



SB-0333

First Year B. Com. (Honours) Examination
March / April – 2011
Mathematics & Statistics

Time : 3 Hours]

[Total Marks : 70

Instruction :

(1)

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Fillup strictly the details of signs on your answer book.

Name of the Examination :

Name of the Subject :

Subject Code No. : Section No. (1, 2,.....) :

Seat No. :

- (2) Answer all the questions.
- (3) Figures to the right indicate full marks of the questions.
- (4) Graph papers and statistical tables will be supplied on request.

1 (a) Evaluate : 6

(1) $\lim_{n \rightarrow 1} \frac{(n+1)}{1+2+3+\dots+n}$

(2) $\lim_{x \rightarrow 3} \frac{x^2 - 5x + 6}{x^2 - 9}$

(b) The demand function of a commodity is $X^2 = 75 - P$. 4
then obtain the value of the demand to get the maximum Revenue.

2 (a) Evaluate : 6

(1) $\int x(x-1)(1+\frac{1}{x})dx$

(2) $\int_0^1 (2x-3)^2 dx$

(b) Maitree deposited Rs. 1,00,000 in a nationalized 4
bank for three years. If the rate of interest is 7% p.a. Calculate the interest that bank has to pay to Maitree after three years if interest is compound annually. Also calculate the amount at the end of third year.

- 3 (a) Explain the following terms : 4
 (1) Future value (2) Present value.
 (b) An investor intends purchasing a three year 3
 Rs. 1000 par value bond having nominal interest rate
 of 10%. At what price has the bond may be purchased
 now if it matures a rate of return of 14% ?
 (c) How much amount is required to be invested every 3
 year so as to accumulate Rs 3,00,000 at the end of
 10 years if interest is compounded annually at 10% ?

- 4 (a) Explain the following terms : 4
 (1) objective function (2) optimum solution.
 (b) Solve the following linear programming problem by 6
 simplex method :
 Maximize $Z = 2x_1 + 5x_2$ subject to
 $x_1 + 3x_2 \leq 3$, $3x_1 + 2x_2 \leq 6$, $x_1 \geq 0$, $x_2 \geq 0$.

- 5 (a) Solve the given LPP by graphical method : 5
 Minimize $Z = 30x + 50y$ subject to
 $3x + y \geq 15$, $x + 2y \geq 12$, $3x + 2y \geq 24$
 $x \geq 0$, $y \geq 0$.
 (b) Obtain IBFs by Vogel's approximation method. Also 5
 obtain total transportation cost :

Origin	D_1	D_2	D_3	Supply
O_1	3	2	5	20
O_2	2	3	4	30
O_3	2	2	3	10
Demand	10	10	20	

- 6 (a) Explain the following terms with illustration : 4
 (1) Row matrix (2) Unit matrix.
 (3) Symmetric (4) Non singular matrix.
 (b) Solve the following questions by using inverse of a 6
 matrix :
 $x + 2y + 3z = 6$, $2x + 4y + z = 7$, $3x + 2y + 9z = 14$.

7 (a) If $A = \begin{bmatrix} 7 & 3 & -5 \\ 0 & 4 & 2 \\ 1 & 5 & 4 \end{bmatrix}$ and $B = 3A$ 5

and $C = B + 2A - 5I$ then find $D = 2A + B - C$.

(b) Obtain IBFs and TTC by max(min-max) method : 5

<i>Origin</i>	D_1	D_2	D_3	D_4	<i>Supply</i>
O_1	15	17	21	18	250
O_2	20	22	18	14	300
O_3	25	28	17	14	400
<i>Demand</i>	200	225	275	250	950

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