**Course File**

***Subject Title/Subject Code : Digital Electronics/3CS3-04***

Semester : III Year : II

|  |  |  |
| --- | --- | --- |
| Name of the Faculty: Yogendra Singh Solanki |  | |
|  |  | |
| E-mail id: [yogendra.solanki@technonjr.org](mailto:yogendra.solanki@technonjr.org) |  |

**Class Schedule**

**Total Number of Lectures:** 40

i**)Course Objective**

**Students will be able to design and optimize combinational and sequential digital logic circuits.**

**INDEX - COURSE FILE**

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**VISSION & MISSION OF INSTITUTE**

## Vision

Empowering student with recent and emerging technologies to create innovative technical leaders capable of contributing to industrial and societal needs for betterment of mankind across the globe.

## Mission

**M1**: To provide dynamic learning environment to students by providing constant exposure to latest technologies by linking closely with the industries.

**M2**: To establish effective interface with industry to obtain live problems to enhance critical thinking and problem solving skills among students and consultancy projects for faculty.

**M3**: To provide avenues and opportunities to faculty for domain specific trainings and qualification upgradation.

**M4**: To develop ethical leaders with strong communication skills.

**VISION & MISSION OF DEPARTMENT**

**Department Vision**

**To be among top five well known department of Computer Science and Engineering in the state of Rajasthan in placing the students at premier industry.**

**Department Mission**

**M1: To equip students with ability to be innovative and excellence to face the challenges in the digital world.**

**M2: To prepare students with high quality employability skills catering to current trends in industries, problem solving skills, innovative pursuits and ready to face challenges in the domain and allied disciplines.**

**M3: To provide ambience for entrepreneurship and start-ups through incubation center among students.**

**M4: To encourage continuous faculty training on industry-based Development, and Innovation.**

**PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)**

**Technical Proficiency** Graduates will have a strong foundation in core concepts, tools, and technologies relevant to their discipline.

**Career Development** Graduate will be capable of pursuing diverse career paths in field of Computer Science & Engineering with proficiency in software development/ pursue higher education an or become entrepreneurs.

**Problem-Solving** Graduates will have a strong math foundation so that they will be proficient problem solvers, capable of identifying, analyzing , and solving complex technical problems using critical thinking and creative approaches.

**Professional Attitude** Graduates will be sensitive to societal and professional environment, possess strong communication skills and will be skilled in working collaboratively within diverse teams adhering to ethical standards and professional practices.

**Learning Environment** To create a learning environment that ensures graduates continue learning throughout their careers, effortlessly adopting new technologies to stay innovative in their chosen fields and remain effective contributors in their chosen field.

**PROGRAM SPECIFIC OUTCOMES (PSO's)**

**PSO1**: Students will be able to design, develop, test, debug, deploy, analyse, troubleshoot, maintain, manage, and ensure security during the complete product lifecycle.

**PSO2**: Student will be able to apply software engineering/ information system development skills to solve problems across diverse domains.

**PSO3**: Students will be well-prepared to initiate and oversee innovative startups within their respective sectors.

**PROGRAMME OUTCOMES (POs)**

**A student will develop:**

**PO01. ENGINEERING KNOWLEDGE:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO02. PROBLEM ANALYSIS:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO03. DESIGN/ DEVELOPMENT OF SOLUTION:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO04. CONDUCTION OF INVESTIGATION OF COMPLEX PROBLEMS:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO05. MODERN TOOL USAGE:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with and understanding of the limitations.

**PO06. THE ENGINEERING AND SOCIETY:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO07. ENVIRONMENT & SUSTAINABILITY:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO08. ETHICS:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO09. INDIVIDUAL AND TEAM WORK:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10. COMMUNICATION:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11. PROJECT MANAGEMENT & FINANCE:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12. LIFE-LONG LEARNING:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

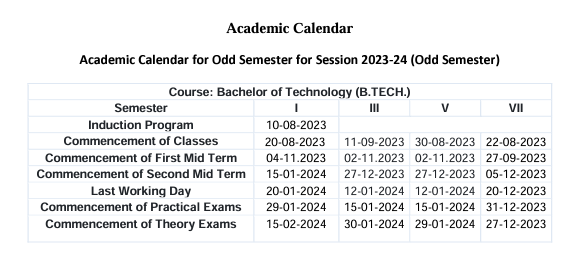
**COURSE OUTCOMES (COs) OF THE SUBJECT**

|  |  |  |
| --- | --- | --- |
| **CO.NO.** | **Cognitive Level** | **Course Outcome** |
| 1 | Understanding | Students will be able to classify various number systems and will be able to relate their application in digital electronics. |
| 2 | Applying | Students will be able to apply K-map & QM technique to optimize the Boolean function to the simplest form for the implementation of compact digital circuits. |
| 3 | Analyzing | Students will be able to classify logic families and analyze basic circuits of these families. |
| 4 | Creating | Students will be able to design combinational circuits like half adder, full adder, MUX, DEMUX encoder, decoder. |
| 5 | Creating | Students will be able to design synchronous and asynchronous sequential circuits like registers FLIP FLOP, and counters. |

**COS MAPPING WITH POs AND PSOs**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Outcome** | **Program Outcomes (PO’s)** | | | | | | | | | | | |
| **CO. NO.** | **Domain Specific** | | | | | **Domain Independent** | | | | | | |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| CO1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| CO2 | 1 | 1 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| CO3 | 2 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| CO4 | 1 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| CO5 | 1 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1: Slight (Low) , 2: Moderate (Medium), 3: Substantial (High) | | | | | | | | | | | | |

**UNIVERSITY ACADEMIC CALENDAR**



**Evaluation Scheme**

FACULTY DETAILS:

Name of the Faculty : Yogendra Singh Solanki

Designation : Assistant Professor

Department : Computer Science Engineering

1. TARGET

a) Percentage Pass : 100%

b) Percentage I class: 60 %

2. METHOD OF EVALUATION

2.1. Continuous Assessment Examinations (Mid-Term 1, Mid-Term 2)

2.2. Assignments / Seminars

2.3. Mini Projects

2.4. Quiz

2.5. Semester Examination

Others\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. List out any new topic(s) or any innovation you would like to introduce in teaching the subject in this Semester.

1. Take the help of creative tools to stimulate creativity. Include slide presentations, demonstration or forms of visual exercises that will excite the young minds and capture their interest.

Signature of Faculty: **Signature of HOD**

**UNIVERSITY SYLLABUS**

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**PRESCRIBED BOOKS**

1. Modern Digital Electronics, R.P Jain, Tata McGraw-Hill Education
2. Digital Circuit & Logic Design, Morris Mano, Prentice Hall of India
3. Digital Principles & Applications, A.P.Malvino & D.P Leach, Tata McGraw-Hill Education

**WEEKLY TIME TABLE OF THE TEACHER**

First Time Table: with effect from (Date):

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| Monday |  |  |  |  |  |  |  |
| Tuesday |  |  |  |  |  |  |  |
| Wednesday |  |  |  |  |  |  |  |
| Thursday |  |  |  |  |  |  |  |
| Friday |  |  |  |  |  |  |  |
| Saturday |  |  |  |  |  |  |  |

Revision: 1 with effect from (Date):

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Day** | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| Monday |  |  |  |  |  |  |  |
| Tuesday |  |  |  |  |  |  |  |
| Wednesday |  |  |  |  |  |  |  |
| Thursday |  |  |  |  |  |  |  |
| Friday |  |  |  |  |  |  |  |
| Saturday |  |  |  |  |  |  |  |

**COURSE-PLAN**

|  |  |  |  |
| --- | --- | --- | --- |
| **UNIT** | **Lect.**  **No.** | **TOPICS** | **Teaching Methods/ Teaching Aids** |
| **1** | 1 | **Fundamental concepts:** Number systems and codes, | White Board |
| 1 | 2 | Basic logic Gates and Boolean algebra | White Board |
| 1 | 3 | Sign & magnitude representation, Fixed point representation | White Board |
| 1 | 4 | Sign & magnitude representation, Fixed point representation | White Board |
| 1 | 5 | Complement notation, various codes & arithmetic in different codes &their inter conversion | White Board |
| 1 | 6 | Complement notation, various codes & arithmetic in different codes &their inter conversion | White Board |
| 1 | 7 | Features of logic algebra, postulates of Boolean algebra | White Board |
| 1 | 8 | Theorems of Boolean algebra | White Board |
| **2** | 9 | **Minimization Techniques and Logic Gates**: Principle of Duality | White Board |
| 2 | 10 | Boolean expression -Minimization of Boolean expressions | White Board |
| 2 | 11 | Minterm – Maxterm - Sum of Products (SOP) – Product of Sums (POS) | White Board |
| 2 | 12 | Karnaugh map Minimization in SOP form | White Board |
| 2 | 13 | Karnaugh map Minimization in POS form | White Board |
| 2 | 14 | Karnaugh map Minimization with Don’t care conditions | White Board |
| 2 | 15 | Quine - McCluskey method of minimization without Don’t care conditions | White Board |
| 2 | 16 | Quine - McCluskey method of minimization with Don’t care conditions | White Board |
| **3** | 17 | **Digital Logic Gate Characteristics:** TTL logic gate characteristics. | White Board, PPT |
| 3 | 18 | Theory & operation of TTL NAND gate  circuitry | White Board |
| 3 | 19 | Open collector TTL | White Board |
| 3 | 20 | Three state output logic | White Board |
| 3 | 21 | TTL subfamilies | White Board |
| 3 | 22 | MOS& CMOS logic families | White Board |
| 3 | 23 | Realization of logic gates in RTL,ECL,DTL | White Board |
| 3 | 24 | Realization of logic gates in C-MOS & MOSFET | White Board |
| **4** | 25 | **Combinational Circuits:** Combinational logic circuit design | White Board, Simulation |
| 4 | 26 | Designing of adder, subtractor | White Board, Simulation |
| 4 | 27 | Designing of BCD adder | White Board, Simulation |
| 4 | 28 | Designing of encoder | White Board, Simulation |
| 4 | 29 | Designing of decoder | White Board, Simulation |
| 4 | 30 | Designing of BCD to 7-segment decoder | White Board, Simulation |
| 4 | 31 | Designing of multiplexer | White Board, Simulation |
| 4 | 32 | Designing of demultiplexer | White Board, Simulation |
| **5** | 33 | **Sequential Circuits:** Latches, Flip-flops | White Board, Simulation |
| 5 | 34 | SR, JK, D, T Flip Flop Characteristic table and equation | White Board, Simulation |
| 5 | 35 | Master-Slave Characteristic table and equation | White Board, Simulation |
| 5 | 36 | counters and their design, Asynchronous counters | White Board, Simulation |
| 5 | 37 | Synchronous Up/Down counters | White Board, Simulation |
| 5 | 38 | Programmable counters | White Board, Simulation |
| 5 | 39 | State table and state transition diagram | White Board, Simulation |
| 5 | 40 | sequential circuits design methodology. Registers –shift registers | White Board, Simulation |

