School of Aeronautics (Neemrana)
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APPROVED BY ALL INDIA COUNCIL FOR TECHNICAL EDUCATION & AFFILIATED TO RAJASTHAN TECHNICAL UNIVERSITY, KOTA
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Question Paper For Internal Assessment Examination (Theory) - Credit 3 / 119 /

NAME OF STUDY CENTER: SCHOOL OF AERONAUTICS, NEEMRANA

Instructions for Students / Faculty

Mid Term I (Total 60 Marks, 2 HRS. Syllabus from Unit-1)

- Part A: Total number of questions to be given are six (3 from CO1 and 3 from CO2), each carrying 2 marks and are compulsory to attend. There is no choice. They are short answer type questions **(Not More Than 25 Words for Both Question & Answer)**, no objective type or fill in the blanks. Total 12 marks.

- Part B: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student has to answer four (2 from CO1 and 2 from CO2). They are long answer type (**Not More Than 50 Words for Question)**, each carrying 4 marks. Total 16 marks.

- Part C: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student has to answer four (2 from CO1 and 2 from CO2). They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question)***, each carrying 8 marks. Total 32 marks.

Mid Term II (Total 90 Marks, 2.5 HRS., Syllabus from Unit-2)

- Part A: Total number of questions to be given are ten (5 from CO3 and 5 from CO4), each carrying 3 marks and are compulsory to attend. There is no choice. They are short answer type questions **(Not More Than 25 Words for Both Question & Answer)**, no objective type or fill in the blanks. Total 30 marks

- Part B: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student has to answer four (2 from CO3 and 2 from CO4). They are long answer type (**Not More Than 50 Words for Question)**, each carrying 6 marks. Total 24 marks.

- Part C: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student has to answer any four (2 from CO3 and 2 from CO4). They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question)***, each carrying 9 marks. Total 36 marks.

Mid Term III (Total 90 Marks, 2.5 HRS., Syllabus from Unit-3)

- Part A: Total number of questions to be given are ten (5 from CO5 and 5 from CO6), each carrying 3 marks and are compulsory to attend. There is no choice. They are short answer type questions **(Not More Than 25 Words for Both Question & Answer)**, no objective type or fill in the blanks. Total 30 marks

- Part B: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6). They are long answer type (**Not More Than 50 Words for Question)**, each carrying 6 marks. Total 24 marks.

- Part C: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6). They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question)***, each carrying 9 marks. Total 36 marks.

* LIST OF ELABORATIVE THEORY QUESTION SUBJECTS: 3 MH4 - 07 Manufacturing Process, 4 AN4 - 06 Aircraft Materials and Processes (Cr 3), 5 AN4 - 05 Aircraft System (Cr 3), 6 AN4 - 05 Avionics-I (Cr 3), 6 MH4 - 03 Applied Hydraulics & Pneumatics (Cr 3), 6 MH5 - 11 Principles of Management (Cr 3), 6 MH5 - 13 Aircraft Electronics System (Cr 3), 7 AN5 - 12 Maintenance of Airframe and System (Cr 3), 7 AN5 - 13 Helicopter Theory (Cr 3), 7 AG6 - 60.1 Human Engineering and Safety (Cr 3), 7 ST - 01 Avionics II (Special Theory Subject) (Cr 3), 7 MH5 - 11 Design of Mechatronics Systems (Cr 3), 7 MH5 - 12 Robotics and Machine Vision System (Cr 3), 7 MH6 - 13 Medical Electronics (Cr 3), 7 AN6 - 60.1 Aircraft Avionic System (Cr 3), 8 AN5 - 12 Maintenance of Power Plant and System

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(Cr 3), 8 AN5 - 13 Unmanned Aerial Vehicles & Systems (UAV) (Cr 3), 8 MH5 - 13 Product Development & Launching (Cr 3), 8 EC6 - 60.2 Robotics and control (Cr 3)

Instructions For Faculties

There should be total 6 Course Outcomes (COs) for each subject.

- Mid Term Question Papers are to be submitted as per Course Outcomes (COs) which should be divided equally in Part A, Part B and Part C according to Mid Term Examination and Credit Point.

- In Mid Term-1, the questions are to be given from CO1 and CO2. In Mid Term-2, the questions are to be given from CO3 and CO4. Similarly, in Mid Term-3, the questions are to be given from CO5 and CO6.

