



Question Paper For Internal Assessment Examination (Theory) - Credit 3 / 104 / SET 1

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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NAME OF STUDY CENTER: SCHOOL OF AERONAUTICS, NEEMRANA(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 2	Date of Submission	25/03/2021
Name of Faculty	DR. MOHAMMAD FAHIM AKHTAR	Date of Examination	26/03/2021
Course	B.Tech (Mechatronics Engineering)	Semester	SEMESTER : 8
Batch	Combined Batches 12, 13, 14	Subject	8 MH5 - 12 Artificial Intelligence (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	CO 3: Use of knowledge representation techniques (such as predicate logic and frames). CO 4: Apply AI techniques to real-world problems to develop intelligent systems.		
Email I'd	fahim@soaneemrana.org	Phone No.	852-108-9715
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 3

Question : 1 Define genetic algorithm.



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19	Genetic Algorithm.	Text Book - AI: A Modern Approach, by Stuart Russell and Peter Norvig, Prentice Hall, Page No. 1 to 30	
Question : 2	Describe types of knowledge that need to be represented in AI systems.		
20	Knowledge Representation	Text Book - AI: A Modern Approach, by Stuart Russell and Peter Norvig, Prentice Hall, Page No. 1 to 30	
Question : 3	Differentiate between state space and a state description.		
12	Solving Problems by Searching	Text Book - AI: A Modern Approach, by Stuart Russell and Peter Norvig, Prentice Hall, Page No. 1 to 30	
Question : 4	Compare your best search agent with a simple randomized reflex agent that sucks if there is dirt and otherwise moves randomly.		
13	Solving Problem by Searching	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 5	State the role of knowledge-based agents in AI.		
14	knowledge-based agents	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
2. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			CO 4
Question : 6	List the name of two entities that can structure in knowledge representation of AI.		
20	knowledge representation	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 7	Show the concept of "Rationality".		
11	Rationality	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 8	Apply a planning technique to construct a real-world problem solver agent with a suitable example.		



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14	Searching Agent	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 9	Write the application of knowledge representation in AI.		
20	knowledge representation	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 10	Identify well-defined problems and solutions with an example.		
11	Solving Problem by Searching		

PART B

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 3

Question : 1	Explain the properties of the knowledge representation system with the concept of AI.		
21	knowledge representation	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 2	Discuss the ways to measure the performance of an Intelligent Agent.		
10	Intelligent Agent	Text Book - AI: A Modern Approach, by Stuart Russell and Peter Norvig, Prentice Hall, Page No. 1 to 31	
Question : 3	Explain the different types of approaches to knowledge representation.		
21	knowledge representation.	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	

4. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.

CO 4

Question : 4	Differentiate between Initial State and successor function with given any problem.		
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12	Solving Problem by Searching	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 5	Write an algorithm of the Breadth-First Search technique.		
17	BFS	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 6	List the advantages of the Genetic Algorithm.		
20	Genetic Algorithm	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 7 (Old Pattern)			

PART C

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 3

Question : 1	Design the state-space for the vacuum cleaner world problem. [Hint - Links denote actions: L = Left, R = Right, S = Suck]		
13	State Space Problem	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 2	Explain each function of "Model-based Agent" with a diagram.		
11	Types of Intelligent Agent	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 3	Explain the depth-first search technique is used to solve a problem by searching with a suitable example.		



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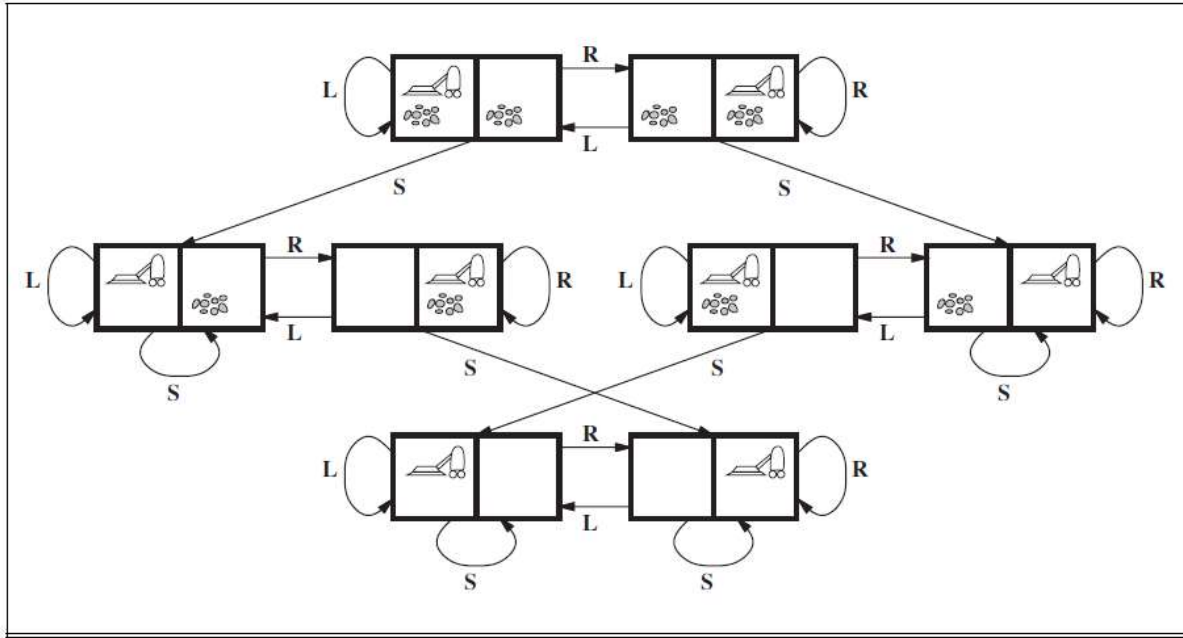
NAME OF STUDY CENTER: SCHOOL OF AERONAUTICS, NEEMRANA

16	Solving Problem by Searching	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
6. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			CO 4
Question : 4	Solve the 8 puzzle problem in the figure shown.		
17	8 puzzle problem	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 5	Suppose two friends live in different cities on a given map such as one friend lives in Oradea City and another one lives in Arad. Who will reach Bucharest as earlier? Write a detailed formulation for this search problem.		
18	Searching - Shortest Distance	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
Question : 6	Explain Informed and Uninformed searching. Also, explain the subcategories of searching with each example.		
16	Types of searching	Text Book - Artificial Intelligence - A Modern Approach by Stuart J. Russell and Peter Norvig,	
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)		https://form.123formbuilder.com/upload_dld.php?fileid=ee2dad1075f805d0046e82315fe1e62c	
I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.			

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PART – C

Q. NO. 1



PART – C

Q. NO. 4

7	2	4
5		6
8	3	1

Start State

	1	2
3	4	5
6	7	8

Goal State

PART – C

Q. NO. 5