**Signature of Faculty: Signature of HOD**

**Assignment Sheet 1**

Digital Electronics (**3CS304**)

|  |  |
| --- | --- |
|  | Convert to canonical POS form f (A, B, C) = (A+C) (A+C’) (A+B) |
|  | Simplify using Boolean algebra Y = (A+B’+AB) (A+ B’) (A’B)s |
|  | Add using 2’s Compliment method +49 and -37 |
|  | Express the following   * 3421in excess 3 form * 82 in gray code form |
|  | Design 8:1 mux using 2:1 mux |
|  | Design 1-bit full subtractor |
|  | Design 2-to-4-line decoder |
|  | Design Half adder using NAND gate only. |
|  | Implement D flipflop using JK flipflop. |
|  | Explain Race around condition. |

|  |
| --- |
| 1. Write short note on Parity code &Hamming code, also encode the 0101 into a 7 bit even parity hamming code |
| 1. Convert the following :  * 1101111.101 to decimal * AB2 to octal * 4163 octal to hexadecimal * 011.101101 to octal * 72.45 decimal to binary |
| 1. Obtain minimized SOP & POS expression using K-Map for   **F (A, B, C, D) = πM (4,5,6,7,8,12) + d (1,2,3)** |
| 2. Obtain minimized SOP & POS expression using K-Map for  **F (A, B, C, D) = ∑m (0,1,2,3,5,7,8,9,11,14)** |
| 1. Implement the given Boolean function Y = A + BC using 4:1 mux & 3:8 Decoder |
| 3. Design 4-bit BCD adder using IC 7483 & logic gates |
| 1. Design a combinational circuit which accepts 4-bit inputs and output is 1 if the input contains the even number of 1’s otherwise output is zero. |
| 4. Design 4 bit Binary to Gray code converter. |
| 1. Design a Synchronous counter using JK flipflop which counts following sequence 7-3-1-2-5-4-6-7 |
| 5. Design mod-12 asynchronous counter. |

**Assignment II**

Digital Electronics (**3CS304**)

|  | Explain Propagation delay |
| --- | --- |
|  | Explain Noise Margin or immunity. |
|  | Short note on PLA & PAL devices. |
|  | Implement Y = AB + C using CMOS logic |
|  | Write VHDL code for **Y = AB’** in structural modeling style. |
|  | Short note on VHDL data objects. |
|  | Define VHDL Synthesis |
|  | Define VHDL Simulation |
|  | Difference between Mealy & Moore model of FSM |
|  | What are the basic components of ASM charts? |

| 1. Draw the labeled circuit diagram for TTL Nand gate with totem pole output and explain its working. |
| --- |
| 1. Explain the interfacing of TTL logic family with CMOS logic family. |

| 1. Short note on CPLD & FPGA |
| --- |
| 2. Draw the circuit diagram for RTL NAND gate & NOR gate & explain its working. |

| 3. Draw the VLSI design flow diagram and explain all the phases. |
| --- |
| 3. Explain different type of data types in VHDL. |

| 4. Write VHDL code for JK flip flop using behavioral modeling style. |
| --- |
| 4. Write a VHDL code for Full adder using structural modeling style. |

| 5. Design binary sequence generator to generate “10110” |
| --- |
| 5. Design the FSM for the given state diagram. |

**MULTIPLE CHOICE QUESTIONS**

1) A ripple counter's speed is limited by the propagation delay of

a) each flip-flop

b) all flip-flops and gates

c) the flip-flops only with gates

d) only circuit gates

2) To operate correctly, starting a ring counter requires

a) clearing all the flip-flops

b) presetting one flip-flop and clearing all the others

c) clearing one flip-flop and presetting all the others

d) presetting all the flip-flops

3) What type of register would shift a complete binary number in one bit at a time and shift

all the stored bits out one bit at a time?

a) PIPO

b) SISO

c) SIPO

d) PISO

4) A comparison between ring and johnson counters indicates that

a) a ring counter has fewer flip-flops but requires more decoding circuitry

b) a ring counter has an inverted feedback path

c) a johnson counter has more flip-flops but less decoding circuitry

d) a johnson counter has an inverted feedback path

5) Mod-6 and mod-12 counters are most commonly used in

a) frequency counters

b) multiplexed displays

c) digital clocks

d) power consumption meters

6) What is a shift register that will accept a parallel input and can shift data left or right

called

a) tri-state

b) end around

c) bidirectional universal

d) conversion

7) Which sequential circuits generate the feedback path due to the cross-coupled connection

from output of one gate to the input of another gate?

a) Synchronous

b) Asynchronous

c) Both

d) None of the above

8) The behaviour of synchronous sequential circuit can be predicted by defining the signals

at \_\_\_\_\_\_.

a) discrete instants of time

b) continuous instants of time

c) sampling instants of time

d) at any instant of time

9) How is a J-K flip-flop made to toggle

a) J = 0, K = 0

b) J = 1, K = 0

c) J = 0, K = 1

d) J = 1, K = 1

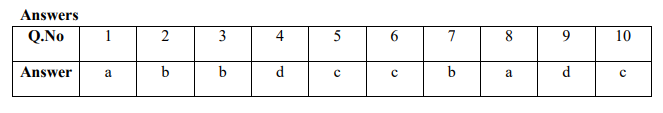
10) The ‘T’ in the flip flop stands for

a) Time

b) Transfer

c) Toggle

d) Trigger

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**Mid Term Paper-I**

**TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY, UDAIPUR**

B. TECH 2nd – YEAR (III SEM.) – MT-I

Digital Electronics (**3CS3-04**)

**Time:2 Hr** **Max. Marks: 70**

**Note:**

1. The paper is divided into 2 parts: Part-A& Part-B.
2. Part-A contains 10 questions and carries 2marks each.
3. Part-B contains 5 questions. Each question is having two options and carries 10 marks each.

**Part- A (20 Marks)**

|  |  |
| --- | --- |
| 1. Explain in detail with example about fixed-point representation. | **CO 1** |
| 1. Find the excess 3 equivalent of: 345&Find 9’s Compliment of: 1423 | **CO 1** |
| 1. Realize following expression using Universal NAND gate only   Y = AB + B’C | **CO 2** |
| 1. Design 8:1 MUX using basic gates. | **CO 4** |
| 1. Design Half subtractor circuit with circuit diagram. | **CO 4** |
| 1. Perform the following subtraction using 2’s Compliment method. 2. 11011 – 11001 ii) 11001 – 11011 | **CO 1** |
| 1. Convert the following numbers as required in each case   (603.23)8= ( ? ) 2 (603.23)8 = ( ? ) 2 (15C.38)16 = (?)8 | **CO 1** |
| 1. Simplify the following Boolean expressionA[B+C(AB + AC)’] | **CO 1** |
| 1. Express the function Y = A + B’C  * Canonical SOP form&Canonical POS form | **CO 2** |
| 1. Simplify the expression using K-Map π (0,1,4,5,6,8,9,12,13,14) | **CO 2** |

**Part- B (40 Marks)**

|  |  |
| --- | --- |
| 1. Explain in detail with example weighted binary codes. | **CO1** |
| OR | |
| 1. Explain in detail with example non- weighted binary codes. | **CO1** |

|  |  |
| --- | --- |
| 1. Reduce the following Boolean function using Quine Mc-Cluskey   Y = ∑m (0,2,3,6,7) + ∑d ( 8,10,11,15) | **CO 2** |
| OR | |
| 1. Design Full adder circuit and draw the circuit diagram for 4 bit ripple carry adder. | **CO 4** |

|  |  |
| --- | --- |
| 1. Explain in detail about difference between Error detection and correction codes. Also explain in detail about Parity Codes & Hamming Code | **CO1** |
| OR | |
| 1. Reduce the following Boolean function using Quine Mc-Cluskey   Y = ∑m (1,3,4,5,9,10,11) + ∑d ( 6,8) | **CO2** |

|  |  |
| --- | --- |
| 1. Design a BCD adder circuit using full adder IC 7483 | **CO 4** |
| OR | |
| 4. Design Decimal to BCD encoder | **CO 4** |

