazines are a source of _____ data.
8. In a good questionnaire, the number of _____ should be limited.
9. Family Budget method is used to find _____ index number.
10. If an index number is constructed with a very old base we will have to _____ the base with a recent one.

TURN OVER

2. Attempt either A OR B :

2. (A) (p) Following data gives imports and exports of India for a few years. Construct a suitable diagram to represent the given data :

Year	Rupees in Crores	
	Imports	Exports
1994 - 95	17170	11850
1995 - 96	19760	11010
1996 - 97	20080	12550
1997 - 98	22330	15710

(q) (i) Among the two candidates Ramesh and Raman, only one has to be selected for a post. Their marks in the Written exam, Group discussion and Interview are given below along with their corresponding weights. Which of the two should be selected and why?

Test	Marks scored by		Weight
	Ramesh	by Raman	
Written exam	80	70	3
Group	70	80	2
Interview	50	90	1

(q) (ii) The following are the distances travelled by villagers to buy their weekly requirements from the weekly bazaar :

Kilometers travelled	1	2	3	4	5
Number of villagers	87	75	100	78	60

Find the arithmetic mean of the distance travelled.

OR

2. (B) (p) Calculate Median units of production for the following data. Also Find First and Third Quartiles and the Modal value :

Production in units	100-110	110-120	120-130	130-140	140-150
Number of students	9	70	81	70	30

2. (B) (q) Construct a frequency polygon for the data given below :

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Class	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
Frequency	5	11	18	15	7

3. Attempt either A **OR** B :

3. (A) (p) From the data given below, find the following :

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- (i) Combined Mean
- (ii) Combined Standard deviation
- (iii) Which Group is more variable with respect to wages?

	Group I	Group II
Number of workers	70	90
Mean Daily wages (In Rupees)	75	82
Standard deviation of wages	4	7

(q) The following data gives marks out of 75 in Statistics (Paper I) and Maths (Paper II) in an examination. Find Karl Pearson's coefficient of correlation :

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Marks Paper I	61	68	68	64	65	70	63	62	64	65
Marks Paper II	51	54	54	55	60	59	59	55	54	52

OR

3. (B) (p) The data below gives ranks of 8 clerks on the basis of length of service and efficiency. Calculate Coefficient of Rank Correlation and comment on the value :

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Ranks according to Seniority	1	2	3	4	5	6	7	8
Ranks according to Efficiency	5	4	2	1	7	8	6	3

- (q) A survey of domestic consumption of electricity gave the following distribution of current consumption. The electricity board wants to study the pattern of dispersion of consumption of electricity. Find the absolute and relative measures of dispersion using quartiles :

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Units consumed	Less than 200	200-400	400-600	600-800	800-1000	1000-1200	1200-1400	1400 & above
No. of Consumers	9	18	27	32	45	38	20	11

4. Attempt either A **OR** B :

4. (A) (p) The manufacturer wishes to estimate the expected production of shirts for the year 2007 . Find the estimate using a trend line :

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Year	2001	2002	2003	2004	2005	2006
Number of shirts	310	328	341	361	383	407

- (q) Calculate Index Numbers using Laspeyre's, Paasche's and Marshall Edgeworth formula for the year 1978 with base 1975 from the following data :

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Commodity	1975		1978	
	Price	Quantity	Price	Quantity
A	15	100	17	95
B	25	70	26	75
C	5	5	4	6
D	14	12	10	10

OR

4. (B) (p) Find trend by three yearly moving average method :

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Year	1991	1992	1993	1994	1995	1996	1997
Sales (in thousands of Rupees)	35	41	44	48	53	56	65

4. (B) (q) Construct the cost of living index number for 1990 from the data given below : 8

Group	Group Index for 1990	Weight
Food	300	47
Fuel & Lighting	250	10
Clothing	220	8
House Rent	150	20
Miscellaneous	200	15

5. Attempt either A OR B :

5. (A) (p) Consider the following payoff matrix where the Courses of Action, States of Nature and Profits are shown. Use the following criterion- Maximin, Minimax Regret, Hurwitz Alpha (Let $\alpha = 0.6$) and Laplace to select the appropriate action that the decision maker should take. 10

States of Nature	Actions			
	A ₁	A ₂	A ₃	A ₄
S ₁	0	10	15	20
S ₂	-20	30	30	05
S ₃	40	20	25	40
S ₄	10	15	15	30

5. (A) (q) (i) A card is drawn from a pack of 52 cards. Find the probability that it is a Jack or a Spade. 5
- (ii) A person buys a dozen eggs of which 2 are bad . He chooses 4 eggs for breakfast. Find the probability that he chooses 1 bad egg among the four chosen.

OR

Q.P. Code : 768101

7

5. (B) Attempt **Any Three** :

- (i) Write a note on Skewness and Kurtosis. 5
 - (ii) Write merits and demerits of Mode. 5
 - (iii) Define the terms Payoff, States of nature, Courses of Action with respect to Decision theory. Use a suitable illustration to explain. 5
 - (iv) Write a brief note on collection of Secondary data. 5
 - (v) Explain the statement "Correlation is not necessarily causation". 5
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