

School of Aeronautics (Neemrana)

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

Instructions For Students / Faculty

Back / Re-back Internal Examination (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 THEORETICAL 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 EXAM, AND MAY LEAVE THE EXAM HALL ON EXPIRY OF ATLEAST OF 1 Hr FROM THE STARTING TIME OF EXAMINATION

Question Paper & Student Details

Name of Faculty*	<input type="text" value="Mr. Rahul Dev Bairwan"/>	Date of Submission of QP	<input type="text" value="15/03/2021"/>
Subject*	<input type="text" value="7MH6.3 - Operations Research (Old)"/>	Date of Examination*	<input type="text" value="17/03/2021"/>
Email Id of Faculty:*	<input type="text" value="rahuldevbairwan@soaneemrana.org"/>	Course*	<input type="text" value="B.Tech (Mechatronics Engineering)"/>
Phone Number of Faculty*	<input type="text" value="945 634 1170"/>	Semester*	<input type="text" value="Semester : 7"/>

Student Name	<input type="text"/>	Student Reg No.	<input type="text"/>
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Part A

Question : 1*

Using Simplex Method
Maximize : $12x_1 + 3x_2 + x_3$
Subject to:
 $10x_1 + 2x_2 + x_3 \leq 100$
 $7x_1 + 3x_2 + 2x_3 \leq 77$
 $2x_1 + 4x_2 + x_3 \leq 80$
 $x_1, x_2, x_3 \geq 0$

Lesson Plan*	<input type="text" value="6"/>	Topic*	<input type="text" value="Linear Programming"/>	Source*	<input type="text" value="Operations Research by"/>
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Question : 2*

Three fertilizers factories X, Y and Z located at different places of the country produce 6,4 and 5 lakh tones of urea respectively. Under the directive of the central government, they are to be distributed to 3 States A, B and C as 5, 3 and 7 lakh respectively. The transportation cost per tones in rupees is given in table attached.

Find out suitable transportation pattern at minimum cost by North West Corner method or Least Cost method.

Lesson Plan*

11

Topic*

Transportation problem

Source*

Operations Research by

Question : 3*

Find the range of values of p and q that will render the entry a saddle point for the game. Table is attached.

Lesson Plan*

21

Topic*

Game theory

Source*

Operations Research by

Question : 4*

Differentiate between Deterministic and Probabilistic Method of inventory models.

Lesson Plan*

26

Topic*

Deterministic and Stochastic In

Source*

Operations Research by

Part B

Question : 1*

A firm produces three products. These products are processed on three different machines. The time required to manufacture one unit of each of the three products and the daily capacity of the three machines are given in the table attached.

It is required to determine the daily number of units to be manufactured for each product. The profit per unit for product 1, 2 and 3 is Rs. 4, Rs.3 and Rs.6 respectively. It is assumed that all the amounts produced are consumed in the market. Formulate the mathematical (L.P.) model that will maximize the daily profit

Lesson Plan*

4

Topic*

Linear Programming

Source*

Operations Research by

Question : 2*

Solve the following Assignment Problem attached.

Lesson Plan*

14

Topic*

Assignment problem

Source*

Operations Research by

Question : 3*

Explain Branch and Bound method for integer programming.

Lesson Plan*

24

Topic*

Integer Programming

Source*

Operations Research by

Question : 4*

Explain the different methods useful for decision making under certainty.

Lesson Plan*

23

Topic*

Decision theory

Source*

Operations Research by

Question : 5

Explain the need of simulation. How can you use Monte-Carlo simulation for industrial problems.

Lesson Plan

34

Topic

Simulations

Source

Operations Research by

Question : 6

In a self service store with one cashier, 8 customers arrive on an average of every 5 mins. and the cashier can serve 10 in 5 mins. If both arrival and service time are exponentially distributed, then determine

- Average number of customer waiting in the queue for average.
- Expected waiting time in the queue.
- What is the probability of having more than 6 customers In the system.

Lesson Plan

37

Topic

Queuing model

Source

Operations Research by

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 (53 KB)



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



A handwritten signature in black ink, appearing to read 'Rahul', is written above a horizontal line. The signature is contained within a rectangular box.

School of Aeronautics(Neemrana)

Question Paper For Internal Assessment Examination (Theory) Diagram Sheet

Faculties preparing Question Paper for various examinations, need to draw or insert diagrams as per requirement of questions in the below format and upload the same in upload documents column of the question paper.