|  |  |
| --- | --- |
| 1. Design BCD to Excess 3 Code converter | **CO 4** |
| **OR** | |
| 5. Design 3 to 8 decoder circuit. | **CO 4** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Marks and Gap Analysis of Mid-Term 1** | | | | |
| Sr. No | RTU Roll Number | Name of the Student | M-1 Marks (70) | Remark ( Remedial Class need or not – Y/N ) |
| 1 | 22ETCCS001 | AADARSH SONI | 42 | N |
| 2 | 22ETCCS002 | ABDUL ATTIF | 38 | N |
| 3 | 22ETCCS003 | ABHIJEET GARG | 61 | N |
| 4 | 22ETCCS004 | ADITYA CHHIPA | 70 | N |
| 5 | 22ETCCS005 | ADITYA GIRI GOSWAMI | 68 | N |
| 6 | 22ETCCS006 | ADITYA SHARMA | 63 | N |
| 7 | 22ETCCS007 | AJIT KUMAR | 40 | N |
| 8 | 22ETCCS008 | AKASH SONI | 66 | N |
| 9 | 22ETCCS009 | AKSHAT JANGID | 70 | N |
| 10 | 22ETCCS010 | AKSHAT KUMAR SAINI | 61 | N |
| 11 | 22ETCCS011 | AKSHI BARGURJAR | 47 | N |
| 12 | 22ETCCS012 | AKSHIT NALWAYA | 42 | N |
| 13 | 22ETCCS013 | AKSHITA KUMAWAT | 63 | N |
| 14 | 22ETCCS014 | AKSHITA PANCHAL | 70 | N |
| 15 | 22ETCCS015 | ALI ASGAR ORA WALA | 45 | N |
| 16 | 22ETCCS017 | ANGHA VARANGAONKAR | 70 | N |
| 17 | 22ETCCS018 | ANKIT DHANAWAT | 68 | N |
| 18 | 22ETCCS019 | ANSHIKA JAIN | 70 | N |
| 19 | 22ETCCS020 | ARCHIT JAIN | 45 | N |
| 20 | 22ETCCS021 | ARIN UPADHAYAY | 28 | Y |
| 21 | 22ETCCS022 | ARUSH MENARIA | 70 | N |
| 22 | 22ETCCS023 | ARYAN TALWAR | 66 | N |
| 23 | 22ETCCS024 | AVIKA SURANA | 33 | Y |
| 24 | 22ETCCS025 | BHAWANA KUMARI | 70 | N |
| 25 | 22ETCCS026 | BHUMI JAIN | 56 | N |
| 26 | 22ETCCS027 | BHUWAN SUTHAR | 33 | Y |
| 27 | 22ETCCS028 | CHETAN NAGDA | 38 | N |
| 28 | 22ETCCS029 | CHIRAG SHARMA | 42 | N |
| 29 | 22ETCCS030 | MS. CIA SHARMMA | 59 | N |
| 30 | 22ETCCS031 | DAIVIK SHARMA | 47 | N |
| 31 | 22ETCCS032 | DAKSH JAIN | 66 | N |
| 32 | 22ETCCS033 | DAKSH MENARIA | 52 | N |
| 33 | 22ETCCS034 | DEV PARAKH | 70 | N |
| 34 | 22ETCCS035 | DHANESH JOSHI | 61 | N |
| 35 | 22ETCCS036 | DHEERAJ SINGH THAPA | 47 | N |
| 36 | 22ETCCS037 | DHWANI KHUSHLANI | 70 | N |
| 37 | 22ETCCS038 | DIKSHIT DARJI | 47 | N |
| 38 | 22ETCCS039 | MSDIKSHITA SHARMA | 49 | N |
| 39 | 22ETCCS040 | DIVYA BAGORA | 70 | N |
| 40 | 22ETCCS041 | DIVYANSHU SHARMA | 59 | N |
| 41 | 22ETCCS042 | DIVYASHAKTI PAL | 49 | N |
| 42 | 22ETCCS043 | DIYA JAIN | 52 | N |
| 43 | 22ETCCS044 | DIYA PALIWAL | 70 | N |
| 44 | 22ETCCS045 | FALGUN CHOUDHARY | 70 | N |
| 45 | 22ETCCS046 | GARGI SHARMA | 70 | N |
| 46 | 22ETCCS047 | GARV BAKLIWAL | 63 | N |
| 47 | 22ETCCS048 | GARVIT NANDAWAT | 49 | N |
| 48 | 22ETCCS049 | GAURAV JAIN | 68 | N |
| 49 | 22ETCCS050 | GAURAVI NEGI | 66 | N |
| 50 | 22ETCCS051 | GAURI SUTHAR | 70 | N |
| 51 | 22ETCCS053 | GOURAV POKHARNA | 68 | N |
| 52 | 22ETCCS054 | HARDIK BATWAL | 66 | N |
| 53 | 22ETCCS055 | HARSH DANGI | 61 | N |
| 54 | 22ETCCS056 | HARSH KAWADIA | 70 | N |
| 55 | 22ETCCS057 | HARSH TAMBOLI | 66 | N |
| 56 | 22ETCCS058 | HARSHAL JAIN | 52 | N |
| 57 | 22ETCCS059 | HARSHIT POKHARNA | 70 | N |
| 58 | 22ETCCS060 | HARSHVARDHAN SINGH CHAUHAN | 54 | N |
| 59 | 22ETCCS061 | HARSHVARDHAN SINGH KITAWAT | 52 | N |
| 60 | 22ETCCS062 | HEMANT AHUJA | 56 | N |
| 61 | 22ETCCS064 | HIMANK LOHAR | 56 | N |
| 62 | 22ETCCS065 | HIMANSHI PRAJAPAT | 66 | N |
| 63 | 22ETCCS066 | HIMANSHU KALAL | 35 | Y |
| 64 | 22ETCCS067 | HONHAR RAWAL | 61 | N |
| 65 | 22ETCCS068 | HUSAIN BOHRA TIDIWALA | 63 | N |
| 66 | 22ETCCS069 | JAINISH JAIN | 54 | N |
| 67 | 22ETCCS070 | JAYESH JOSHI | 66 | N |
| 68 | 22ETCCS071 | JAYESH MANDAWAT | 38 | N |
| 69 | 22ETCCS072 | JINENDRA SINGH DODIYA | 66 | N |
| 70 | 22ETCCS073 | KANIKA GUPTA | 70 | N |
| 71 | 22ETCCS074 | KANISHK GUPTA | 59 | N |
| 72 | 22ETCCS075 | KAPIL KALAL | 70 | N |
| 73 | 22ETCCS076 | KARAN SWAMI | 70 | N |
| 74 | 22ETCCS077 | KARTIK JAIN | 70 | N |
| 75 | 22ETCCS078 | KARTIK KRISHNA KALE | 70 | N |
| 76 | 22ETCCS079 | KAVYA PALIWAL | 70 | N |
| 77 | 22ETCCS080 | KETAN OJHA | 68 | N |
| 78 | 22ETCCS081 | KHUSH JAIN | 70 | N |
| 79 | 22ETCCS082 | KHUSHI SHARMA | 63 | N |
| 80 | 22ETCCS083 | KIRTAN TAMBOLI | 68 | N |
| 81 | 22ETCCS085 | KONPAL SHARMA | 56 | N |
| 82 | 22ETCCS086 | KRITI PATWA | 70 | N |
| 83 | 22ETCCS087 | KUSH PARSAI | 68 | N |
| 84 | 22ETCCS088 | KUSHAL MEENA | 56 | N |
| 85 | 22ETCCS089 | LAKSHIT PALIWAL | 63 | N |
| 86 | 22ETCCS090 | LAKSHY JAIN | 40 | N |
| 87 | 22ETCCS091 | LAKSHYARAJ CHOUDHARY | 70 | N |
| 88 | 22ETCCS092 | LAL SINGH JHALA | 54 | N |
| 89 | 22ETCCS093 | LUCKY LOHAR | 70 | N |
| 90 | 22ETCCS094 | MAHATV BHATNAGAR | 42 | N |
| 91 | 22ETCCS095 | MAHENDRA SINGH SISODIYA | 68 | N |
| 92 | 22ETCCS096 | MSMAHIMA CHOUHAN | 66 | N |
| 93 | 22ETCCS097 | MAHIPAL SINGH JHALA | 70 | N |
| 94 | 22ETCCS098 | MAHIRAJ SINGH SANKHLA | 66 | N |
| 95 | 22ETCCS099 | MANAS PARWANI | 52 | N |
| 96 | 22ETCCS100 | MANASVI SHARMA | 45 | N |
| 97 | 22ETCCS101 | MANASWINI SHARMA | 68 | N |
| 98 | 22ETCCS102 | MANSI DUBE | 70 | N |
| 99 | 22ETCCS103 | MAYANK KASERA | 66 | N |
| 100 | 22ETCCS104 | MAYANK TRIVEDI | 47 | N |
| 101 | 22ETCCS105 | MEDHAVI KAUSHIK | 68 | N |
| 102 | 22ETCCS106 | MEETRAJ SINGH | 70 | N |
| 103 | 22ETCCS107 | MITALI PALIWAL | 68 | N |
| 104 | 22ETCCS108 | MITVESH AMETA | 61 | N |
| 105 | 22ETCCS109 | MOHAMMED YASAR | 70 | N |
| 106 | 22ETCCS110 | MOHIT KALAL | 63 | N |
| 107 | 22ETCCS111 | MOHIT KUMAWAT | 68 | N |
| 108 | 22ETCCS112 | MONIL SETH | 66 | N |
| 109 | 22ETCCS113 | NAKUL PANDYA | 66 | N |
| 110 | 22ETCCS114 | NEERAJ DANGI | 49 | N |
| 111 | 22ETCCS115 | NIKHIL RAJ MALI | 61 | N |
| 112 | 22ETCCS116 | NIMISHKA CHAUHAN | 66 | N |
| 113 | 22ETCCS117 | NISHANT MENARIA | 70 | N |
| 114 | 22ETCCS118 | MSPALAK KUMAWAT | 56 | N |
| 115 | 22ETCCS119 | PARSHVI HARKAWAT | 66 | N |
| 116 | 22ETCCS120 | PRAGYA BUJ | 59 | N |
| 117 | 22ETCCS121 | PRATIBHA SINGH | 70 | N |
| 118 | 22ETCCS122 | PRINCE DANGI | 66 | N |
| 119 | 22ETCCS123 | PRIYANSH JAIN | 66 | N |
| 120 | 22ETCCS124 | PURVAM CHATURVEDI | 59 | N |
| 121 | 22ETCCS125 | PUSHKAR GAMETI | 52 | N |
| 122 | 22ETCCS126 | PUSHPENDRA MENARIA | 70 | N |
| 123 | 22ETCCS127 | QAIDJOHAR JUKKER | 61 | N |
| 124 | 22ETCCS128 | RAGHAVENDRA BAHETI | 54 | N |
| 125 | 22ETCCS129 | RAJ LAXKAR | 70 | N |
| 126 | 22ETCCS130 | RAJ SHRIMALI | 63 | N |
| 127 | 22ETCCS131 | RAM MUNDRA | 63 | N |
| 128 | 22ETCCS132 | RAMMITH K R | 61 | N |
| 129 | 22ETCCS133 | RANITH BISWAS | 63 | N |
| 130 | 22ETCCS134 | RANJIT SINGH SHAKTAWAT | 70 | N |
| 131 | 22ETCCS135 | MSRAUNAK TAK | 63 | N |
| 132 | 22ETCCS136 | RAVI JOSHI | 61 | N |
| 133 | 22ETCCS137 | RAVI MENARIYA | 70 | N |
| 134 | 22ETCCS138 | RITIK SHARMA | 56 | N |
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| 136 | 22ETCCS140 | ROHIT AGARWAL | 70 | N |
| 137 | 22ETCCS141 | ROSHAN SHARMA | 70 | N |
| 138 | 22ETCCS142 | ROSHNI MENARIA | 68 | N |
| 139 | 22ETCCS143 | RUDRA PUROHIT | 59 | N |
| 140 | 22ETCCS144 | RUDRAVEER SINGH PANWAR | 68 | N |
| 141 | 22ETCCS145 | SHAAN SANADHYA | 59 | N |
| 142 | 22ETCCS146 | SHACHI JAIN | 56 | N |
| 143 | 22ETCCS147 | SHAURYA KUNDAR | 38 | N |
| 144 | 22ETCCS148 | SHOURYA BORDIA | 56 | N |
| 145 | 22ETCCS149 | SHUBHAM YADAV | 52 | N |
| 146 | 22ETCCS150 | SIDDHARTH KUMAR SINGH | 40 | N |
| 147 | 22ETCCS151 | SIDDHARTH MENARIA | 66 | N |
| 148 | 22ETCCS152 | SRAJAN MENARIA | 42 | N |
| 149 | 22ETCCS154 | SUMIT DANGI | 59 | N |
| 150 | 22ETCCS155 | SURBHI TAILOR | 45 | N |
| 151 | 22ETCCS156 | SURYANSH MADHUKAR | 61 | N |
| 152 | 22ETCCS157 | TALENT JAIN | 47 | N |
| 153 | 22ETCCS158 | TANISHK VYAS | 66 | N |
| 154 | 22ETCCS159 | TANVI SHARMA | 52 | N |
| 155 | 22ETCCS160 | TOHEED AKHTAR | 56 | N |
| 156 | 22ETCCS161 | TUSHAR PRAJAPAT | 42 | N |
| 157 | 22ETCCS162 | TUSHAR SINGH RAWAT | 70 | N |
| 158 | 22ETCCS163 | UJJWAL SINGH CHOUHAN | 38 | N |
| 159 | 22ETCCS164 | USHIT SHARMA | 54 | N |
| 160 | 22ETCCS165 | UTKARSH BAJPAI | 56 | N |
| 161 | 22ETCCS166 | VAIBHAV GOYAL | 70 | N |
| 162 | 22ETCCS167 | VANSH BHATNAGAR | 70 | N |
| 163 | 22ETCCS168 | VINAY VADERA | 63 | N |
| 164 | 22ETCCS169 | VINITA MENARIA | 70 | N |
| 165 | 22ETCCS170 | VISHAL MENARIYA | 70 | N |
| 166 | 22ETCCS171 | VISHAL SINGH RAO | 52 | N |
| 167 | 22ETCCS172 | VIVEK SHARMA | 70 | N |
| 168 | 22ETCCS173 | VIVEK SHRIMALI | 54 | N |
| 169 | 22ETCCS174 | YANA OZHA | 70 | N |
| 170 | 22ETCCS175 | YASH VAGHELA | 68 | N |
| 171 | 22ETCCS300 | KEVALI ASHOK KANAGALE | 66 | N |
| 172 | 22ETCCS301 | KARAN SUTHAR | 33 | Y |
| 173 | 22ETCCS302 | VINEET SHARMA | 70 | N |
| 174 | 23ETCCS200 | GOPAL PALIWAL | 28 | Y |
| 175 | 23ETCCS201 | MANISH VYAS | 52 | N |
| 176 | 23ETCCS202 | RAHUL RAJPUROHIT | 61 | N |
| 177 | 23ETCCS203 | VAISHALI H PUROHIT | 66 | N |
| 178 | 23ETCCS204 | YASH SINGHATWADIA | 47 | N |

**Signature of Faculty: Signature of HOD**

**Mid Term Paper-II**

# B. TECH II – YEAR (III SEM.)

# ComputerScience&Engineering

**Digital Electronic (3CS3-04)**

**Mid Term II**

## MaxMarks: 70 Time:2 Hrs

Note:1) The paper is divided into 2 parts: Part-A and, Part-B  
2) Part-A contains 10 questions and carries 2 mark each.  
3) Part-B contains 5 questions. Each question is having two options and carries 10 marks each.

