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SARDAR PATEL UNIVERSITY  
B.B.A. (ITM) (3 Years) SEMESTER – II EXAMINATION  
Tuesday, 5<sup>th</sup> April 2016  
2.30 p.m. to 4.30 p.m.  
BUSINESS STATISTICS (UM02EBBI03)

Total Marks: - 60

Q.1

(a) Define primary data. State the various methods of collecting primary data. Explain questionnaire method. (07)

(b) From the following data prepare a frequency distribution with class interval of 10 units containing 120-130 as one of the classes. Also prepare cumulative frequency distribution. (08)

110 105 126 132 149 136 125 112 135 155 125 138  
136 130 120 148 138 125 119 111 154 147 165 137  
140 132 150 137 142 135 125 126 154 147 165 137  
110 105 126 132 149 136 125 112 135 155 125 138  
136 130 120 148 138 125 119 111

Q.1

OR

(a) Define secondary data and list out sources of secondary data. (07)

(b) The number of calls from motorists per day for roadside service was recorded for the month of December 2014. The results were as follows: Prepare a frequency distribution with one of the class 125-134 taking class interval 10. Also prepare cumulative frequency distribution. (08)

154 115 122 144 128 142 133 146 118 160 153 153 123  
153 153 123 148 154 142 161 153 121 115 133 144 155  
130 155 123 150 161 138 133 144 155 115 154 142 161  
124 118 117 131 164 144 134 131 120 150 117 131 164

Q.2

(a) The following frequency distribution showing the marks obtained by 50 students in statistics at a certain college. Find the arithmetic mean and standard deviation. (08)

Marks	20-29	30-39	40-49	50-59	60-69	70-79	80-89
Frequency	1	5	12	15	9	6	2

(b) Find the missing frequencies if N=100 and Mode = 24. (07)

Expenditure(Rs. '000)	0-10	10-20	20-30	30-40	40-50
No. of persons	14	?	27	?	15

Q.2

OR

(a) What is the central tendency and measure of dispersion? Give its different measures. (03)

(b) Terrier and SFP are two stocks traded on the Stock Exchange. For the past 9 weeks recorded the Friday closing price (dollars per share): (06)

Terrier: 32 35 34 36 31 39 41 36 40  
SFP: 51 55 56 52 55 52 57 52 56

Compute the coefficient of variation for both Terrier and SFP. Compare the results and explain the meaning of these numbers.

(c) The weights of 54 college students are given in the following table. Find mode and quartiles of the frequency distribution. (06)

Weights (Kg)	60-64	65-69	70-74	75-79	80-84	85-89
No of Students	5	9	16	12	8	4

Q.3

- (a) Define correlation. Explain type of correlation (04)  
(b) Given the following value of  $x$  and  $y$ . (05)

$x$ :	12	10	14	18	16	15	17
$y$ :	9	10	8	9	7	5	6

Obtain:

- a) The regression coefficient of  $y$  on  $x$  and  $x$  on  $y$ .  
b) Estimate value of  $y$  when  $x = 10$  and  $x$  when  $y = 6$ .  
(c) Nine management graduates appeared before a selection board consisting of two members ( $X$  and  $Y$ ) for the post of probationary officer in a certain bank. If the rank order assigned by each of the two members is as given below, find the coefficient of rank correlation. (06)

Rank order( $X$ )	1	5	4	6	8	3	9	2	7
Rank order( $Y$ )	2	6	3	5	8	4	7	1	9

Q.3

OR

- (a) Define regression and write properties of regression coefficient. (04)  
(b) The following information is obtained from the result of an examination. (05)

	Marks in Mathematics ( $x$ )	Marks in English ( $y$ )
Average	39.5	47.5
S.D.	10.8	16.8

Correlation co-efficient between  $x$  and  $y = 0.42$ .

Obtain the two regression lines, and hence estimate  $y$  for  $x=50$  and  $x$  for  $y=30$ .

- (c) Calculate Karl Pearson's coefficient of correlation between expenditure on advertising and sales from the data given below. (06)  
Advertising expenditure ('000 Rs.) : 39 65 62 90 82 75 25 98 36 78  
Sales (lakh Rs.) : 47 53 58 86 62 68 60 91 51 84

Q.4

- (a) Write properties of Binomial distribution. (05)  
(b) Between the hours 2 P.M. and 4 P.M. the average number of phone calls per minute coming on the switch board of a company is 2. Find the probability that during one particular minute, three will be (i) at most 2 (ii) zero phone calls. (05)  
(c) The daily wages of 1000 workmen are normally distributed around a mean of Rs. 70 and with standard deviation of Rs. 5. Estimate the number of workers whose daily wages will be (i) between Rs. 70 and 72 (ii) between Rs. 69 and 72 (iii) greater than 75. (05)

Q.4

OR

- (a) Define: Mathematical, Statistical and Axiomatic definition probability. (05)  
(b) The probability that a bomb dropped from a plane will hit a target is  $2/5$ . Two bombs are enough to destroy a bridge. If 5 bombs are dropped on a bridge, find the probabilities; (i) the bridge will be destroyed (ii) the bridge will be saved. (05)  
(c) Assume the mean height of soldiers to be 68.22 inches with a standard deviation 3.2. How many soldiers in a regiment of 1000 would you expect to be, (i) over 72 inches tall (ii) below 66 inches? (05)

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