TAMIL NADU OPEN UNIVERSITY

Chennai - 15

School of Science

HOME / SPOT ASSIGNMENT

Programme Code No	: 131
Programme Name	: B.Sc., Mathematics
Course Code & Name	: BMS-31, Real and Complex Analysis
Batch	: CY 2018
No.of Assignment	: One Assignment for Each 2 Credits
Maximum CIA Marks	: 25 (Average of Total No. of Assignment)

Assignment – I

Answer any one of the question not exceeding 1000 words

1. State and prove Holder's inequality and hence deduce Cauchy-Schwarz inequality.
2. State equivalent conditions for a subset A our metric space X is dense in X.
3. Prove that ℓ_2 is complete, with usual notation.

Assignment – II

Answer any one of the question not exceeding 1000 words

1. Prove that $\mathbb{R}$ is connected, proving necessary results.
2. Prove that a metric space X is totally bounded if and only if every sequence in X has a Cauchy subsequence.
3. State and prove Cantor's Intersection Theorem.

Assignment – III

Answer any one of the question not exceeding 1000 words

1. State and prove equivalent conditions for a metric space X to be compact.
2. List Properties of Riemann integral and prove.
3. State and prove first fundamental theorem of Calculus.

Assignment – IV

Answer any one of the question not exceeding 1000 words

1. State and prove Cauchyôs integral theorem for Rectangle.
2. State and prove Moreraôs theorem.
3. State and prove maximum modulus theorem.

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HOME / SPOT ASSIGNMENT

Programme Code No : 131
Programme Name : B.Sc., Mathematics
Course Code & Name : BMS-32, Linear Algebra and Boolean Algebra
Batch : CY 2018
No.of Assignment : One Assignment for Each 2 Credits
Maximum CIA Marks : 25 (Average of Total No. of Assignment)

Assignment – I

Answer any one of the question not exceeding 1000 words

1. Define the quotient Space and prove it is an vector space.
2. Prove that the set of all linear transformations from V to W is a vector space where V and W are vector spaces
3. Prove that any two bases of a finite dimensional vector space V have the same number of elements, proving necessary results.

Assignment – II

Answer any one of the question not exceeding 1000 words

1. State and prove equivalent conditions for a subset of a vector space to be a basis.
2. Prove that any vector space of dimension n over a field F is isomorphic to $V_n(F)$.
3. Prove that dim W $\leq$ dim V and dim $\frac{V}{W}$ = dim V ï dim W where W is a subspace of a finite dimensional vector space V.

Assignment – III

Answer any one of the question not exceeding 1000 words

1. If A and B are subspaces of a finite-dimensional vector space V, then prove that, dim (A + B) = dim A + dim B ï dim (A ∩ B).
2. Explain Gram-Schmidt orthogonalisation process and illustrate.
3. Explain Lagrange Method to reduce a quadratic form to diagonal form and illustrate.

Assignment – IV

1. Write a note on Distributive Lattices.
2. Write a note on Modular Lattices.
3. Explain the process of converting a Boolean ring with identity element 1 ≠ 0 in to a Boolean algebra.

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ASSIGNMENT

Programme Code No	: 131
Programme Name	: B.Sc., Mathematics
Course Code & Name	: BMS-33N, Quantitative Techniques
Batch	: CY 2018
No.of Assignment	: One Assignment for Each 2 Credits
Maximum Marks	: 25 (Average of Total No. of Assignment)

Assignment – I

Answer any one of the question not exceeding 1000 words.

1. Use Charne's penalty method to

Minimize $Z = 2x_1 + x_2$

Subject to the constraints:

$3x_1 + x_2 = 3$

$4x_1 + 3x_2 \geq 6$

$x_1 + 2x_2 \leq 3$

$x_1, x_2 \geq 0$

2. Use two-phase simplex method to

Minimize $Z = \frac{15}{2}x_1 - 3x_2$

Subject to the constraints:

$3x_1 - x_2 - x_3 \geq 3$

$x_1 - x_2 + x_3 \geq 2$

$x_1, x_2, x_3 \geq 0$

3. Use simplex method to solve the following L.P.P.

Maximize $Z = 7x_1 + 5x_2$

Subject to the constraints:

$x_1 + 2x_2 \leq 6$

$4x_1 + 3x_2 \leq$

$x_1, x_2 \geq 0$

Assignment – II

Answer any one of the question not exceeding 1000 words.