## PART – A

|  |  |  |
| --- | --- | --- |
|  | Design 16:1 Mux using 2:1 Mux only. | [CO4] |
|  | Design 1:8 De-mux using basic gates. | [CO4] |
|  | Realize D flip flop using JK flip flop. | [CO5] |
|  | Draw circuit diagram of PISO shift register and explain. | [CO5] |
|  | State the steps for sequential circuit design. | [CO5] |
|  | Explain the working of JK flip flop. | [CO5] |
|  | Define VIH, VIL, VOL, VOH. | [CO3] |
|  | Write short note of RTL & DTL logic family. | [CO3] |
|  | Draw CMOS circuit for AND gate. | [CO3] |
|  | Draw AND gate using DTL logic. | [CO3] |

## PART – B

|  |  |  |
| --- | --- | --- |
|  | Design a synchronous counter with the following binary sequence: 0, 4, 2 ,1 6 and repeat using JK flip flop | [CO5] |
| **OR** | | |
|  | Explain Race Around Condition and working of Master slave JK flip flop. | [CO5] |

|  |  |  |
| --- | --- | --- |
|  | Design Mod-12 asynchronous up counter and draw the output waveforms. | [CO5] |
| **OR** | | |
|  | Design 3-bit synchronous UP / Down counter | [CO5] |

|  |  |  |
| --- | --- | --- |
|  | Draw the circuit diagram of TTL NAND gate with totem pole output configuration and explain its working. | [CO3] |
| **OR** | | |
|  | Draw the CMOS circuit diagram for   1. NAND gate b) NOR Gate c) XOR gate | [CO3] |

|  |  |  |
| --- | --- | --- |
|  | Explain the following Digital IC characteristic parameters:   1. Noise Margin b) Speed of operation c) Fan in & Fan Out | [CO3] |
| **OR** | | |
|  | What are the different logic families, draw the tree and explain the classification | [CO3] |

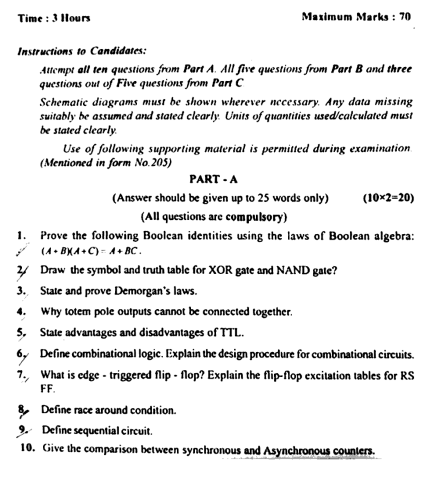
|  |  |  |
| --- | --- | --- |
|  | Design BCD to Excess 3 encoder | [CO4] |
| **OR** | | |
|  | Design Binary to Gray decoder | [CO4] |

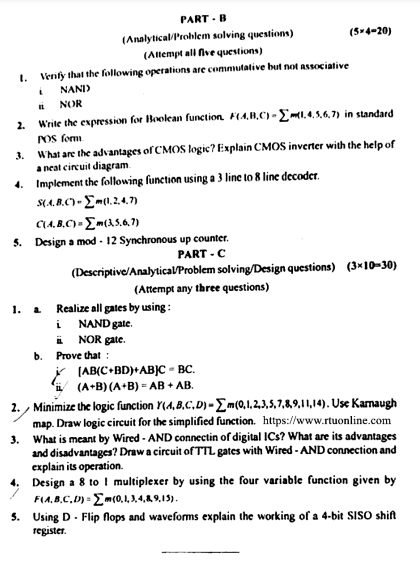
------------------------------------------- **All the Best** -------------------------------------------------