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

INSTRUCTION FOR STUDENTS

- **STUDENT IS ALLOWED TO ENTER LATE NOT MORE THAN 15 MIN AFTER STARTING OF EXAM,**

QUESTION PAPER & STUDENTS DETAILS

Type of Exam	Mid Term 3	Date of Submission	26/06/2021
Name of Faculty	Mr. Rahul Dev Bairwan	Date of Examination	29/06/2021
Course	B.Tech (Aeronautical Engineering)	Semester	SEMESTER : 8
Batch	Combined Batches 12, 13, 14	Subject	8 ME6 - 60.1 Operations Research (Cr 3)-

COURSE OUTCOMES FOR REFERENCE TO FRAME QUESTION PAPERS
(Faculties are required to mention Course Outcome Number against each part of the question paper)

Course Outcome	CO5: Examine game theory model and apply stochastic models for discrete and continuous variables to control inventory. CO6: Formulate queuing models and visualize dynamic programming and simulation models.		
Email I'd	rahuldevbairwan@soaneemrana.org	Phone No.	945-634-1170
Student Name		Student Reg No.	

PART A

All the questions are compulsory to attend.

1. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.	CO 5
Question : 1	Define an inventory.

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29	Inventory control models	Operations Research by Gupta and Heera	
Question : 2	Define ordering cost and deduce its expression.		
29	Inventory control models	Operations Research by Gupta and Heera	
Question : 3	Define EOQ.		
30	Inventory control models	Operations Research by Gupta and Heera	
Question : 4	Define safety stock.		
31	Inventory control models	Operations Research by Gupta and Heera	
Question : 5	Define selective inventory control.		
32	Inventory control models	Operations Research by Gupta and Heera	
2. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.		CO 6	
Question : 6	Define simulation.		
37	Simulation	Operations Research by Gupta and Heera	
Question : 7	Define Monte Carlo Method.		
39	Simulation	Operations Research by Gupta and Heera	
Question : 8	Define random numbers in simulation.		
38	Simulation	Operations Research by Gupta and Heera	
Question : 9	Define Entities in simulation.		
38	Simulation	Operations Research by Gupta and Heera	
Question : 10	Define the purpose of simulation.		
40	Simulation	Operations Research by Gupta and Heera	
PART B			

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FOR MIDTERM 1 - Part B: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2).
FOR MIDTERM 2 - Part B: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student must answer four (2 from CO3 and 2 from CO4).
FOR MIDTERM 3 - Part B: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6).

3. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			CO 5
Question : 1	Discuss the four major elements of inventory costs.		
29	Inventory control models	Operations Research by Gupta and Heera	
Question : 2	Explain P and Q systems in inventory.		
31	Inventory control models	Operations Research by Gupta and Heera	
Question : 3	A manufacturing company needs 4000 units of material every month. The delivery system from supplier is so scheduled that once delivery commences the materials is received at the rate of 6000 units/month. The cost of processing purchase order is Rs. 600 and inventory carrying cost is 30 paisa/unit/month. Determine the optimal lot size and interval at which the order is to be placed. What is maximum inventory during a cycle?		
33	Inventory control models	Operations Research by Gupta and Heera	
4. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			CO 6
Question : 4	Discuss the types of simulation.		
37	Simulation	Operations Research by Gupta and Heera	
Question : 5	Discuss situations when simulation is an appropriate tool.		
38	Simulation	Operations Research by Gupta and Heera	
Question : 6	List out the areas of application of simulation.		
40	Simulation	Operations Research by Gupta and Heera	
Question : 7 (Old Pattern)			
PART C			

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FOR MIDTERM 1 - Part C: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2).
FOR MIDTERM 2 - Part C: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student must answer four (2 from CO3 and 2 from CO4).
FOR MIDTERM 3 - Part C: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6).

5. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			CO 5
Question : 1	Derive an expression for order quantity and total cost with single inventory model with shortage cost.		
30	Inventory control models	Operations Research by Gupta and Heera	
Question : 2	Explain ABC analysis.		
32	Inventory control models	Operations Research by Gupta and Heera	
Question : 3	M/s T.V. assembly, one man T.V. assembler – entrepreneur, needs 10000 of tubes/year. The cost of one procurement is Rs. 80. The holding cost per tube is Rs. 3/year. The rush purchase of tubes, if not in stock, amounts to equivalent shortage cost of Rs. 6/tube/year. If stock ordered is delivered all instantaneously, determine how much he should order, at what interval, calculate the total cost of inventory.		
36	Inventory control models	Operations Research by Gupta and Heera	
6. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			CO 6
Question : 4	Briefly classify simulation models.		
37	Simulation	Operations Research by Gupta and Heera	
Question : 5	Mention the advantages and disadvantages of simulation.		
38	Simulation	Operations Research by Gupta and Heera	
Question : 6	Explain the generation of random numbers in simulation.		
38	Simulation	Operations Research by Gupta and Heera	
Upload Scanned Document In Case of Numerical or Diagram For Any of The Above Questions. *(Mention question number with relevant fig / numerical / equations. Max 150 KB)*			
I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.			

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