

School of Aeronautics (Neemrana)

Question Paper For Internal Assessment Examination (Theory) - Old Scheme i.e 2012 Syllabus

Instructions For Students / Faculty

Mid Term I (Total 40 Marks, 1 Hr. & 30 Min, Syllabus From Beginning of The Session)

Total number of questions to be given are 8, each carrying 10 marks and it is compulsory to attend 2 questions from each part i.e. Part A and B. There is a choice of two questions out of four in each part. Part A will be theoretical or derivation type (**Not More Than 70 Words For Question**). Part B will be fully numerically oriented questions (**Not More Than 70 Words For Question**), except for the list of subjects given below. No objective type or fill in the blanks shall be given, but subpart of question can be given for both Part A & B.

Mid Term II (Total 50 Marks, 1 Hr. & 45 Min, Syllabus From Beginning of The Session)

Total number of questions to be given are 8, each carrying 10 marks and it is compulsory to attend 2 questions from Part A and three questions from Part B. There is a choice of two questions out of four in part A and 3 questions out of 4 in Part B. Part A will be theoretical or derivation type (**Not More Than 70 Words For Question**). Part B will be fully numerically oriented questions (**Not More Than 70 Words For Question**), except for the list of subjects given below. No objective type or fill in the blanks shall be given, but subpart of question can be given for both Part A & B.

Mid Term III (Total 60 Marks, 2 Hrs, Syllabus From Beginning of The Session)

Total number of questions to be given are 10, each carrying 10 marks and it is compulsory to attend 2 questions from Part A and 4 questions from Part B. There is a choice of two questions out of four in part A and 4 questions out of 6 in Part B. Part A will be theoretical or derivation type (**Not More Than 70 Words For Question**). Part B will be fully numerically oriented questions (**Not More Than 70 Words For Question**), except for the list of subjects given below. No objective type or fill in the blanks shall be given, but subpart of question can be given for both Part A & B.

* **LIST OF ELABORATIVE THEORY QUESTION SUBJECTS:** Aircraft Materials, Aircraft System, Aircraft Rules & Regulation-I, Mechanics of Composite Materials, Aircraft Design, Aircraft Rules & Regulation-II, Avionics-I, Helicopter Theory, Maintenance of Airframe and System Design, Avionics-II, Airlines and Airport Management, Maintenance of Power Plant & Systems

FACULTY MEMBERS, PLEASE ENSURE EXCEPT ABOVE LISTED SUBJECTS, NO THEORITICAL ELABORATIVE QUESTION SHOULD BE GIVEN IN PART 'B' OF QUESTION PAPER

STUDENT IS ALLOWED TO ENTER LATE NOT MORE THAN 15 MIN AFTER STARTING OF

STUDENT IS ALLOWED TO ENTER LATE NOT MORE THAN 15 MIN AFTER STARTING OF EXAM, AND MAY LEAVE THE EXAM HALL ON EXPIRY OF ATLEAST OF 1 Hr FROM THE STARTING TIME OF EXAMINATION

Question Paper & Student Details

Mid Term*	Mid Term 1	Date of Submission of QP	09/09/2019
Name of Faculty*	ManbirSingh	Date of Examination*	10/09/2019
Subject*	7MH6.3 - Operations Research (Old)	Course*	B.Tech (Mechatronics Engine...
Batch	Second (2)	Semest...	Semester : 7
Email Id of Faculty:*	shiv.manbir2010@gmail.com	Phone Number of Faculty*	807 648 5819

Student Name		Student Reg No.	
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Part A

Question : 1*	1. Introduction to operation Research and what are its application ?
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Lesson Plan*	1	Topic*	Introduction OR	Source*	Dr. Debashis Dutt.
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Question : 2*	What is Linear Programming and Explain its Application ?
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Lesson Plan*	2	Topic*	Linear Programming	Source*	Dr. Debashis Dutt.
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Question : 3*

Explain the Graphical method in detail

Lesson Plan*

2

Topic*

Linear Programming Prc

Source*

Dr. Debashis Dutt.

Question : 4*

This is Mathematical quition which attach in file

Lesson Plan*

3

Topic*

Linear Programming

Source*

Dr. Debashis Dutt.

Part B

Question : 1*

Find initial BFS of the T.P. BY least cost method

	M1	M2	M3	M4	
F1	3	2	4	1	20
F2	2	4	5	3	15
F3	3	5	2	6	25
F4	4	3	1	4	40
	30	20	25	25	

Lesson Plan*

9

Topic*

Transportation Problem

Source*

Dr. Debashis Dutt.