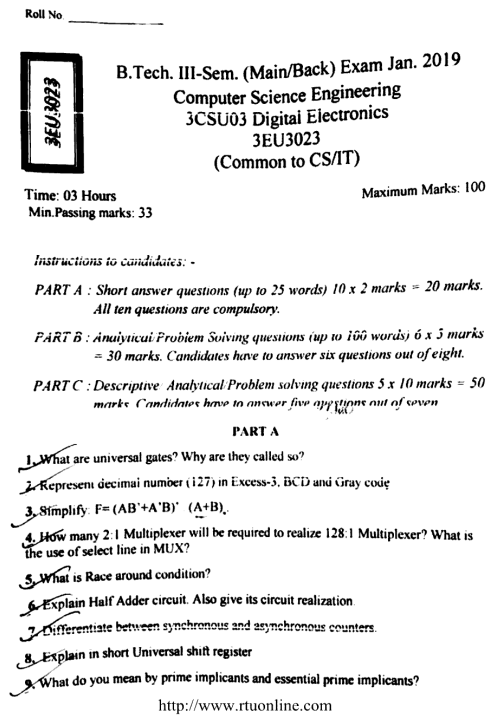
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Marks and Gap Analysis of Mid-Term 2** | | | | |
| Sr. No | RTU Roll Number | Name of the Student | M-1 Marks (70) | Remark ( Remedial Class need or not – Y/N ) |
| 1 | 22ETCCS001 | AADARSH SONI | 70 | N |
| 2 | 22ETCCS002 | ABDUL ATTIF | 70 | N |
| 3 | 22ETCCS003 | ABHIJEET GARG | 70 | N |
| 4 | 22ETCCS004 | ADITYA CHHIPA | 70 | N |
| 5 | 22ETCCS005 | ADITYA GIRI GOSWAMI | 59 | N |
| 6 | 22ETCCS006 | ADITYA SHARMA | 63 | N |
| 7 | 22ETCCS007 | AJIT KUMAR | 68 | N |
| 8 | 22ETCCS008 | AKASH SONI | 70 | N |
| 9 | 22ETCCS009 | AKSHAT JANGID | 61 | N |
| 10 | 22ETCCS010 | AKSHAT KUMAR SAINI | 66 | N |
| 11 | 22ETCCS011 | AKSHI BARGURJAR | 70 | N |
| 12 | 22ETCCS012 | AKSHIT NALWAYA | 66 | N |
| 13 | 22ETCCS013 | AKSHITA KUMAWAT | 68 | N |
| 14 | 22ETCCS014 | AKSHITA PANCHAL | 66 | N |
| 15 | 22ETCCS015 | ALI ASGAR ORA WALA | 68 | N |
| 16 | 22ETCCS017 | ANGHA VARANGAONKAR | 66 | N |
| 17 | 22ETCCS018 | ANKIT DHANAWAT | 63 | N |
| 18 | 22ETCCS019 | ANSHIKA JAIN | 70 | N |
| 19 | 22ETCCS020 | ARCHIT JAIN | 63 | N |
| 20 | 22ETCCS021 | ARIN UPADHAYAY | 70 | N |
| 21 | 22ETCCS022 | ARUSH MENARIA | 70 | N |
| 22 | 22ETCCS023 | ARYAN TALWAR | 70 | N |
| 23 | 22ETCCS024 | AVIKA SURANA | 70 | N |
| 24 | 22ETCCS025 | BHAWANA KUMARI | 70 | N |
| 25 | 22ETCCS026 | BHUMI JAIN | 70 | N |
| 26 | 22ETCCS027 | BHUWAN SUTHAR | 66 | N |
| 27 | 22ETCCS028 | CHETAN NAGDA | 61 | N |
| 28 | 22ETCCS029 | CHIRAG SHARMA | 56 | N |
| 29 | 22ETCCS030 | MS. CIA SHARMMA | 68 | N |
| 30 | 22ETCCS031 | DAIVIK SHARMA | 52 | N |
| 31 | 22ETCCS032 | DAKSH JAIN | 66 | N |
| 32 | 22ETCCS033 | DAKSH MENARIA | 47 | N |
| 33 | 22ETCCS034 | DEV PARAKH | 66 | N |
| 34 | 22ETCCS035 | DHANESH JOSHI | 70 | N |
| 35 | 22ETCCS036 | DHEERAJ SINGH THAPA | 66 | N |
| 36 | 22ETCCS037 | DHWANI KHUSHLANI | 70 | N |
| 37 | 22ETCCS038 | DIKSHIT DARJI | 61 | N |
| 38 | 22ETCCS039 | MSDIKSHITA SHARMA | 68 | N |
| 39 | 22ETCCS040 | DIVYA BAGORA | 61 | N |
| 40 | 22ETCCS041 | DIVYANSHU SHARMA | 68 | N |
| 41 | 22ETCCS042 | DIVYASHAKTI PAL | 63 | N |
| 42 | 22ETCCS043 | DIYA JAIN | 61 | N |
| 43 | 22ETCCS044 | DIYA PALIWAL | 70 | N |
| 44 | 22ETCCS045 | FALGUN CHOUDHARY | 70 | N |
| 45 | 22ETCCS046 | GARGI SHARMA | 66 | N |
| 46 | 22ETCCS047 | GARV BAKLIWAL | 68 | N |
| 47 | 22ETCCS048 | GARVIT NANDAWAT | 59 | N |
| 48 | 22ETCCS049 | GAURAV JAIN | 63 | N |
| 49 | 22ETCCS050 | GAURAVI NEGI | 66 | N |
| 50 | 22ETCCS051 | GAURI SUTHAR | 70 | N |
| 51 | 22ETCCS053 | GOURAV POKHARNA | 68 | N |
| 52 | 22ETCCS054 | HARDIK BATWAL | 70 | N |
| 53 | 22ETCCS055 | HARSH DANGI | 70 | N |
| 54 | 22ETCCS056 | HARSH KAWADIA | 66 | N |
| 55 | 22ETCCS057 | HARSH TAMBOLI | 56 | N |
| 56 | 22ETCCS058 | HARSHAL JAIN | 70 | N |
| 57 | 22ETCCS059 | HARSHIT POKHARNA | 66 | N |
| 58 | 22ETCCS060 | HARSHVARDHAN SINGH CHAUHAN | 68 | N |
| 59 | 22ETCCS061 | HARSHVARDHAN SINGH KITAWAT | 66 | N |
| 60 | 22ETCCS062 | HEMANT AHUJA | 66 | N |
| 61 | 22ETCCS064 | HIMANK LOHAR | 42 | N |
| 62 | 22ETCCS065 | HIMANSHI PRAJAPAT | 70 | N |
| 63 | 22ETCCS066 | HIMANSHU KALAL | 68 | N |
| 64 | 22ETCCS067 | HONHAR RAWAL | 38 | N |
| 65 | 22ETCCS068 | HUSAIN BOHRA TIDIWALA | 63 | N |
| 66 | 22ETCCS069 | JAINISH JAIN | 63 | N |
| 67 | 22ETCCS070 | JAYESH JOSHI | 61 | N |
| 68 | 22ETCCS071 | JAYESH MANDAWAT | 66 | N |
| 69 | 22ETCCS072 | JINENDRA SINGH DODIYA | 33 | Y |
| 70 | 22ETCCS073 | KANIKA GUPTA | 56 | N |
| 71 | 22ETCCS074 | KANISHK GUPTA | 63 | N |
| 72 | 22ETCCS075 | KAPIL KALAL | 28 | Y |
| 73 | 22ETCCS076 | KARAN SWAMI | 61 | N |
| 74 | 22ETCCS077 | KARTIK JAIN | 66 | N |
| 75 | 22ETCCS078 | KARTIK KRISHNA KALE | 70 | N |
| 76 | 22ETCCS079 | KAVYA PALIWAL | 28 | Y |
| 77 | 22ETCCS080 | KETAN OJHA | 59 | N |
| 78 | 22ETCCS081 | KHUSH JAIN | 70 | N |
| 79 | 22ETCCS082 | KHUSHI SHARMA | 68 | N |
| 80 | 22ETCCS083 | KIRTAN TAMBOLI | 59 | N |
| 81 | 22ETCCS085 | KONPAL SHARMA | 61 | N |
| 82 | 22ETCCS086 | KRITI PATWA | 70 | N |
| 83 | 22ETCCS087 | KUSH PARSAI | 63 | N |
| 84 | 22ETCCS088 | KUSHAL MEENA | 66 | N |
| 85 | 22ETCCS089 | LAKSHIT PALIWAL | 63 | N |
| 86 | 22ETCCS090 | LAKSHY JAIN | 63 | N |
| 87 | 22ETCCS091 | LAKSHYARAJ CHOUDHARY | 66 | N |
| 88 | 22ETCCS092 | LAL SINGH JHALA | 59 | N |
| 89 | 22ETCCS093 | LUCKY LOHAR | 47 | N |
| 90 | 22ETCCS094 | MAHATV BHATNAGAR | 61 | N |
| 91 | 22ETCCS095 | MAHENDRA SINGH SISODIYA | 68 | N |
| 92 | 22ETCCS096 | MSMAHIMA CHOUHAN | 66 | N |
| 93 | 22ETCCS097 | MAHIPAL SINGH JHALA | 52 | N |
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| 95 | 22ETCCS099 | MANAS PARWANI | 56 | N |
| 96 | 22ETCCS100 | MANASVI SHARMA | 59 | N |
| 97 | 22ETCCS101 | MANASWINI SHARMA | 54 | N |
| 98 | 22ETCCS102 | MANSI DUBE | 70 | N |
| 99 | 22ETCCS103 | MAYANK KASERA | 56 | N |
| 100 | 22ETCCS104 | MAYANK TRIVEDI | 56 | N |
| 101 | 22ETCCS105 | MEDHAVI KAUSHIK | 49 | N |
| 102 | 22ETCCS106 | MEETRAJ SINGH | 38 | N |
| 103 | 22ETCCS107 | MITALI PALIWAL | 40 | N |
| 104 | 22ETCCS108 | MITVESH AMETA | 38 | N |
| 105 | 22ETCCS109 | MOHAMMED YASAR | 42 | N |
| 106 | 22ETCCS110 | MOHIT KALAL | 59 | N |
| 107 | 22ETCCS111 | MOHIT KUMAWAT | 45 | N |
| 108 | 22ETCCS112 | MONIL SETH | 70 | N |
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| 110 | 22ETCCS114 | NEERAJ DANGI | 54 | N |
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| 118 | 22ETCCS122 | PRINCE DANGI | 42 | N |
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| 123 | 22ETCCS127 | QAIDJOHAR JUKKER | 70 | N |
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| 129 | 22ETCCS133 | RANITH BISWAS | 45 | N |
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| 131 | 22ETCCS135 | MSRAUNAK TAK | 63 | N |
| 132 | 22ETCCS136 | RAVI JOSHI | 47 | N |
| 133 | 22ETCCS137 | RAVI MENARIYA | 66 | N |
| 134 | 22ETCCS138 | RITIK SHARMA | 66 | N |
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| 136 | 22ETCCS140 | ROHIT AGARWAL | 70 | N |
| 137 | 22ETCCS141 | ROSHAN SHARMA | 33 | Y |
| 138 | 22ETCCS142 | ROSHNI MENARIA | 35 | Y |
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| 140 | 22ETCCS144 | RUDRAVEER SINGH PANWAR | 68 | N |
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| 144 | 22ETCCS148 | SHOURYA BORDIA | 42 | N |
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| 146 | 22ETCCS150 | SIDDHARTH KUMAR SINGH | 68 | N |
| 147 | 22ETCCS151 | SIDDHARTH MENARIA | 38 | N |
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| 149 | 22ETCCS154 | SUMIT DANGI | 63 | N |
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| 151 | 22ETCCS156 | SURYANSH MADHUKAR | 56 | N |
| 152 | 22ETCCS157 | TALENT JAIN | 52 | N |
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| 154 | 22ETCCS159 | TANVI SHARMA | 66 | N |
| 155 | 22ETCCS160 | TOHEED AKHTAR | 66 | N |
| 156 | 22ETCCS161 | TUSHAR PRAJAPAT | 56 | N |
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| 163 | 22ETCCS168 | VINAY VADERA | 40 | N |
| 164 | 22ETCCS169 | VINITA MENARIA | 70 | N |
| 165 | 22ETCCS170 | VISHAL MENARIYA | 70 | N |
| 166 | 22ETCCS171 | VISHAL SINGH RAO | 61 | N |
| 167 | 22ETCCS172 | VIVEK SHARMA | 70 | N |
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| 169 | 22ETCCS174 | YANA OZHA | 66 | N |
| 170 | 22ETCCS175 | YASH VAGHELA | 54 | N |
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| 172 | 22ETCCS301 | KARAN SUTHAR | 66 | N |
| 173 | 22ETCCS302 | VINEET SHARMA | 42 | N |
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| 175 | 23ETCCS201 | MANISH VYAS | 47 | N |
| 176 | 23ETCCS202 | RAHUL RAJPUROHIT | 42 | N |
| 177 | 23ETCCS203 | VAISHALI H PUROHIT | 56 | N |
| 178 | 23ETCCS204 | YASH SINGHATWADIA | 52 | N |

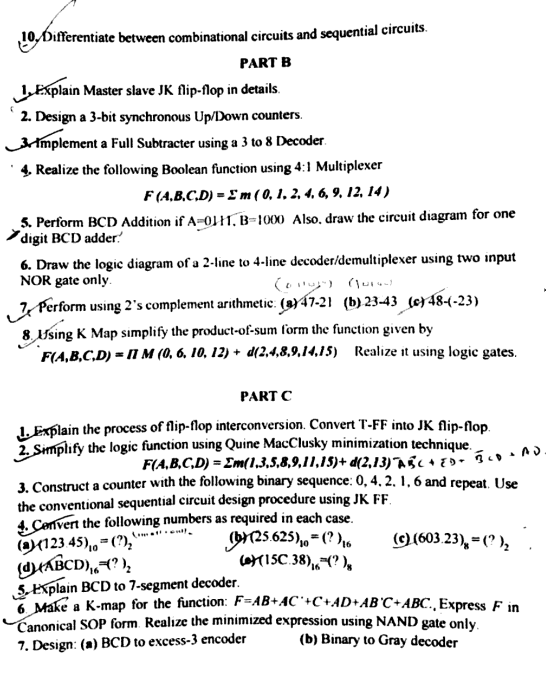
**Signature of Faculty: Signature of HOD**

