JABALPUR ENGINEERING COLLEGE, JABALPUR (M.P.)

Scheme of Examination w.e.f. July, 2017 batch

FOURTH SEMESTER (M.Sc. Applied Mathematics)

| S.NO. | SUBJECT CODE | SUBJECT | Periods Per Week | | | | Maximum Marks (Theory Slots) | | | Maximum marks (Practical Slots) | | Total Marks | Remarks |
			L	T	P	TOTAL Credits	End Sem. Exam	Mid Sem Exam	Assignment/ Quiz	End Semester Practical/ Viva	Practical Record/ Assignment/Quiz/ Presentation		
1	AM-4001	Fuzzy Logic and its Applications	4	1	...	5	70	20	10	...	.....	100	
2	AM-4002	Graph Theory	4	1	...	5	70	20	10	...	...	100	
3	AM-4003	ELECTIVE-I	4	1	...	5	70	20	10	...	.....	100	
4	AM-4004	Dissertation			9	9	...	...	...	100	100	200	
5	AM-4005	LAB-IV(MATHEMATICA)	....	...	8	8	...	...	...	90	60	150	
		TOTAL	12	3	17	32	210	60	30	190	160	650	

L-Lecture   T-Tutorial   P-Practical

Elective-: Reliability Mathematics
Elective-: Computer Graphics
Elective-: Mathematical Modelling
Elective-: Operations Research

20.7.18

HSpalep
20/7/18

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Jabalpur Engineering College, Jabalpur (M.P.)

M. Sc. IV Semester(Applied Mathematics)

SUBJECT –Fuzzy Logic and it's Applications

Subject Code: AM4001

UNIT-I

Fuzzy membership functions methods of membership, construction, direct method with one expert, direct method with multiple expert, indirect method with one expert, indirect method with multiple experts, membership constructions from simple data, construction by neural networks.

UNIT-II

Fuzzy expert system, fuzzy implications, selections of fuzzy implications multi-conditional approximate reasoning, role of fuzzy relational equations in approximate reasoning.

UNIT-III

Fuzzy control systems, linguistic variables, Fuzzification, method fuzzy inference rules, defuzzification methods, examples of fuzzy controllers inverted pendudal, and aircraft landing controllers n heating fuzzy. Control system, camera auto focus system, neural network and fuzzy systems.

UNIT-IV

Fuzzy clustering, fuzzy c-mean methods, clustering methods based on fuzzy equivalences relation, fuzzy pattern recognition, fuzzy relational database systems and fuzzy information retrieval systems.

UNIT-V

Fuzzy decision making individual decision making, multiperson decision making, multi criteria decision making, multistage decision making, fuzzy rasnking method, fuzzy linear programming and fuzzy regression.

Books References:

1. Fuzzy sets and fuzzy logic theory and applications by g. J. Klir and Boyuan
2. Fuzzy logic with engineering applications by T.J. Ross
3. Fuzzy set theory and its applications by h. J. Zimmermann.

Jabalpur Engineering College, Jabalpur (M.P.)

M. Sc. IV Semester(Applied Mathematics)

SUBJECT –Graph Theory

Subject Code: AM 4002

UNIT-I

Graph: application of graph, finite and infinite graphs ,incidence and degree, isolated vertex, dependent vertex ,null graph, isomorphism, subgraphs, walks path and circuits connected. Disconnected graph, components, Eular graphs, operation of graphs, Hamiltonian path & circuit.

UNIT-II

Trees: some properties of trees, pendant vertex in a tree, distance and centres in a tree, rooted and binary trees on counting trees, spanning trees, fundamental circuits, finding all spanning trees of a graph.

UNIT-III

Cut set: some properties of cut-set all cut set in a graph fundamental circuits and cut-sets connectivity & Separability, network flow max-min cut theorem combinational vs geometric graphs, planar graphs, Kuratowaski's two graphs.

UNIT-IV

Incidence matrix, sub matrix of A(G), circuit matrix fundamental circuits matrix and rank of B, an application to a switching circuits, cut-set matrix, adjacency matrix Chromatic number chromatic polynomial chromatic partitionity.

UNIT-V

Directed graph some types of directed graph directed graph and binary relation directed paths and connectedness, Euler digraphs trees with directed graphs fundamental circuits in digraphs matrixes A,B, & C of digraph adjacency matrix of a digraph paired comparisons and tournaments a cyclic digraph and dccyclization.

Book References:

1. Graph Theory with Application to Engg. & Computer science Nanarsingh Deo PITI Private Ltd.
2. Graph Theory application, fundamental publication.

Jabalpur Engineering College, Jabalpur (M.P.)
M. Sc. IV Semester(Applied Mathematics)
SUBJECT –Operations Research
Subject Code : AM 4003

UNIT-I

Network Analysis: Network representation of a project finding critical path, slacks and floats, PERT method, probability distribution of time duration, critical path in PERT probability of completing the project, optimum scheduling by CPM, LPP formation of CPM PERT problem.

UNIT-II

Queuing System: General structure of a queuing system operating characteristics of a queuing system, Poisson process & exponential distribution classification of queues, queuing models (M/M/1) : (∞/FCFS); (M/M/1):(N/FCFS); Birth date process model (M/M/S):(N/FCFS); Non Poisson queuing system (M/EK/1):(∞/FCFS).

UNIT-III

Sequencing models: processing of n jobs through two machines and three machines, processing of two jobs through m machines.

UNIT-IV

Inventory models: Classification of inventory models, economic lot size models, Model-I: economic lot size model with uniform rate of demand, infinite production rate and having no shortage, Model-II: economic lot size model with different rate of demand in different production cycles,. Infinite production rate and having no shortage economic lot size model with uniform rate of demand, finite rate of replenishment having no shortage multi items deterministic models, probability models with instantaneous demand & uniform demand.

UNIT-V

Replacement problem: Replacement of major item that deteriorates ·with finite replacement of a machine whose maintenance cost in increasing with time to determine best replacement age of machine taking money value into consideration to find the minimum value of fixed annual payment throughout the life of the machine, replacement of item in anticipation of complete failure the probability of which increase with time to determine the interval of optimum replacement problem in mortality staffing problem, mortality tables.

Books References:

1. Operation research by S.D. Sharma
2. Operation research an introduction by H.A.Taha: McMillan Publication
3. Operation research by Kanti Swaroop R.K. Gupta & Manmohan: Pub. Sultan Chand
4. Principle of operation research by II M. Wagner pub. Prentice Hall of India