



Name :

Roll No. :

Invigilator's Signature :

CS/MMA/SEM-1/MMA-102/2012-13

2012

QUANTITATIVE TECHNIQUES - II

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives from the following :

$10 \times 1 = 10$

- i) What are the criteria for evaluating secondary data sources ?
 - a) Relevance of data; who collects the data; method of data collection; who paid for the research
 - b) Source of data; who collects the data; method of data collection. construct of research
 - c) Relevance of data; who collects the data; method of data collection; evidence of careful work
 - d) Source of data; who collects the data; method of data collection; construct of data.



- ii) Suppose the observations are available on the monthly bond prices of 100 companies for 5 years. What type of data are these ?
- a) cross-sectional
 - b) Time-series
 - c) Panel
 - d) Qualitative.
- iii) The type of sampling in which each member of the population selected for the sample is returned to the population before the next member is selected is called
- a) sampling without replacement
 - b) Sampling with replacement
 - c) Simple random sampling
 - d) Systematic sampling.
- iv) Which of the following types of sampling involves the researcher determining the appropriate sample sizes for the groups identified as important, and then taking convenience samples from those groups ?
- a) Proportional stratified sampling
 - b) Quota sampling
 - c) One-stage cluster sampling
 - d) Two-stage cluster sampling.
- v) When measurement data are not normally distributed, which of the following measures of central tendency and variability are recommended ?
- a) Mean and standard deviation
 - b) Mean and Range
 - c) Median and variance
 - d) Median and range.



- vi) A common assumption about the players in a game is that
- a) neither player knows the payoff matrix
 - b) the players have different information about the payoff matrix
 - c) only one of the players pursues a rational strategy
 - d) the specific identity of the players is irrelevant to the play of the game.
- vii) The Prisoner's Dilemma is not a constant sum game because
- a) some outcomes are better than others for both players
 - b) the prisoner's sentences are necessarily non-zero
 - c) the game does not have a Nash equilibrium
 - d) the sum of the prisoner's sentences is non-zero.
- viii) In game theory, a choice that is optimal for a firm no matter what its competitors do is referred to as
- a) the dominant strategy
 - b) the game-winning choice
 - c) super optimal
 - d) a gonzo selection.
- ix) If an estimator is said to have minimum variance, which of the following statements is NOT implied ?
- a) The probability that the estimate is a long way away from its true value is minimized
 - b) The estimator is efficient
 - c) Such an estimator would be termed "best"
 - d) Such an estimator will always be unbiased.



- x) Consider the OLS estimator for the standard error of the slope coefficient. Which of the following statement(s) is(are) true ?
- a) The standard error will be positively related to the residual variance
 - b) The standard error will be negatively related to the dispersion of the observations on the explanatory variable about their mean value
 - c) The standard error will be negatively related to the sample size
 - d) The standard error gives a measure of the precision of the coefficient estimate.
 - i) (b) and (d) only
 - ii) (a) and (c) only
 - iii) (a), (b) and (c) only
 - iv) (a), (b), (c) and (d).

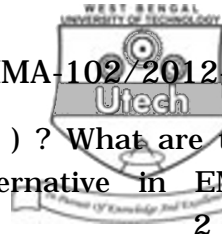
GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. What do you mean by a questionnaire ? State the essential points to be observed in drafting a good questionnaire ? 2 + 3
3. Find the mean and the standard deviation of the first n natural numbers.
4. Show that the sample mean based on a simple random sample with replacement (srswr) is an unbiased estimator of the the population mean.
5. For what value of a, the game with the following payoff matrix is strictly determinable ?

		B		
		I	II	III
A	I	a	5	2
	II	- 1	a	- 8
	III	- 2	3	a



6. What is Expected Monetary Value (EMV) ? What are the steps involved while selecting the alternative in EMV criterion. 2 + 3

GROUP - C

(Long Answer Type Questions)

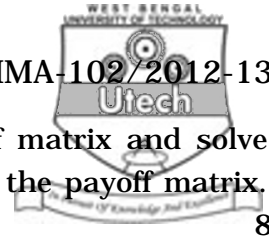
Answer any *three* of the following. 3 × 15 = 45

7. a) Examine the merits and limitations of the observation method in collecting material. Illustrate your answer with suitable examples. 6
- b) Clearly explain the difference between collection of data through questionnaires and schedules. 5
- c) Explain fully the survey method of research. 4
8. a) Establish the relation between mean, median and mode. 4
- b) You are given the following incomplete frequency distribution. It is known that the total frequency is 1,000 and that the median is 413.11. Estimate by calculation the missing frequencies. 6

<i>Values</i>	<i>Frequency</i>
300 – 325	5
325 – 350	17
350 – 375	80
375 – 400	?
400 – 425	326
425 – 450	?
450 – 475	88
475 – 500	9



- c) The mean and standard deviation of 20 items is found to be 10 and 2 respectively. At the time of checking it was found that one item 8 was incorrect. Calculate the mean and standard deviation if (i) the wrong item is omitted, and (ii) it is replaced by 12. 5
9. a) What are random numbers and how can you see them in drawing a random sample from a finite population ? 4
- b) A simple random sample of size 5 is drawn without replacement from a finite population consisting of 41 units. If the population standard deviation is 6.25, what is the standard error of sample mean ? 4
- c) Calculate the coefficient of skewness based on quartiles from the following :
- | | |
|---------------|------|
| More than 0 | 5474 |
| More than 10 | 5426 |
| More than 20 | 5259 |
| More than 30 | 5023 |
| More than 40 | 4475 |
| More than 50 | 3712 |
| More than 60 | 2718 |
| More than 70 | 1406 |
| More than 80 | 764 |
| More than 90 | 370 |
| More than 100 | 160 |
| More than | 39. |



10. a) Use dominance to reduce the payoff matrix and solve the following game problem given by the payoff matrix.

		B		
		1	7	2
A	6	2	7	
	0	1	6	

8

- b) A newspaper boy has the following probabilities of selling a magazine.

No. of copies sold	10	11	12	13	14
Probability	0.10	0.15	0.20	0.25	0.3

Cost of a copy is 30 paise and the sale price is 50 paise. He cannot return unsold copies. How many copies should he order ?

7

11. Write short notes on any *three* of the following : 3 × 5

- a) Interview method
- b) Differences between Pure and Mixed strategies
- c) Properties of a Markov Chain
- d) Monte-Carlo Technique
- e) Expected opportunity loss criterion.