**Model Question Paper**

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**STUDENT PERFORMANCE REPORT**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **RTU Roll Number** | **Name of the Student** | **Midterm 1** | **Midterm 2** | **Avg** |
| 22ETCCS001 | AADARSH SONI | 18 | 30 | 24 |
| 22ETCCS002 | ABDUL ATTIF | 16 | 30 | 23 |
| 22ETCCS003 | ABHIJEET GARG | 26 | 30 | 28 |
| 22ETCCS004 | ADITYA CHHIPA | 30 | 30 | 30 |
| 22ETCCS005 | ADITYA GIRI GOSWAMI | 29 | 25 | 27 |
| 22ETCCS006 | ADITYA SHARMA | 27 | 27 | 27 |
| 22ETCCS007 | AJIT KUMAR | 17 | 29 | 23 |
| 22ETCCS008 | AKASH SONI | 28 | 30 | 29 |
| 22ETCCS009 | AKSHAT JANGID | 30 | 26 | 28 |
| 22ETCCS010 | AKSHAT KUMAR SAINI | 26 | 28 | 27 |
| 22ETCCS011 | AKSHI BARGURJAR | 20 | 30 | 25 |
| 22ETCCS012 | AKSHIT NALWAYA | 18 | 28 | 23 |
| 22ETCCS013 | AKSHITA KUMAWAT | 27 | 29 | 28 |
| 22ETCCS014 | AKSHITA PANCHAL | 30 | 28 | 29 |
| 22ETCCS015 | ALI ASGAR ORA WALA | 19 | 29 | 24 |
| 22ETCCS017 | ANGHA VARANGAONKAR | 30 | 28 | 29 |
| 22ETCCS018 | ANKIT DHANAWAT | 29 | 27 | 28 |
| 22ETCCS019 | ANSHIKA JAIN | 30 | 30 | 30 |
| 22ETCCS020 | ARCHIT JAIN | 19 | 27 | 23 |
| 22ETCCS021 | ARIN UPADHAYAY | 12 | 30 | 21 |
| 22ETCCS022 | ARUSH MENARIA | 30 | 30 | 30 |
| 22ETCCS023 | ARYAN TALWAR | 28 | 30 | 29 |
| 22ETCCS024 | AVIKA SURANA | 14 | 30 | 22 |
| 22ETCCS025 | BHAWANA KUMARI | 30 | 30 | 30 |
| 22ETCCS026 | BHUMI JAIN | 24 | 30 | 27 |
| 22ETCCS027 | BHUWAN SUTHAR | 14 | 28 | 21 |
| 22ETCCS028 | CHETAN NAGDA | 16 | 26 | 21 |
| 22ETCCS029 | CHIRAG SHARMA | 18 | 24 | 21 |
| 22ETCCS030 | MS. CIA SHARMMA | 25 | 29 | 27 |
| 22ETCCS031 | DAIVIK SHARMA | 20 | 22 | 21 |
| 22ETCCS032 | DAKSH JAIN | 28 | 28 | 28 |
| 22ETCCS033 | DAKSH MENARIA | 22 | 20 | 21 |
| 22ETCCS034 | DEV PARAKH | 30 | 28 | 29 |
| 22ETCCS035 | DHANESH JOSHI | 26 | 30 | 28 |
| 22ETCCS036 | DHEERAJ SINGH THAPA | 20 | 28 | 24 |
| 22ETCCS037 | DHWANI KHUSHLANI | 30 | 30 | 30 |
| 22ETCCS038 | DIKSHIT DARJI | 20 | 26 | 23 |
| 22ETCCS039 | MSDIKSHITA SHARMA | 21 | 29 | 25 |
| 22ETCCS040 | DIVYA BAGORA | 30 | 26 | 28 |
| 22ETCCS041 | DIVYANSHU SHARMA | 25 | 29 | 27 |
| 22ETCCS042 | DIVYASHAKTI PAL | 21 | 27 | 24 |
| 22ETCCS043 | DIYA JAIN | 22 | 26 | 24 |
| 22ETCCS044 | DIYA PALIWAL | 30 | 30 | 30 |
| 22ETCCS045 | FALGUN CHOUDHARY | 30 | 30 | 30 |
| 22ETCCS046 | GARGI SHARMA | 30 | 28 | 29 |
| 22ETCCS047 | GARV BAKLIWAL | 27 | 29 | 28 |
| 22ETCCS048 | GARVIT NANDAWAT | 21 | 25 | 23 |
| 22ETCCS049 | GAURAV JAIN | 29 | 27 | 28 |
| 22ETCCS050 | GAURAVI NEGI | 28 | 28 | 28 |
| 22ETCCS051 | GAURI SUTHAR | 30 | 30 | 30 |
| 22ETCCS053 | GOURAV POKHARNA | 29 | 29 | 29 |
| 22ETCCS054 | HARDIK BATWAL | 28 | 30 | 29 |
| 22ETCCS055 | HARSH DANGI | 26 | 30 | 28 |
| 22ETCCS056 | HARSH KAWADIA | 30 | 28 | 29 |
| 22ETCCS057 | HARSH TAMBOLI | 28 | 24 | 26 |
| 22ETCCS058 | HARSHAL JAIN | 22 | 30 | 26 |
| 22ETCCS059 | HARSHIT POKHARNA | 30 | 28 | 29 |
| 22ETCCS060 | HARSHVARDHAN SINGH CHAUHAN | 23 | 29 | 26 |
| 22ETCCS061 | HARSHVARDHAN SINGH KITAWAT | 22 | 28 | 25 |
| 22ETCCS062 | HEMANT AHUJA | 24 | 28 | 26 |
| 22ETCCS064 | HIMANK LOHAR | 24 | 18 | 21 |
| 22ETCCS065 | HIMANSHI PRAJAPAT | 28 | 30 | 29 |
| 22ETCCS066 | HIMANSHU KALAL | 15 | 29 | 22 |
| 22ETCCS067 | HONHAR RAWAL | 26 | 16 | 21 |
| 22ETCCS068 | HUSAIN BOHRA TIDIWALA | 27 | 27 | 27 |
| 22ETCCS069 | JAINISH JAIN | 23 | 27 | 25 |
| 22ETCCS070 | JAYESH JOSHI | 28 | 26 | 27 |
| 22ETCCS071 | JAYESH MANDAWAT | 16 | 28 | 22 |
| 22ETCCS072 | JINENDRA SINGH DODIYA | 28 | 14 | 21 |
| 22ETCCS073 | KANIKA GUPTA | 30 | 24 | 27 |
| 22ETCCS074 | KANISHK GUPTA | 25 | 27 | 26 |
| 22ETCCS075 | KAPIL KALAL | 30 | 12 | 21 |
| 22ETCCS076 | KARAN SWAMI | 30 | 26 | 28 |
| 22ETCCS077 | KARTIK JAIN | 30 | 28 | 29 |
| 22ETCCS078 | KARTIK KRISHNA KALE | 30 | 30 | 30 |
| 22ETCCS079 | KAVYA PALIWAL | 30 | 12 | 21 |
| 22ETCCS080 | KETAN OJHA | 29 | 25 | 27 |
| 22ETCCS081 | KHUSH JAIN | 30 | 30 | 30 |
| 22ETCCS082 | KHUSHI SHARMA | 27 | 29 | 28 |
| 22ETCCS083 | KIRTAN TAMBOLI | 29 | 25 | 27 |
| 22ETCCS085 | KONPAL SHARMA | 24 | 26 | 25 |
| 22ETCCS086 | KRITI PATWA | 30 | 30 | 30 |
| 22ETCCS087 | KUSH PARSAI | 29 | 27 | 28 |
| 22ETCCS088 | KUSHAL MEENA | 24 | 28 | 26 |
| 22ETCCS089 | LAKSHIT PALIWAL | 27 | 27 | 27 |
| 22ETCCS090 | LAKSHY JAIN | 17 | 27 | 22 |
| 22ETCCS091 | LAKSHYARAJ CHOUDHARY | 30 | 28 | 29 |
| 22ETCCS092 | LAL SINGH JHALA | 23 | 25 | 24 |
| 22ETCCS093 | LUCKY LOHAR | 30 | 20 | 25 |
| 22ETCCS094 | MAHATV BHATNAGAR | 18 | 26 | 22 |
| 22ETCCS095 | MAHENDRA SINGH SISODIYA | 29 | 29 | 29 |
| 22ETCCS096 | MSMAHIMA CHOUHAN | 28 | 28 | 28 |
| 22ETCCS097 | MAHIPAL SINGH JHALA | 30 | 22 | 26 |
| 22ETCCS098 | MAHIRAJ SINGH SANKHLA | 28 | 14 | 21 |
| 22ETCCS099 | MANAS PARWANI | 22 | 24 | 23 |
| 22ETCCS100 | MANASVI SHARMA | 19 | 25 | 22 |
| 22ETCCS101 | MANASWINI SHARMA | 29 | 23 | 26 |
| 22ETCCS102 | MANSI DUBE | 30 | 30 | 30 |
| 22ETCCS103 | MAYANK KASERA | 28 | 24 | 26 |
| 22ETCCS104 | MAYANK TRIVEDI | 20 | 24 | 22 |
| 22ETCCS105 | MEDHAVI KAUSHIK | 29 | 21 | 25 |
| 22ETCCS106 | MEETRAJ SINGH | 30 | 16 | 23 |
| 22ETCCS107 | MITALI PALIWAL | 29 | 17 | 23 |
| 22ETCCS108 | MITVESH AMETA | 26 | 16 | 21 |
| 22ETCCS109 | MOHAMMED YASAR | 30 | 18 | 24 |
| 22ETCCS110 | MOHIT KALAL | 27 | 25 | 26 |
| 22ETCCS111 | MOHIT KUMAWAT | 29 | 19 | 24 |
| 22ETCCS112 | MONIL SETH | 28 | 30 | 29 |
| 22ETCCS113 | NAKUL PANDYA | 28 | 20 | 24 |
| 22ETCCS114 | NEERAJ DANGI | 21 | 23 | 22 |
| 22ETCCS115 | NIKHIL RAJ MALI | 26 | 28 | 27 |
| 22ETCCS116 | NIMISHKA CHAUHAN | 28 | 24 | 26 |
| 22ETCCS117 | NISHANT MENARIA | 30 | 28 | 29 |
| 22ETCCS118 | MSPALAK KUMAWAT | 24 | 30 | 27 |
| 22ETCCS119 | PARSHVI HARKAWAT | 28 | 22 | 25 |
| 22ETCCS120 | PRAGYA BUJ | 25 | 29 | 27 |
| 22ETCCS121 | PRATIBHA SINGH | 30 | 28 | 29 |
| 22ETCCS122 | PRINCE DANGI | 28 | 18 | 23 |
| 22ETCCS123 | PRIYANSH JAIN | 28 | 30 | 29 |
| 22ETCCS124 | PURVAM CHATURVEDI | 25 | 29 | 27 |
| 22ETCCS125 | PUSHKAR GAMETI | 22 | 30 | 26 |
| 22ETCCS126 | PUSHPENDRA MENARIA | 30 | 30 | 30 |
| 22ETCCS127 | QAIDJOHAR JUKKER | 26 | 30 | 28 |
| 22ETCCS128 | RAGHAVENDRA BAHETI | 23 | 29 | 26 |
| 22ETCCS129 | RAJ LAXKAR | 30 | 26 | 28 |
| 22ETCCS130 | RAJ SHRIMALI | 27 | 29 | 28 |
| 22ETCCS131 | RAM MUNDRA | 27 | 21 | 24 |
| 22ETCCS132 | RAMMITH K R | 26 | 22 | 24 |
| 22ETCCS133 | RANITH BISWAS | 27 | 19 | 23 |
| 22ETCCS134 | RANJIT SINGH SHAKTAWAT | 30 | 28 | 29 |
| 22ETCCS135 | MSRAUNAK TAK | 27 | 27 | 27 |
| 22ETCCS136 | RAVI JOSHI | 26 | 20 | 23 |
| 22ETCCS137 | RAVI MENARIYA | 30 | 28 | 29 |
| 22ETCCS138 | RITIK SHARMA | 24 | 28 | 26 |
| 22ETCCS139 | RITISHA SEN | 27 | 23 | 25 |
| 22ETCCS140 | ROHIT AGARWAL | 30 | 30 | 30 |
| 22ETCCS141 | ROSHAN SHARMA | 30 | 14 | 22 |
| 22ETCCS142 | ROSHNI MENARIA | 29 | 15 | 22 |
| 22ETCCS143 | RUDRA PUROHIT | 25 | 23 | 24 |
| 22ETCCS144 | RUDRAVEER SINGH PANWAR | 29 | 29 | 29 |
| 22ETCCS145 | SHAAN SANADHYA | 25 | 21 | 23 |
| 22ETCCS146 | SHACHI JAIN | 24 | 22 | 23 |
| 22ETCCS147 | SHAURYA KUNDAR | 16 | 30 | 23 |
| 22ETCCS148 | SHOURYA BORDIA | 24 | 18 | 21 |
| 22ETCCS149 | SHUBHAM YADAV | 22 | 20 | 21 |
| 22ETCCS150 | SIDDHARTH KUMAR SINGH | 17 | 29 | 23 |
| 22ETCCS151 | SIDDHARTH MENARIA | 28 | 16 | 22 |
| 22ETCCS152 | SRAJAN MENARIA | 18 | 28 | 23 |
| 22ETCCS154 | SUMIT DANGI | 25 | 27 | 26 |
| 22ETCCS155 | SURBHI TAILOR | 19 | 27 | 23 |
| 22ETCCS156 | SURYANSH MADHUKAR | 26 | 24 | 25 |
| 22ETCCS157 | TALENT JAIN | 20 | 22 | 21 |
| 22ETCCS158 | TANISHK VYAS | 28 | 26 | 27 |
| 22ETCCS159 | TANVI SHARMA | 22 | 28 | 25 |
| 22ETCCS160 | TOHEED AKHTAR | 24 | 28 | 26 |
| 22ETCCS161 | TUSHAR PRAJAPAT | 18 | 24 | 21 |
| 22ETCCS162 | TUSHAR SINGH RAWAT | 30 | 22 | 26 |
| 22ETCCS163 | UJJWAL SINGH CHOUHAN | 16 | 26 | 21 |
| 22ETCCS164 | USHIT SHARMA | 23 | 27 | 25 |
| 22ETCCS165 | UTKARSH BAJPAI | 24 | 26 | 25 |
| 22ETCCS166 | VAIBHAV GOYAL | 30 | 30 | 30 |
| 22ETCCS167 | VANSH BHATNAGAR | 30 | 24 | 27 |
| 22ETCCS168 | VINAY VADERA | 27 | 17 | 22 |
| 22ETCCS169 | VINITA MENARIA | 30 | 30 | 30 |
| 22ETCCS170 | VISHAL MENARIYA | 30 | 30 | 30 |
| 22ETCCS171 | VISHAL SINGH RAO | 22 | 26 | 24 |
| 22ETCCS172 | VIVEK SHARMA | 30 | 30 | 30 |
| 22ETCCS173 | VIVEK SHRIMALI | 23 | 25 | 24 |
| 22ETCCS174 | YANA OZHA | 30 | 28 | 29 |
| 22ETCCS175 | YASH VAGHELA | 29 | 23 | 26 |
| 22ETCCS300 | KEVALI ASHOK KANAGALE | 28 | 30 | 29 |
| 22ETCCS301 | KARAN SUTHAR | 14 | 28 | 21 |
| 22ETCCS302 | VINEET SHARMA | 30 | 18 | 24 |
| 23ETCCS200 | GOPAL PALIWAL | 12 | 30 | 21 |
| 23ETCCS201 | MANISH VYAS | 22 | 20 | 21 |
| 23ETCCS202 | RAHUL RAJPUROHIT | 26 | 18 | 22 |
| 23ETCCS203 | VAISHALI H PUROHIT | 28 | 24 | 26 |
| 23ETCCS204 | YASH SINGHATWADIA | 20 | 22 | 21 |