Question : 2*

Find initial BFS of the T.P. BY North West Corner rule

	M1	M2	M3	M4	
F1	3	2	4	1	20
F2	2	4	5	3	15
F3	3	5	2	6	25
F4	4	3	1	4	40
	30	20	25	25	

Lesson Plan*

9

Topic*

Transportation Problem

Source*

Dr. Debashis Dutt.

Question : 3*

Find initial BFS of the T.P. BY Vogel approximation method

	M1	M2	M3	M4	
F1	3	2	4	1	20
F2	2	4	5	3	15
F3	3	5	2	6	25
F4	4	3	1	4	40
	30	20	25	25	

Lesson Plan*

10

Topic*

Transportation Problem

Source*

Dr. Debashis Dutt.

Question : 4*

Assign 4 jobs to 5 persons the expected profit in rupees for each person are as

	J1	J2	J3	J4
1	86	78	62	81
2	55	79	65	60
3	72	65	63	80
4	86	70	65	71
5	72	70	71	60

Lesson Plan*

11

Topic*

Assignment Problem

Source*

Dr. Debashis Dutt.

Question : 5

Lesson Plan

Topic

Source

Question : 6

Lesson Plan

Topic

Source

Upload Scanned Document In Case of Numerical or Diagram for any of the above question

Mention question number with relevant fig / numerical / equations. Max 150 KB

archive-1.zip (26 KB)



I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.



School of Aeronautics (Neemrana)

Paper For Internal Assessment Examination (Theory) - Credit 1

Instructions For Students / Faculty

Mid Term I (Total 20 Marks, 1 Hr.)

- Part A: Total number of questions to be given are two, each carrying 2 marks and are compulsory to attend. There is no choice. They are short answer type **(Not More Than 25 Words For Both Question & Answer)** questions, no objective type or fill in the blanks. Total 4 marks.
- Part B: Total number of questions to be given are three, out of which student has to answer any two. They are long answer type **(Not More Than 50 Words Question)**, each carrying 4 marks. Total 8 marks.
- Part C: Total number of questions to be given are two, out of which student has to answer any one. They are numerical answer type / fully elaborative type **(Not More Than 70 Words Question)***, each carrying 8 marks. Total 8 marks.

Mid Term II & III (Total 30 Marks, 1.5 Hrs)

- Part A: Total number of questions to be given are four, each carrying 2 marks and are compulsory to attend. There is no choice. They are short answer type **(Not More Than 25 Words For Both Question & Answer)** questions, no objective type or fill in the blanks. Total 8 marks.
- Part B: Total number of questions to be given are five, out of which student has to answer any three. They are long answer type **(Not More Than 50 Words Question)**, each carrying 4 marks. Total 12 marks.
- Part C: Total number of questions to be given are three, out of which student has to answer any two. They are numerical answer type / fully elaborative type **(Not More Than 70 Words Question)***, each carrying 5 marks. Total 10 marks.

***LIST OF ELABORATIVE THEORY QUESTION SUBJECTS:** Communication Skills, Human Values, Technical Communication, Managerial Economics and Financial, Aircraft Materials and Processes, Aircraft Systems, Aircraft Maintenance Practices, Avionics-I, Aircraft Rules and Regulation, Wind Tunnel Techniques, Maintenance of Airframe and System, Helicopter Theory, Avionics-II, Maintenance of Power Plant and System, Unmanned Aerial Vehicles & Systems (UAV), Space Mission Design & Optimization, CAD, Airlines and Airport Management.

FACULTY MEMBERS, PLEASE ENSURE EXCEPT ABOVE LISTED SUBJECTS, NO THEORITICAL ELABORATIVE QUESTION SHOULD BE GIVEN IN PART 'C' OF QUESTION PAPER

Question Paper & Student Details

Mid Term *	Mid term 1st	Date of Submission of QP	9/9/2019
Name of Faculty *	ManbirSingh	Date of Examination *	10-09-2019
Subject *	Operation Research	Course*	B.TECH Mechatronics
Batch	MT -2	Semester *	7th
Email Id of Faculty:*	shiv.manbir2010@gmail.com	Phone Number of Faculty*	8076485892

Student Name		Student Reg No.	
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PART : A

Question: 4

$$\begin{aligned} & \text{Maximize } Z \ 3x_1 + 10x_2 \\ & \text{Subject to } 3x_1 + 2x_2 \geq 6 \\ & \quad 4x_1 + x_2 \geq 4, \ 2x_1 + 3x_2 \geq 6 \\ & \quad x_1 \geq 0, x_2 \geq 0 \end{aligned}$$

Lesson Plan *

Topic *

Source *

Lesson Plan *

Topic *

Source

Lesson Plan *

Topic *

Source *

I have scrutinized the question paper.
There is no spelling mistake of any type
or irrelevant question.