1. Use the duality to solve the following L.P.P.:

Maximize $Z = 2x_1 + x_2$

Subject to the constraints:

$x_1 + 2x_2 \leq 10$
$x_1 + x_2 \leq 6$
$x_1 - x_2 \leq 2$
$x_1 - 2x_2 \leq 1$

$x_1, x_2, x_3 \geq 0$

2. Find the optimum integer solution to the following all I.P.P.:

Maximize $Z = x_1 + 2x_2$

Subject to the constraints :

$x_1 + x_2 \leq 7$

$2x_1 \leq 11$

$2x_2 \leq 7$

$x_1, x_2 \geq 0$ and are integers.

3. Maximize $Z = \frac{3}{4} x_1$ ï $150x_2 + \frac{1}{50} x_3$ ï $6x_4$

Subject to the constraints:

$\frac{1}{4} x_1$ ï $60x_2 - \frac{1}{25} x_3 + 9x_4 \leq 0$

$\frac{1}{2} x_1$ ï $90x_2 - \frac{1}{50} x_3 + 3x_4 \leq 0$

$x_3 \leq 1$

$x_1, x_2, x_3, x_4 \geq 0$

Assignment – III

Answer any one of the question not exceeding 1000 words.

1. Use dual simplex method to solve the L.P.P.

Minimize $Z = x_1 + 2x_2 + 3x_3$

subject to the constraints:

$x_1 - x_2 + x_3 \geq 4$

$x_1 + x_2 + 2x_3 \leq 8$

$x_2 - x_3 \geq 2$

$x_1, x_2, x_3 \geq 0$

2. Consider the problem of assigning five jobs to five persons. The assignment costs are given as follows:

Persons	Job				
	1	2	3	4	5
A	8	4	2	6	1
B	0	9	5	5	4
C	3	8	9	2	6
D	4	3	1	0	3
E	9	5	8	9	5

Determine the optimum assignment schedule.

3. Obtain an initial basic feasible solution to the following T.P. using the Vogel's approximation method:

	Stores				
Warehouses	I	II	III	IV	Availability
A	5	1	3	3	34
B	3	3	5	4	15
C	6	4	4	3	12
D	4	-1	4	2	19

Requirement	21	25	17	17	80

Assignment – IV

Answer any one of the question not exceeding 1000 words.

1. Solve the following 3 x 3 game by linear programming:

Player B

$$\text{Player A} \begin{bmatrix} 1 & -1 & -1 \\ -1 & -1 & 3 \\ -1 & 2 & -1 \end{bmatrix}$$

2. Explain EOQ model without shortage.
3. Explain (M/M/1): (∞/FIFO) model.

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HOME / SPOT ASSIGNMENT

Programme Code No	: 131
Programme Name	: B.Sc., Mathematics
Course Code & Name	: BMS-34, Programming in C and C++
Batch	: CY 2018
No.of Assignment	: One Assignment for Each 2 Credits
Maximum CIA Marks	: 25 (Average of Total No. of Assignment)

Assignment – I

Answer any one of the question not exceeding 1000 words.

1. Explain Control statements available in C.
2. Write a note on a) Polymorphism b) Function overloading
3. Write a note on Storage Class.

Assignment – II

Answer any one of the question not exceeding 1000 words.

1 Explain User defined functions in C.

2. Write a note on Structures and unions in C.
3. Write a note on Arrays in C.

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HOME / SPOT ASSIGNMENT

Programme Code No	: 131
Programme Name	: B.Sc., Mathematics
Course Code & Name	: BMS-35, Graph Theory
Batch	: CY 2018
No.of Assignment	: One Assignment for Each 2 Credits
Maximum CIA Marks	: 25 (Average of Total No. of Assignment)

Assignment – I

Answer any one of the question not exceeding 1000 words.

1. State and prove equivalent condition for a graph to be a tree.
2. State and prove Haval and Hakimi theorem and illustrate.
3. Define an Eulerian graph, give an example and a counter example. Also prove that a connected graph G is eulerian if and only if each vertex of G has even degree.

Assignment – II

Answer any one of the question not exceeding 1000 words.

1. Define closure of a graph, illustrate and prove that closure of a graph is well defined. Also prove that if c(G) is complete, then G is hamiltonian when $p \geq 3$.
2. Write a note on Chromatic Polynomial of a graph.
3. State and prove Five-colour theorem, proving necessary result.