**RESULT ANALYSIS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.NO.** | **RTU ROLL NUMBER** | **NAME OF STUDENT** | **END TERM MARKS** | **SESSIONAL MARKS** | **TOTAL** |
| **MAX MARKS** | **70** | **30** | **100** |
| **Set Target Level** | | | **60%** | **75%** |  |
| 1 | 22ETCCS001 | AADARSH SONI | 38 | 24 | 62 |
| 2 | 22ETCCS002 | ABDUL ATTIF | 31 | 23 | 54 |
| 3 | 22ETCCS003 | ABHIJEET GARG | 38 | 28 | 66 |
| 4 | 22ETCCS004 | ADITYA CHHIPA | 20 | 30 | 50 |
| 5 | 22ETCCS005 | ADITYA GIRI GOSWAMI | 52 | 27 | 79 |
| 6 | 22ETCCS006 | ADITYA SHARMA | 55 | 27 | 82 |
| 7 | 22ETCCS007 | AJIT KUMAR | 10 | 23 | 33 |
| 8 | 22ETCCS008 | AKASH SONI | 30 | 29 | 59 |
| 9 | 22ETCCS009 | AKSHAT JANGID | 47 | 28 | 75 |
| 10 | 22ETCCS010 | AKSHAT KUMAR SAINI | 32 | 27 | 59 |
| 11 | 22ETCCS011 | AKSHI BARGURJAR | 35 | 25 | 60 |
| 12 | 22ETCCS012 | AKSHIT NALWAYA | 37 | 23 | 60 |
| 13 | 22ETCCS013 | AKSHITA KUMAWAT | 45 | 28 | 73 |
| 14 | 22ETCCS014 | AKSHITA PANCHAL | 43 | 29 | 72 |
| 15 | 22ETCCS015 | ALI ASGAR ORA WALA | 20 | 24 | 44 |
| 16 | 22ETCCS017 | ANGHA VARANGAONKAR | 42 | 29 | 71 |
| 17 | 22ETCCS018 | ANKIT DHANAWAT | 19 | 28 | 47 |
| 18 | 22ETCCS019 | ANSHIKA JAIN | 40 | 30 | 70 |
| 19 | 22ETCCS020 | ARCHIT JAIN | 17 | 23 | 40 |
| 20 | 22ETCCS021 | ARIN UPADHAYAY | 41 | 21 | 62 |
| 21 | 22ETCCS022 | ARUSH MENARIA | 55 | 30 | 85 |
| 22 | 22ETCCS023 | ARYAN TALWAR | 59 | 29 | 88 |
| 23 | 22ETCCS024 | AVIKA SURANA | 48 | 22 | 70 |
| 24 | 22ETCCS025 | BHAWANA KUMARI | 48 | 30 | 78 |
| 25 | 22ETCCS026 | BHUMI JAIN | 60 | 27 | 87 |
| 26 | 22ETCCS027 | BHUWAN SUTHAR | 22 | 21 | 43 |
| 27 | 22ETCCS028 | CHETAN NAGDA | 19 | 21 | 40 |
| 28 | 22ETCCS029 | CHIRAG SHARMA | 14 | 21 | 35 |
| 29 | 22ETCCS030 | MS. CIA SHARMMA | 50 | 27 | 77 |
| 30 | 22ETCCS031 | DAIVIK SHARMA | 38 | 21 | 59 |
| 31 | 22ETCCS032 | DAKSH JAIN | 56 | 28 | 84 |
| 32 | 22ETCCS033 | DAKSH MENARIA | 18 | 21 | 39 |
| 33 | 22ETCCS034 | DEV PARAKH | 32 | 29 | 61 |
| 34 | 22ETCCS035 | DHANESH JOSHI | 42 | 28 | 70 |
| 35 | 22ETCCS036 | DHEERAJ SINGH THAPA | 26 | 24 | 50 |
| 36 | 22ETCCS037 | DHWANI KHUSHLANI | 44 | 30 | 74 |
| 37 | 22ETCCS038 | DIKSHIT DARJI | 33 | 23 | 56 |
| 38 | 22ETCCS039 | MSDIKSHITA SHARMA | 27 | 25 | 52 |
| 39 | 22ETCCS040 | DIVYA BAGORA | 51 | 28 | 79 |
| 40 | 22ETCCS041 | DIVYANSHU SHARMA | 32 | 27 | 59 |
| 41 | 22ETCCS042 | DIVYASHAKTI PAL | 28 | 24 | 52 |
| 42 | 22ETCCS043 | DIYA JAIN | 38 | 24 | 62 |
| 43 | 22ETCCS044 | DIYA PALIWAL | 56 | 30 | 86 |
| 44 | 22ETCCS045 | FALGUN CHOUDHARY | 59 | 30 | 89 |
| 45 | 22ETCCS046 | GARGI SHARMA | 58 | 29 | 87 |
| 46 | 22ETCCS047 | GARV BAKLIWAL | 53 | 28 | 81 |
| 47 | 22ETCCS048 | GARVIT NANDAWAT | 14 | 23 | 37 |
| 48 | 22ETCCS049 | GAURAV JAIN | 35 | 28 | 63 |
| 49 | 22ETCCS050 | GAURAVI NEGI | 29 | 28 | 57 |
| 50 | 22ETCCS051 | GAURI SUTHAR | 45 | 30 | 75 |
| 51 | 22ETCCS053 | GOURAV POKHARNA | 42 | 29 | 71 |
| 52 | 22ETCCS054 | HARDIK BATWAL | 43 | 29 | 72 |
| 53 | 22ETCCS055 | HARSH DANGI | 42 | 28 | 70 |
| 54 | 22ETCCS056 | HARSH KAWADIA | 40 | 29 | 69 |
| 55 | 22ETCCS057 | HARSH TAMBOLI | 33 | 26 | 59 |
| 56 | 22ETCCS058 | HARSHAL JAIN | 41 | 26 | 67 |
| 57 | 22ETCCS059 | HARSHIT POKHARNA | 34 | 29 | 63 |
| 58 | 22ETCCS060 | HARSHVARDHAN SINGH CHAUHAN | 36 | 26 | 62 |
| 59 | 22ETCCS061 | HARSHVARDHAN SINGH KITAWAT | 29 | 25 | 54 |
| 60 | 22ETCCS062 | HEMANT AHUJA | 45 | 26 | 71 |
| 61 | 22ETCCS064 | HIMANK LOHAR | 35 | 21 | 56 |
| 62 | 22ETCCS065 | HIMANSHI PRAJAPAT | 37 | 29 | 66 |
| 63 | 22ETCCS066 | HIMANSHU KALAL | 16 | 22 | 38 |
| 64 | 22ETCCS067 | HONHAR RAWAL | 12 | 21 | 33 |
| 65 | 22ETCCS068 | HUSAIN BOHRA TIDIWALA | 34 | 27 | 61 |
| 66 | 22ETCCS069 | JAINISH JAIN | 24 | 25 | 49 |
| 67 | 22ETCCS070 | JAYESH JOSHI | 28 | 27 | 55 |
| 68 | 22ETCCS071 | JAYESH MANDAWAT | 16 | 22 | 38 |
| 69 | 22ETCCS072 | JINENDRA SINGH DODIYA | 11 | 21 | 32 |
| 70 | 22ETCCS073 | KANIKA GUPTA | 33 | 27 | 60 |
| 71 | 22ETCCS074 | KANISHK GUPTA | 29 | 26 | 55 |
| 72 | 22ETCCS075 | KAPIL KALAL | 9 | 21 | 30 |
| 73 | 22ETCCS076 | KARAN SWAMI | 33 | 28 | 61 |
| 74 | 22ETCCS077 | KARTIK JAIN | 24 | 29 | 53 |
| 75 | 22ETCCS078 | KARTIK KRISHNA KALE | 23 | 30 | 53 |
| 76 | 22ETCCS079 | KAVYA PALIWAL | 24 | 21 | 45 |
| 77 | 22ETCCS080 | KETAN OJHA | 40 | 27 | 67 |
| 78 | 22ETCCS081 | KHUSH JAIN | 53 | 30 | 83 |
| 79 | 22ETCCS082 | KHUSHI SHARMA | 49 | 28 | 77 |
| 80 | 22ETCCS083 | KIRTAN TAMBOLI | 37 | 27 | 64 |
| 81 | 22ETCCS085 | KONPAL SHARMA | 35 | 25 | 60 |
| 82 | 22ETCCS086 | KRITI PATWA | 48 | 30 | 78 |
| 83 | 22ETCCS087 | KUSH PARSAI | 37 | 28 | 65 |
| 84 | 22ETCCS088 | KUSHAL MEENA | 17 | 26 | 43 |
| 85 | 22ETCCS089 | LAKSHIT PALIWAL | 44 | 27 | 71 |
| 86 | 22ETCCS090 | LAKSHY JAIN | 46 | 22 | 68 |
| 87 | 22ETCCS091 | LAKSHYARAJ CHOUDHARY | 42 | 29 | 71 |
| 88 | 22ETCCS092 | LAL SINGH JHALA | 37 | 24 | 61 |
| 89 | 22ETCCS093 | LUCKY LOHAR | 27 | 25 | 52 |
| 90 | 22ETCCS094 | MAHATV BHATNAGAR | 19 | 22 | 41 |
| 91 | 22ETCCS095 | MAHENDRA SINGH SISODIYA | 41 | 29 | 70 |
| 92 | 22ETCCS096 | MSMAHIMA CHOUHAN | 39 | 28 | 67 |
| 93 | 22ETCCS097 | MAHIPAL SINGH JHALA | 27 | 26 | 53 |
| 94 | 22ETCCS098 | MAHIRAJ SINGH SANKHLA | 23 | 21 | 44 |
| 95 | 22ETCCS099 | MANAS PARWANI | 22 | 23 | 45 |
| 96 | 22ETCCS100 | MANASVI SHARMA | 34 | 22 | 56 |
| 97 | 22ETCCS101 | MANASWINI SHARMA | 25 | 26 | 51 |
| 98 | 22ETCCS102 | MANSI DUBE | 61 | 30 | 91 |
| 99 | 22ETCCS103 | MAYANK KASERA | 19 | 26 | 45 |
| 100 | 22ETCCS104 | MAYANK TRIVEDI | 17 | 22 | 39 |
| 101 | 22ETCCS105 | MEDHAVI KAUSHIK | 26 | 25 | 51 |
| 102 | 22ETCCS106 | MEETRAJ SINGH | 31 | 23 | 54 |
| 103 | 22ETCCS107 | MITALI PALIWAL | 23 | 23 | 46 |
| 104 | 22ETCCS108 | MITVESH AMETA | 15 | 21 | 36 |
| 105 | 22ETCCS109 | MOHAMMED YASAR | 18 | 24 | 42 |
| 106 | 22ETCCS110 | MOHIT KALAL | 26 | 26 | 52 |
| 107 | 22ETCCS111 | MOHIT KUMAWAT | 17 | 24 | 41 |
| 108 | 22ETCCS112 | MONIL SETH | 49 | 29 | 78 |
| 109 | 22ETCCS113 | NAKUL PANDYA | 22 | 24 | 46 |
| 110 | 22ETCCS114 | NEERAJ DANGI | 22 | 22 | 44 |
| 111 | 22ETCCS115 | NIKHIL RAJ MALI | 38 | 27 | 65 |
| 112 | 22ETCCS116 | NIMISHKA CHAUHAN | 31 | 26 | 57 |
| 113 | 22ETCCS117 | NISHANT MENARIA | 54 | 29 | 83 |
| 114 | 22ETCCS118 | MSPALAK KUMAWAT | 40 | 27 | 67 |
| 115 | 22ETCCS119 | PARSHVI HARKAWAT | 58 | 25 | 83 |
| 116 | 22ETCCS120 | PRAGYA BUJ | 45 | 27 | 72 |
| 117 | 22ETCCS121 | PRATIBHA SINGH | 52 | 29 | 81 |
| 118 | 22ETCCS122 | PRINCE DANGI | 36 | 23 | 59 |
| 119 | 22ETCCS123 | PRIYANSH JAIN | 50 | 29 | 79 |
| 120 | 22ETCCS124 | PURVAM CHATURVEDI | 42 | 27 | 69 |
| 121 | 22ETCCS125 | PUSHKAR GAMETI | 26 | 26 | 52 |
| 122 | 22ETCCS126 | PUSHPENDRA MENARIA | 49 | 30 | 79 |
| 123 | 22ETCCS127 | QAIDJOHAR JUKKER | 32 | 28 | 60 |
| 124 | 22ETCCS128 | RAGHAVENDRA BAHETI | 40 | 26 | 66 |
| 125 | 22ETCCS129 | RAJ LAXKAR | 29 | 28 | 57 |
| 126 | 22ETCCS130 | RAJ SHRIMALI | 28 | 28 | 56 |
| 127 | 22ETCCS131 | RAM MUNDRA | 32 | 24 | 56 |
| 128 | 22ETCCS132 | RAMMITH K R | 33 | 24 | 57 |
| 129 | 22ETCCS133 | RANITH BISWAS | 19 | 23 | 42 |
| 130 | 22ETCCS134 | RANJIT SINGH SHAKTAWAT | 31 | 29 | 60 |
| 131 | 22ETCCS135 | MSRAUNAK TAK | 51 | 27 | 78 |
| 132 | 22ETCCS136 | RAVI JOSHI | 16 | 23 | 39 |
| 133 | 22ETCCS137 | RAVI MENARIYA | 41 | 29 | 70 |
| 134 | 22ETCCS138 | RITIK SHARMA | 41 | 26 | 67 |
| 135 | 22ETCCS139 | RITISHA SEN | 57 | 25 | 82 |
| 136 | 22ETCCS140 | ROHIT AGARWAL | 54 | 30 | 84 |
| 137 | 22ETCCS141 | ROSHAN SHARMA | 22 | 22 | 44 |
| 138 | 22ETCCS142 | ROSHNI MENARIA | 43 | 22 | 65 |
| 139 | 22ETCCS143 | RUDRA PUROHIT | 42 | 24 | 66 |
| 140 | 22ETCCS144 | RUDRAVEER SINGH PANWAR | 48 | 29 | 77 |
| 141 | 22ETCCS145 | SHAAN SANADHYA | 33 | 23 | 56 |
| 142 | 22ETCCS146 | SHACHI JAIN | 25 | 23 | 48 |
| 143 | 22ETCCS147 | SHAURYA KUNDAR | 32 | 23 | 55 |
| 144 | 22ETCCS148 | SHOURYA BORDIA | 13 | 21 | 34 |
| 145 | 22ETCCS149 | SHUBHAM YADAV | 12 | 21 | 33 |
| 146 | 22ETCCS150 | SIDDHARTH KUMAR SINGH | 21 | 23 | 44 |
| 147 | 22ETCCS151 | SIDDHARTH MENARIA | 10 | 22 | 32 |
| 148 | 22ETCCS152 | SRAJAN MENARIA | 8 | 23 | 31 |
| 149 | 22ETCCS154 | SUMIT DANGI | 42 | 26 | 68 |
| 150 | 22ETCCS155 | SURBHI TAILOR | 32 | 23 | 55 |
| 151 | 22ETCCS156 | SURYANSH MADHUKAR | 43 | 25 | 68 |
| 152 | 22ETCCS157 | TALENT JAIN | 36 | 21 | 57 |
| 153 | 22ETCCS158 | TANISHK VYAS | 52 | 27 | 79 |
| 154 | 22ETCCS159 | TANVI SHARMA | 49 | 25 | 74 |
| 155 | 22ETCCS160 | TOHEED AKHTAR | 18 | 26 | 44 |
| 156 | 22ETCCS161 | TUSHAR PRAJAPAT | 21 | 21 | 42 |
| 157 | 22ETCCS162 | TUSHAR SINGH RAWAT | 41 | 26 | 67 |
| 158 | 22ETCCS163 | UJJWAL SINGH CHOUHAN | 16 | 21 | 37 |
| 159 | 22ETCCS164 | USHIT SHARMA | 27 | 25 | 52 |
| 160 | 22ETCCS165 | UTKARSH BAJPAI | 35 | 25 | 60 |
| 161 | 22ETCCS166 | VAIBHAV GOYAL | 67 | 30 | 97 |
| 162 | 22ETCCS167 | VANSH BHATNAGAR | 53 | 27 | 80 |
| 163 | 22ETCCS168 | VINAY VADERA | 22 | 22 | 44 |
| 164 | 22ETCCS169 | VINITA MENARIA | 48 | 30 | 78 |
| 165 | 22ETCCS170 | VISHAL MENARIYA | 57 | 30 | 87 |
| 166 | 22ETCCS171 | VISHAL SINGH RAO | 37 | 24 | 61 |
| 167 | 22ETCCS172 | VIVEK SHARMA | 54 | 30 | 84 |
| 168 | 22ETCCS173 | VIVEK SHRIMALI | 43 | 24 | 67 |
| 169 | 22ETCCS174 | YANA OZHA | 38 | 29 | 67 |
| 170 | 22ETCCS175 | YASH VAGHELA | 46 | 26 | 72 |
| 171 | 22ETCCS300 | KEVALI ASHOK KANAGALE | 64 | 29 | 93 |
| 172 | 22ETCCS301 | KARAN SUTHAR | 38 | 21 | 59 |
| 173 | 22ETCCS302 | VINEET SHARMA | 42 | 24 | 66 |
| 174 | 23ETCCS200 | GOPAL PALIWAL | 27 | 21 | 48 |
| 175 | 23ETCCS201 | MANISH VYAS | 19 | 21 | 40 |
| 176 | 23ETCCS202 | RAHUL RAJPUROHIT | 26 | 22 | 48 |
| 177 | 23ETCCS203 | VAISHALI H PUROHIT | 34 | 26 | 60 |
| 178 | 23ETCCS204 | YASH SINGHATWADIA | 14 | 21 | 35 |

