



Faculty of Commerce and Management Studies

Bachelor of Business Management (General) Degree

Year II Examination (External) - 2008

BMG E 2045/ BMGT 23045 - Statistics for Management

No. of Questions: 07

Time: 03 hours

Answer any five (05) questions only.

- (01) a) I What is " Statistics"?
- II What is " Business Statistics"?
- III Show the importance of Statistics for Business.
- (06 Marks)
- b) I Give the characteristics of random experiment.
- II Explain the types of random variables.
- (08 Marks)
- c) Briefly explain the descriptive data analysis methods by using practical examples.
- (06 Marks)
- (Total 20 Marks)

- (02) a) The following table gives the monthly expenditure of two families. Present the data graphically and analyze them.

Item of Expenditure	Family A (Income Rs. 3000)	Family B (Income Rs.5,000)
Food	840	1500
Clothing	480	1000
House rent	750	1000
Fuel and lighting	300	400
Education	300	400
Miscellaneous	210	300
Savings	120	400

(08 Marks)

- b) The table below shows the time (minutes) spent by each employee to produce a certain product of an organization with 50 employees.

15	19	18	18	16	19	24	17	21	13
21	26	19	30	19	27	20	30	25	20
18	36	17	39	11	33	22	17	29	18
35	20	28	19	32	20	19	26	12	22
17	25	14	31	16	21	10	18	15	16

- i) Build a frequency distribution with 6 classes intervals (05 Marks)
- ii) Draw the histogram and frequency polygon (05 Marks)
- iii) Calculate the mode (02 Marks)
- (Total 20 Marks)

- (03) a) Define probability and explain the importance of this concept in statistics. (04 Marks)

- b) An equipment will function only when all three components A, B and C are functioning. The probability of A failing during one year is 0.15, that of B failing is 0.05 and that of C failing is 0.10. What is the probability that equipment will fail before the end of one year? (04 Marks)

- (c) A salesman for a company sells two products A and B During a morning he makes three calls on customers. Suppose the chance that on any call he makes a sale of product A is $\frac{1}{3}$ and the chance that he makes a sale of B is $\frac{1}{4}$. Suppose also that the sale product A on any call is independent of the sale of product B, and that the results of the three calls are independent of one another.

Calculate the probability that the salesman will,

- a) Sell both products, A and B , at the first call
- b) Sell one product at the first call
- c) Make no sales of product A during the morning
- d) Make at least one sale of product B during the morning
- (08 Marks)

- d) The probability that a blue-eyed person is left handed is $\frac{1}{7}$. The probability that a left handed person is blue-eyed is $\frac{1}{3}$. The probability that a person neither of these attributes is $\frac{4}{5}$. What is the probability that a person has both attributes?

(04 Marks)
(Total 20 Marks)

- (04) a) The probability that an entering college student will graduate is 0.4. Determine the probability that out of 5 students,
- I None
 - II 1
 - III at least 1
 - IV all will be graduate.
- (06 Marks)

- b) During peak periods, customers enter a bank at the rate of 90 per hour. What is the probability that 4 or more customers enter the bank in a six minutes interval during a peak period?
- (06 Marks)

- c) A set of final examination grades in a statistics course was found to be normally distributed with a mean 73 and a standard deviation of 8.
- i) Over what grade of test scores has been obtained by only 5% of students?
 - ii) If the teacher offers grades distributed on a curve (gives A's to the top 10% of the class regardless of the score) are you better off with grade of 81 on this exam or a grade of 68 on a different exam where the mean is 62 and the standard deviation is 3?

Show your answer statically and explain.

(08 Marks)
(Total 20 Marks)

- (05) a) i) What do you mean by analysis of time series?
ii) Describe the various components of time series.
- (06 Marks)

- b) Sales figures of a company are given below.

Year	2002	2003	2004	2005	2006	2007	2008
Sales (in '000 rupees)	380	410	450	480	520	560	630

- i) Complete the linear trend by the method of least squares.
 - ii) Estimate the amount of sales of the year 2009 and 2010.
- (08 Marks)

- (c) Calculate the seasonal index for the following data by Link Relative method

Production in '000 tones				
Year	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
2005	60	62	61	63
2006	65	58	56	61
2007	68	63	63	67
2008	70	59	56	62

(06 Marks)
(Total 20 Marks)

- (06) a) i) Define Central Limit Theorem.
 ii) What is meant by “ Finite Population Correction Factor”?
 (04 Marks)

- b) In a large population, there are 30% fair skin people. If the distribution of fair skin people is nominal,
 i) If a random sample of 200 people is selected, what is the probability that the percentage of fair haired people is 25% or less?
 ii) How would the above answer change if the size is increased to 500?
 (08 Marks)

- c) The mean score of a random sample of 50 students appearing for an examination is 35 with a standard deviation 16.

Establish a 98% confidence interval estimate of the mean score of all the students appearing for the examination.

(08 Marks)
 (Total 20 Marks)

- (07) a) A cellular phone company conduct a survey to determine the ownership of cellular phones in different age groups. The results for 1000 households are shown in table below. Test the hypothesis that the proportion owning cellular phones are the same for the different age groups.

Using Cellular phone	18-24	25-54	55-64	≥ 65	Total
Yes	200	110	70	50	430
No	50	140	180	200	570
Total	250	250	250	250	1000

.(12 Marks)

- b) A group of manufacturing company was describing a particular brand of soap through a large number of retail shops. Before having a heavy advertisement campaign the mean of sales per week per shop was 140 dozens. After the campaign, a sample of 25 shops was taken and the mean of sales was found to be 145 dozen with a standard deviation 15. Can you consider that the advertisement campaign is effective? Show your answer statistically and explain.

(08 Marks)
 (Total 20 Marks)