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MMS/DX-6175

CP-102: Business Statistics

Time : 3 Hours Maximum Marks : 70

Note: Attempt Five questions in all, Question No-1 is compulsory. All questions carry equal marks.

Q-1 Write brief notes of the following:

(a) Inferential Statistics.
(b) Mutually Exclusive Events.
(c) Standard Error.
(d) Method of Maximum likelihood.
(e) Deseasonalisation.
(f) Consumer price index.
(g) Factor reversal test. 2x7=14

Q-2 The following table shows the marks obtained by three students A, B, and C in an examination:

Student	Subject	Maximum marks in each subject				
		800 S1	700 S2	900 S3	600 S4	1000 S5
A		560	553	549	540	500
B		480	420	540	360	600
C		424	427	423	426	420

Determine which student gas shown (i) most consistent performance and (ii) most inconsistent performance. 14

Q-3 (a) The probability that a contractor will get a plumbing contract, is 2/3 and the probability that he will not get an electric contract is 5/9. If the probability of getting at least one contract is 4/5, what is the probability that he will get both the contracts?

(b) The probability that a boy passes MBA examination is 3/5 and that girl will not pass is 4/5. Calculate the probability that at least one of them pass the examination. 7+7=14

Q-4 One hundred car radios are inspected as they come off the production line and number of defects per radio set is recorded below:

No. of Defects	0	1	2	3
No. of Radio Sets	79	18	2	1

Estimate the average number of defects per radio and expected frequencies of 0, 1, 2, and 3 defects assuming Poisson distribution. 14

Q-5 Explain the following:

(a) Sampling and non-sampling errors.
(b) Sampling distributions. 7+7=14

Q-6 Calculate the expected frequencies for the following data presuming the two attributes viz., condition of home and

condition of child as independent.

		Condition of Home	
		Clean	Dirty
Condition of child	Clean	70	50
	Fairly clean	80	20
	Dirty	35	45

use chi-square test at 5% level of state whether the two attribute are independent.
(Table values of chi-square at 5% for 2 d.f. is 5.991 and for 3 d.f. is 7.815 and for 4 d.f. is 9.488) 14

Q-7 (a) What is meant by correlation? Do you think that correlation always signifies a cause-and-effect relationship between the two variables?

(b) Point out the role of regression analysis in business and industry. 7+7=14

Q-8 A company manufactures tyres. A quality control engineer is responsible to ensure that the tyres turned out are fit for use upto 40000 km. He monitors the life of the output from the production process. From each of the 10 batches of 900 tyres, he has tested 5 tyres and recorded the following data, with $\bar{X}$ and $\bar{R}$ measured in thousands of km.

Batch	1	2	3	4	5	6	7	8	19	10
$\bar{X}$	40.2	43.1	42.4	39.8	43.1	41.5	40.7	39.2	38.9	41.9
$\bar{R}$	1.3	1.5	1.8	0.6	2.1	1.4	1.6	1.1	1.3	1.5

Construct an $\bar{X}$ -chart using the above data. Do you think that the production process is in control? Explain. 14