**Overall Teacher Self-Assessment (at the completion of course) in terms of course objective and outcomes**

**Course Objectives:**

Students will be able to design and optimize combinational and sequential digital logic circuits.

**Course Outcomes:**

|  |
| --- |
| * Students will be able to classify various number systems and will be able to relate their application in digital electronics. |
| * Students will be able to apply K-map & QM technique to optimize the Boolean function to the simplest form for the implementation of compact digital circuits. |
| * Students will be able to classify logic families and analyze basic circuits of these families. |
| * Students will be able to design combinational circuits like half adder, full adder, MUX, DEMUX encoder, decoder. |
| * Students will be able to design synchronous and asynchronous sequential circuits like registers FLIP FLOP, and counters. |

**Methodology to identify bright student**

Considered a range of criteria, including academic performance, creativity, critical thinking, problem-solving skills, and enthusiasm for learning. Bright students often excel in multiple areas. Observed how students perform in the classroom. In terms of active participation, engagement in discussions, leadership, and the ability to grasp complex concepts.

**Efforts to keep students engaged**

1. Active Learning:
   * Incorporate active learning strategies, such as group discussions, problem-solving activities, and hands-on projects. Active participation keeps students engaged and encourages critical thinking.
2. Varied Teaching Methods:
   * Use a variety of teaching methods, including lectures, group work, multimedia presentations, and interactive activities to cater to different learning preferences.
3. Technology Integration:
   * Leverage technology, such as online platforms, educational apps, and interactive software, to make lessons more engaging and interactive.

**Methodology to identify weak student**

Considered a range of criteria, including classroom observation, formative assessment, summative assessment, assignment review e.t.c. Weak students are struggling students with sensitivity and a desire to support their learning. Some measures, such as additional tutoring, personalized assignments, or alternative assessment methods, to help students succeed.

**Targeted inventions for weak student**

**1. Additional Resources**

Offer supplementary learning materials, such as textbooks, online resources, or multimedia content, to provide alternative explanations and reinforce key concepts.

**2. Remedial classes**

Establish a tutoring program where students can receive extra help from teachers.

**3. Flipped classroom**

Students are assigned pre-class learning materials, often in the form of videos, readings, or online modules, to cover the foundational concepts before coming to class.

**Some additional resources or links for student to improve their understanding for topic**

* **MOOC (NPTEL):** - <https://onlinecourses.nptel.ac.in/noc19_ee51/preview>
* [Digital Electronics MCQ (Multiple Choice Questions) - Sanfoundry](https://www.sanfoundry.com/1000-digital-circuits-questions-answers/)
* <https://mcqslearn.com/electronics/digital-electronics/digital-electronics-quiz-questions-and-answers.php>