PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MCom (IB) DEGREE EXAMINATION MAY 2018
(Second Semester)

Branch – **INTERNATIONAL BUSINESS**

BUSINESS STATISTICS AND MATHEMATICAL OPTIMIZATION TECHNIQUES

Time : Three Hours Maximum : 75 Marks

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

1 a Briefly explain the uses of Statistics in Business. (5)

b Calculate mean, median and mode for the given data : (10)

C. I :	0-10	10-20	20-30	30-40	40-50	50-60
f :	5	10	25	30	20	10

OR

c Briefly explain the different methods of graphical presentation of Data. (5)

d Calculate the co-efficient of variation for the given data : (10)

C. I :	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
f :	4	6	20	40	45	31	20	9	5

2 a Briefly explain the correlation and its types. (5)

b Obtain two regression equations for the given data : (10)

X :	60	62	65	70	72	48	53	73	65	82
Y :	68	60	62	80	85	40	52	62	60	81

Estimate X when Y = 75, and estimate Y when X = 92.

OR

c Explain Binomial distribution with its properties. (5)

d Intelligence test on two groups of boys and girls gave the following results :

	Mean	S.D	N
Girls	75	15	150
Boys	70	20	250

Is there a significant difference in mean scores obtained by boys and girls?

3 a A study of the height of 18 pairs of husbands and their wives in a factory shows that the co-efficient of correlation is 0.52. Apply t-test to find whether correlation is significant. [for 16 d.f @ 5% level, t table value is 2.12]. (5)

b In an experiment on immunization of cattle from tuberculosis the following results were obtained : (10)

	Affected	Not affected
Inoculated	12	26
Not inoculated	16	6

Calculate χ^2 and discuss the effect of vaccine in controlling susceptibility to tuberculosis. (5% value of chi-square for one d.f = 3.84)

OR

c Briefly explain the procedure of one way classification. (5)

d In a trivariate distribution

$\sigma_1 = 2$; $\sigma_2 = \sigma_3 = 3$

$r_{12} = 0.7$; $r_{23} = r_{31} = 0.5$

Find i) $b_{12.3}$ and (ii) $b_{13.2}$

Cont...

4 a Briefly explain scope and applications of O. R.

b Obtain an initial basic feasible solution to the following T.P using least cost method :

	D_1	D_2	D_3	D_4	Capacity
O_1	1	2	3	4	6
O_2	4	3	2	0	8
O_3	0	2	2	1	10
Demand	4	6	8	6	-

where O_j and D_j denote i^{th} origin and j^{th} destination respectively.

OR

c Solve the assignment problem : (15)

	E	F	G	H
A	18	26	17	11
B	13	28	14	26
C	38	19	18	15
D	19	26	24	10

5 a Briefly explain major steps involved in EMV criterion and EOL. (6)

b A manager has a choice between i) A risky contract promising Rs. 7 laksh with probability 0.6 and Rs. 4 lakhs with probability 0.4 and (ii) A diversified portfolio consisting of two contracts with independent outcomes each promising Rs. 3.5 lakhs with probability 0.6 and Rs. 2 lakhs with probability 0.4. Construct a decision tree for using EMV criteria. Can you arrive at the decision using EMV criteria. (9)

OR

c Explain the terms :
(i) Pure strategy (ii) Mixed strategy (iii) Saddle point
(iv) Payoff matrix (8)

d Solve the following 2 x 2 game graphically : (7)

Player A	Player B			
	B_1	B_2	B_3	B_4
A_1	2	1	0	-2
A_2	1	0	3	2

Z-Z-Z END