Faculty's Sign

Answer Sheet Details

Mid Term	Mid Term 1
Name of Faculty	Manbir Singh
Subject	7MH6.3 - Operations Research (Old)
Date of Submission of QP	12/09/2019
Batch	Second (2)
Email Id of Faculty:	shiv.manbir2010@gmail.com
Date of Examination	16/09/2019
Course	B.Tech (Mechatronics Engineering)
Semester	Semester : 7
Phone Number of Faculty	807-648-5892

Part A

Question : 1

operational research) (OR) is a discipline that deals with the application of advanced analytical methods to help make better decisions.[1] Further, the term operational analysis is used in the British (and some British Commonwealth) military as an intrinsic part of capability development, management and assurance. In particular, operational analysis forms part of the Combined Operational Effectiveness and Investment Appraisals, which support British defense capability acquisition decision-making.

Applications of Operation Research:

Operation research is a problem solving and decision taking technique. It is considered a kit of scientific and programmable rules which provides the management a "quantitative basis" for decisions.

1. Allocation and Distribution in Projects:
2. Production and Facilities Planning:
3. Organization Behavior: etc

Question : 2

Linear programming is a mathematical method that is used to determine the best possible outcome or solution from a given set of parameters or list of requirements, which are represented in the form of linear relationships. It is most often used in computer modeling or simulation in order to find the best solution in allocating finite resources such as money, energy, manpower, machine resources, time, space and many other variables. In most cases, the "best outcome" needed from linear programming is maximum profit or lowest

- 1.Application of linear programming:-
2. Applications in Engineering
3. Transportation Optimization
4. Efficient Manufacturing
5. Energy Food and Agriculture industry

Question : 3

The Graphical Method (graphic solving) is an excellent alternative for the representation and solving of Linear Programming models that have two decision variables. For this purpose there are computational tools that assist in applying the graphical model, Within this context we will present a series of Linear Programming exercises that have been solved using the graphical method.

It basically consists of two steps: Finding the feasible region or the feasible space (which is the region in the plane where all the feasible solutions to the problems lie) and then identifying the optimal solution among all the feasible ones.

Question : 4

It basically consists of two steps: Finding the feasible region or the feasible space (which is the region in the plane where all the feasible solutions to the problems lie) and then identifying the optimal solution among all the feasible ones.

A point to note is that the optimal solution in a LP model always occurs at a corner point of a feasible region

WHEN X(1) IS 0 THEN X(2) IS 2 and when X(2) is 0 then X(1) is 3
equation 1st

when X(1) is 0 then X(2) is 1 and when X(2) is 0 then X(1) is 4 equation 2nd

by solving these two equation we get $X(1) = 2/5$ and $X(2) = 12/5$

Part B**Question : 1**

$X(1,4) = 20$, $X(2,1) = 15$, $X(3,1) = 15$, $X(3,2) = 5$, $X(3,4) = 5$, $X(4,2) = 15$ and $X(4,3) = 25$

The transportation cost is=
 $20 \times 1 + 15 \times 2 + 15 \times 3 + 5 \times 5 + 5 \times 6 + 15 \times 3 + 25 \times 1 = 220$

Question : 2

$X(1,1) = 20$, $X(2,1) = 15$, $X(3,3) = 10$, $X(3,2) = 10$, $X(2,2) = 5$, $X(4,4) = 25$ and $X(4,3) = 15$

The transportation cost is=
 $20 \times 3 + 10 \times 2 + 5 \times 4 + 15 \times 5 + 10 \times 2 + 15 \times 1 + 25 \times 4 = 310$

Question : 3

$X(1,4) = 20$, $X(2,1) = 5$, $X(3,1) = 25$, $X(2,4) = 5$, $X(2,2) = 5$, $X(4,2) = 15$ and $X(4,3) = 25$

The transportation cost is= $1 \times 20 + 2 \times 5 + 4 \times 5 + 3 \times 5 + 3 \times 25 + 3 \times 15 + 1 \times 25 = 210$

Question : 4

It is unbalanced maximum type assignment problem the solution is given below

1-J4, 2-J2, 3-J5, 4-J1, 5-J3

job 1st assigned to person 4, job 2nd assigned to person 2, job 3rd assigned to person 5

job 4th assigned to person 1 and job 5th assigned to person 3

optimum solution $81 + 79 + 86 + 71 = 317$

Question : 5**Question : 6**

Upload Scanned Document In Case of Numerical or Diagram for any of the above question

**I have scrutinized the answer sheet.
There is no spelling mistake or any type
of irrelevant answers.**

Gaur

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