QuestionPaper&StudentDetails

Mid Term *	Internal Improvement	Date of SubmissionofQP	3/17/2021
Name of Faculty *	Mr. Rahul Dev Bairwan	Date ofExamination*	3/17/2021
Subject *	7MH6.3 - Operations Research (Old)	Course*	B. Tech (Mechatronics Engineering)
Batch		Semester *	7
Email Id of Faculty:*	rahuldevbairwan@soaneemrana.org	PhoneNumberofFaculty*	945 634 1170
StudentName		Student RegNo.	

Part No. _A_, Question Number __2__ .

	A	B	C
X	11	17	16
Y	15	12	14
Z	20	12	15

Part No. _A_, Question Number _3__ .

Player A	Player B		
	B ₁	B ₂	B ₃
A ₁	2	4	5
A ₂	10	7	q
A ₃	4	P	6

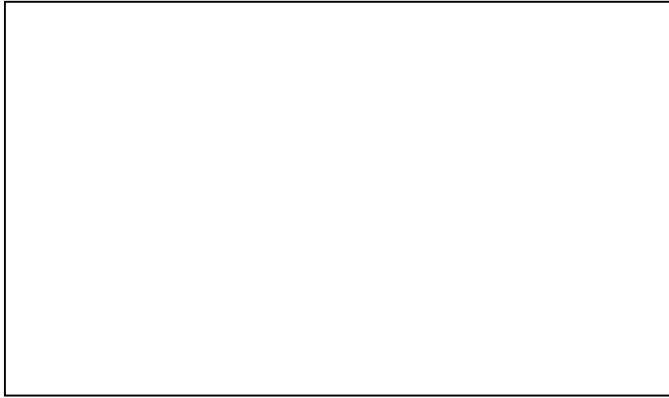
Part No. _B_, Question Number __1__ .

Machine	Time per unit (Minutes)			Machine Capacity (minutes/day)
	Product 1	Product 2	Product 3	
M ₁	2	3	2	440
M ₂	4	-	3	470
M ₃	2	5	-	430

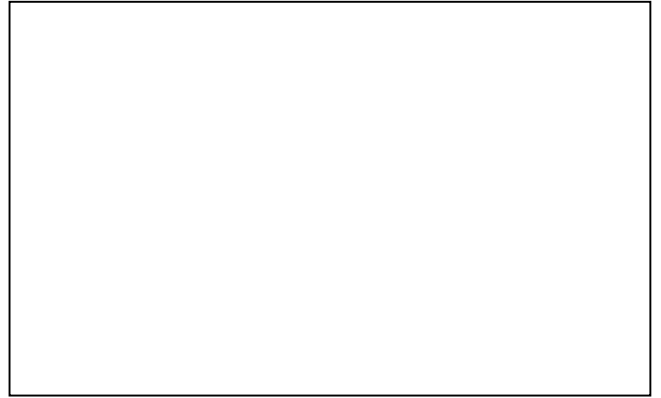
Part No. __B_, Question Number _2__ .

	P	Q	R	S
A	22	30	21	15
B	18	33	9	31
C	44	25	24	21
D	23	30	28	14

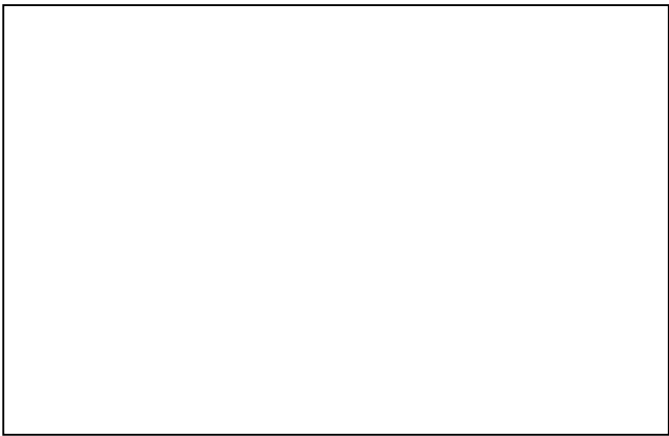
Part No. ____, Question Number ____ .



Part No. ____, Question Number ____ .



Part No. ____, Question Number ____ .



Part No. ____, Question Number ____ .

