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05MBA13

First Semester MBA Degree Examination, December 2011
Statistics for Management

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. What do you mean by statistical investigation? Explain the steps followed in carrying out the statistical investigation. **(07 Marks)**

b. Draw an ogive and locate the quartile-3, using the following data: **(05 Marks)**

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Students	9	42	61	140	250	102	71	25

c. Find the average marks of a student from the following data: **(08 Marks)**

Marks below	10	20	30	40	50
No. of students	25	40	55	60	75

2 a. Calculate the median and mode for the following data: **(07 Marks)**

Earnings(₹)	66-67	67-68	68-69	69-70	70-71	71-72
No. of persons	15	24	40	20	14	11

b. Calculate the quartile deviation for the following data series: **(05 Marks)**

x	0	1	2	3	4	5	6
f	2	10	15	12	8	2	1

c. Write short note on:
i) The sources of primary data and collection methods.
ii) The advantages and disadvantages of diagrammatic and graphical representation of statistical data. **(08 Marks)**

3 a. Calculate the Fisher's index number for the data given below: **(07 Marks)**

Item	Base year		Current year	
	Price (₹)	Value (₹)	Price (₹)	Value (₹)
A	4	300	10	560
B	2	200	2	240
C	4	240	6	360
D	10	300	12	288
E	8	320	12	432

b. The mean systolic blood pressure of 200, 60 years old women patients with glaucoma is 140mmHg with s.d. of 25mmHg. Calculate 95% confidence intervals of sample mean. **(05 Marks)**

c. From the data given below, find
i) the two regression coefficients and γ
ii) regression equation of y on x
iii) y when x = 30. **(08 Marks)**

x	25	28	35	32	31	36	29	38	34	32
y	43	46	49	41	36	32	31	30	33	39

4 a. Define time series. Explain the various components of time series. **(07 Marks)**

b. Let A & B be two events such that P(4) = 1/2, P(B) = 1/3 and P(A∩B) = 1/4. Find P(A∪B) and P(A/B). **(05 Marks)**

c. Find standard deviation and coefficient of variation in the following frequency distribution.

Age in years	Above 10	Above 20	Above 30	Above 40	Above 50	Above 60	Above 70
No. of workers	29	27	23	19	11	5	2

(08 Marks)

5 a. Find the Karl Pearson's coefficient of correlation. **(07 Marks)**

x	50	60	75	84	47	52	59	44	33	46
y	45	52	50	65	40	65	50	60	32	51

b. The mean and s.d. of 50 sample observations were found to be 62 and 7.5 respectively. If the value of each observation is increased by 3 units, will there be any change in the value of mean and s.d.? Justify with reasons. **(05 Marks)**

c. Suppose a random sample of 100 – 12 year old boys is chosen and height of these 100 boys is recorded. The sample mean height is 64 inches and the sample standard deviation is 5 inches. Assuming the heights of 12 year old boys to be normally distributed, find i) the probability of height above 65 inches. ii) The number of boys with heights between 60 and 68 inches. **(08 Marks)**

6 a. 5% of electric bulbs manufactured by a company are defective. Use the Poisson's distribution to find the probability that, in a sample of 100 bulbs,
i) none will be defective ii) 5 bulbs will be defective. **(07 Marks)**

b. A class consists of 32 students from Kerala, 12 from AP and 20 from Karnataka. The mean scores of students from Kerala, AP and Karnataka are 72, 61 and 65 respectively. Find the mean score of the class as a whole. **(05 Marks)**

c. In a survey of 200 boys, 75 were intelligent, 40 had educated fathers, while 85 of the unintelligent had uneducated fathers. Do these figures support the hypothesis that educated father's hvee intelligent boys? $[(\chi^2_{1.d.f}) = 3.84]$ **(08 Marks)**

7 a. Explain the terms: Sampling distribution ii) Probability sampling iii) Standard error. **(07 Marks)**

b. Calculate the coefficient of correlation using the regression lines $5y = 4x + 30$ and $20x = 9y + 107$; where $5y = 4x + 30$ is regression equation of y on x and $20x = 9y + 107$ is the regression equation of x on y. **(05 Marks)**

c. Brief about i) the advantages and limitations of sampling ii) simple random sampling without replacement. **(08 Marks)**

8 a. Explain ANOVA. State the assumptions underlying ANOVA. **(07 Marks)**

b. Calculate the consumer price index for the following data: **(05 Marks)**

Group	Index	Weight
Food	340	60
Clothing	310	5
Fuel and light	220	8
Rent and rates	150	9
Miscellaneous	300	18

c. A random sample of 100 workers from south India, showed that their mean wages are ₹47 per hour, with standard deviation of ₹28. A random sample of 1500 workers from North India gives a mean wage of ₹49 per hour with a standard deviation of ₹40. Is there any significant difference between their mean level of wages? [Given $Z_{tab} = 1.96$] **(08 Marks)**

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