(AUTONOMOUS)

MCom / MCom (CA) DEGREE EXAMINATION MAY 2018
(Second Semester)

Common to Branches – **COMMERCE &**
COMMERCE WITH COMPUTER APPLICATIONS

QUANTITATIVE TECHNIQUES

Time : Three Hours Maximum : 75 Marks

Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 15 = 75)

1 a Briefly explain correlation and its types. (5)

b Obtain two regression equation for the given data :

X :	78	77	85	88	87	82	81	77	76	83	97	93
Y :	84	82	82	85	89	90	88	92	83	83	98	99

OR

c Briefly explain the chief characteristics of normal distribution.

d Fit a binomial distribution for the given data :

X :	0	1	2	3	4	5	6	7	8	9	10
f :	6	20	28	12	8	6	0	0	0	0	0

2 a Briefly explain the testing procedure for single mean in large samples.

b Before an increase in excise duty on tea, 800 persons out of a sample of 1,000 persons were found to be tea drinkers. After an increase in duty, 800 people were tea drinkers in a sample of 1,200 people. Using standard error of proportion, state whether there is a significant decrease in the consumption of tea after the increase in excise duty at 5% level.

OR

c A drug is given to 10 patients, and the increments in their blood pressure were recorded to be 3 ,6, -2, 4, -3, 4, 6, 0, 0, 2. Is it reasonable to believe that the drug has no effect on change of blood pressure at 5% level of significance ($t_{\alpha.0.05,9df} = 2.26$).

d Two types of drugs were used on 5 and 7 patients for reducing their weight. Drug A was imported and drug B is indigenous. The decrease in the weight after using the drugs for six months was as follows :

Drug A :	10	12	13	11	14		
Drug B :	8	9	12	14	15	10	9

Is there a significant different in the efficiency of two drugs? If not, which drug should you buy. (for V = 10, $t_{0.05} = 2.223$).

3 a Briefly explain the different methods available in chi-square test.

b Two samples are drawn from two normal population. From the following data, test whether the two samples have the same variance at 5% level :

Sample 1 :	60	65	71	74	76	82	85	87		
Sample 2 :	61	66	67	85	78	63	85	86	88	91

OR

c The three samples below have been obtained from normal populations with equal variances. Test the hypothesis that the sample means are equal : Carryout one way ANOVA.

Cont...

3 c Cont...

8	7	12
10	5	9
7	10	13
14	9	12
11	9	14

The table of F at 5% level of significance for $V_1 = 2$, $V_2 = 12$ is 348. (15)

4 a Briefly describe the different modellings in OR. (5)

b Use simplex method, to solve the following LPP :
Max $z = 4x_1 + 10x_2$
Subject to constraints
$2x_1 + x_2 \leq 50$
$2x_1 + 5x_2 \leq 100$
$2x_1 + 3x_2 \leq 90$
$x_1 \geq 0$ and $x_2 \geq 0$

OR

c Obtain the optimum solution to the following transportation problem : (15)

	D_1	D_2	D_3	D_4	Supply
S_1	3	7	6	4	5
S_2	2	4	3	2	2
S_3	4	3	8	5	3
Demand	3	3	2	2	

5 a Solve the following assignment problem : (15)

	A	B	C	D
I	1	4	6	3
II	9	7	10	9
III	4	5	11	7
IV	8	7	8	5

OR

b Briefly explain the different criterions of Decision under uncertainty. (8)

c Solve the following traveling Salesman's problem so as to minimize the cost per cycle : (7)

For item	To item				
	A	B	C	D	E
A	-	4	7	3	4
B	4	-	6	3	4
C	7	6	-	7	5
D	3	3	7	-	7
E	4	4	5	7	-

Z-Z-Z END