

**COMMONWEALTH EXECUTIVE
MBA/MPA PROGRAMME**

Term-End Examination

December, 2007

C-7 : QUANTITATIVE TECHNIQUES

Time : 3 hours

Maximum Marks : 100

(Weightage 70%)

Note : *There are two Sections A and B. Attempt any **three** questions from Section A, carrying 20 marks each. Section B is **compulsory** and carries 40 marks.*

SECTION A

1. (a) What are quantitative techniques ? Describe their functions and limitations.
- (b) Calculate the simple average of weekly wages and weighted average of weekly wages from the following data :

	No. of workers	Weekly wages
Unskilled workers	1500	12
Semi-skilled workers	1800	15
Skilled workers	2200	18

2. (a) Calculate the third quartile from the following data :

Wage	No. of Workers
50 – 100	15
100 – 150	40
150 – 200	35
200 – 250	60
250 – 300	125
300 – 350	100
350 – 400	70
400 – 450	40
450 – 500	15

- (b) Calculate the mean deviation from the median from the following data :
- 60 62 70 69 63 65 60 68 63 64
3. (a) Two unbiased dice are tossed. Let 'w' denote the number on the first dice and 'r' denote the number on the second dice. Let A be the event that $w + r \leq 4$ and B be the event that $w + r \leq 3$. Are A and B independent ?
- (b) If X is a random variate which is distributed normally with mean 60 and standard deviation 5, find the probabilities of the following events :
- (i) $50 \leq X \leq 65$
- (ii) $X \leq 50$
4. (a) What is a 'Poisson Process' ? Discuss some business and economic situations where Poisson probability model is appropriate.

- (b) Obtain the regression equation of Y on X from the following data :

X	10	9	7	8	11
Y	6	3	2	4	5

SECTION B

5. (a) Discuss the following :
- (i) Simple random sampling with replacement
 - (ii) Simple random sampling without replacement
- (b) Calculate the Karl Pearson's coefficient of correlation from the following pairs of values :

X	12	9	8	10	11	13	7
Y	14	8	6	9	11	12	3

6. (a) Distinguish between
- (i) Critical region and the region of acceptance
 - (ii) Level of significance and p-value
- (b) A manufacturer claims that the average mileage of scooters of his company is 40 km/ltr. A random sample of 20 scooters of the company showed an average mileage of 42 km/ltr. Test the claim of the manufacturer on the assumption that the mileage of scooter is normally distributed with a standard deviation of 2 km/ltr.