

School of Aeronautics (Neemrana)

I-04, RIICO Industrial Area, Neemrana, Dist. Alwar, Rajasthan

Approved by Director General of Civil Aviation, Govt. of India, All India Council for Technical Education
Ministry of HRD, Govt of India & Affiliated to Rajasthan Technical University, Kota & BTU, Bikaner Rajasthan

Question Paper For Internal Assessment Examination (Theory) - Credit 2 / 125

Instructions for Students / Faculty

Mid Term I (Total 40 Marks, 1.5 HRS., Syllabus from Unit-1)

- Part A: Total number of questions to be given are four (2 from CO1 and 2 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 8 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 Only**), each carrying 4 marks. Total 16 marks.
- Part C: Total number of questions to be given are four (2 from CO1 and 2 from CO2), out of which student has to answer two (1 from CO1 and 1 from CO2). They are numerical answer type / fully elaborative type* (**Not More Than 70 Words for Question Only**), each carrying 8 marks. Total 16 marks.

Mid Term II (Total 60 Marks, 2 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 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 20 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 Only**), each carrying 4 marks. Total 16 marks.
- Part C: Total number of questions to be given are four (2 from CO3 and 2 from CO4), out of which student has to answer any two (1 from CO3 and 1 from CO4). They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question Only**)*, each carrying 12 marks. Total 24 marks.

Mid Term III (Total 60 Marks, 2 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 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 20 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 Only**), each carrying 4 marks. Total 16 marks.
- Part C: Total number of questions to be given are four (2 from CO5 and 2 from CO6), out of which student has to answer any two (1 from CO5 and 1 from CO6). They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question Only**)*, each carrying 12 marks. Total 24 marks.

* LIST OF ELABORATIVE THEORY QUESTION SUBJECTS: 1 FY1 - 04 Communication Skills (Cr 2), 1 FY1 - 05 Human Values (Cr 2), 2 FY1 - 04 Communication Skills (Cr 2), 2 FY1 - 05 Human Values (Cr 2), 3 AN1 - 02 Technical Communication (Cr 2), 4 MH1 - 02 Technical Communications (Cr 2), 4 MH1 - 03 Economics and Financial Accounting (Cr 2), 5 AN5 - 12 Aircraft Maintenance Practices (Cr 2), 6 AN3 - 01 Mechanics of Composite Materials (Cr 2), 6 AN5 - 12 Aircraft Rules and Regulation (Cr 2), 6 MH3 - 01 Automobile Engineering (Cr 2).

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, AND MAY LEAVE THE EXAM HALL ON EXPIRY OF ATLEAST OF 1 Hr FROM THE STARTING TIME OF EXAMINATION.**

Question Paper & Student Details

Type of Exam	Mid Term 2	Date of Submission	21/07/2021
Name of Faculty	Ms. Tarun Thukral	Date of Examination	26/07/2021
Course	B.Tech (Aeronautical Engineering)	Semester	SEMESTER : 4
Batch	Combined Batches 18, 19, SF 2	Subject	4 AN2 - 01 Digital Science (Cr 2)

COURSE OUTCOMES FOR REFERENCE TO FRAME QUESTION PAPER

(Faculties are required to mention relevant Course Outcome number against the respective question in QP)

Course Outcome	CO1: Understand basic concepts of Number system, Logic Gates, and Boolean algebra techniques in real life problems. CO2: Apply the Minimization techniques and data buses for solving engineering problems. CO3: Appreciate the purpose of using combinational systems and sequential circuits to create a new domain in which it is easier to handle the problem that is being investigated in society. CO4: Obtain knowledge on sequential systems used in wide variety of situations in engineering domain. CO5: Design Electronic and Electrical Measuring Instruments which will perform the variety of task in field of aeronautical engineering. CO6: Summarize Electromagnetic Environment and its application that they would find useful in aeronautical engineering disciplines.
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Email I'd	tarunthukral@soaneemrana.org	Phone No.	750-096-6580
Student Name		Student Reg No.	
Part A			
INSTRUCTIONS FOR 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.			3
Question : 1	What are combinational circuits?		
Lesson Plan No. - 12	Topic - Combinational Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
Question : 2	Define DEMUX.		
Lesson Plan No. - 14	Topic - Combinational Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
Question : 3	Define decoder.		
Lesson Plan No. - 13	Topic - Combinational Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
Question : 4	Define Encoder.		
Lesson Plan No. - 14	Topic - Combinational Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
Question : 5	Write the applications of MUX.		
Lesson Plan No. - 13	Topic - Combinational Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
2. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			4
Question : 6	Define & Classify counters.		
Lesson Plan No. - 17	Topic - Sequential Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
Question : 7	Define flip flop and latches.		
Lesson Plan No. - 16	Topic - Sequential Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
Question : 8	Define shift register and classify it.		
Lesson Plan No. - 19	Topic - Sequential Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
Question : 9	Define D flip flop.		
Lesson Plan No. - 16	Topic - Sequential Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
Question : 10	Define MOD N counter.		
Lesson Plan No. - 18	Topic - Sequential Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
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 has to 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 has to 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.

3

Question : 1 Design Full adder.

Lesson Plan No. - 12	Topic - Combinational Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
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Question : 2 Design binary to gray decoder.

Lesson Plan No. - 13	Topic - Combinational Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
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Question : 3 Design Octal to binary encoder.

Lesson Plan No. - 14	Topic - Combinational Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
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4. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.

4

Question : 4 What is the limitation of JK flip flop? How can this be removed? Explain.

Lesson Plan No. - 16	Topic - Sequential Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
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Question : 5 Write short note on Shift Register and Buffer register.

Lesson Plan No. - 19	Topic - Sequential Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
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Question : 6 Explain RS latch.

Lesson Plan No. - 16	Topic - Sequential Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
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Part C

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

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

3

Question : 1 Design Full subtractor logic circuit with NAND & NOR gates.


Lesson Plan No. - 12	Topic - Combinational Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
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Question : 2 Implement the following function using 8:1 MUX.
 $F(A,B,C,D) = \sum m(0,1,3,4,7,8,9,11,14,15)$

Lesson Plan No. - 15	Topic - Combinational Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
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6. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.

4

Question : 3	Convert the JK flip flop to T flip flop.		
Lesson Plan No. - 17	Topic - Sequential Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
Question : 4	Design a synchronous Gray code MOD 10 up counter.		
Lesson Plan No. - 18	Topic - Sequential Systems	Source - Switching Theory 4th Edition by P. Raja	CO No. -
Upload Scanned Document In Case of Numerical or Diagram For Any of The Above Questions. <i>(Mention question number with relevant fig / numerical / equations. Max 150 KB)</i>			
I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.			
Corporate Office: H 974, Palam Extension, Part 1, Sector 7, Dwarka, New Delhi 110077			

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