

**University Institute of Engineering & Technology**

*(Recognised Under Section 2(f) and 12B of UGC)*

**Kurukshetra University, Kurukshetra**

**TIME – 3 Hrs 15 Min**

**THEORY EXAMINATION – FEB 2021**

**B.TECH - CSE**

**SEMESTER – III**

**M.M. - 56**

**PAPER - ES-207**

**SUBJECT- Digital Electronics**

**INSTRUCTIONS TO BE FOLLOWED**

- Allotted time for examination is 3 hours 15 minutes that includes time for downloading the question paper, writing answers, scanning of answer sheets and E-mailing the PDF files to the designated Email ID.
- For CSE-A Regular Students, the Email ID is:- [btech3rdcsea@kuk.ac.in](mailto:btech3rdcsea@kuk.ac.in)
- For CSE-B Regular and All Reappear Students, the Email ID is:- [btech3rdcseb@kuk.ac.in](mailto:btech3rdcseb@kuk.ac.in)
- The candidates will be required to attempt 75% of the question paper (maximum) by choosing to their any best questions accumulating 56 marks.
- The PDF files should be saved as Roll No. and Subject Code. Proper attention should be given while sending the email and in the subject line, the Roll Number and Subject Code should be mentioned.
- Maximum Page Limit should be 20 (Twenty) for attempting the question paper on A4 sheets which could be downloaded and printed from the sample sheets given in the Kurukshetra University Examination guidelines.
- Over-attemptation should be avoided.
- Handwriting should be neat and clean and diagrams should be clear and contrasted.
- The candidate should not write their Mobile No. otherwise Unfair Means Case will be made.
- While attempting the paper, the candidate will use blue/black pen only.
- Before attempting the paper, the candidate will ensure that he/she has downloaded the correct question paper. No complaint for attempting wrong question paper by the candidate will be entertained.
- Candidate must ensure that he/she has put his/her signature on each page of the answer sheet used by him/her. Answer sheet without the signature of the candidate will not be evaluated.

## PART-A

**Q. No. – 1 Answer the following questions.**

**15x1=15**

(i)	What are minterms and maxterms? Explain by giving examples.
(ii)	Draw OR gate using NAND gate.
(iii)	Difference between an analog and a digital signal.
(iv)	What is an active low signal? Explain.
(v)	What is the difference between an even and an odd parity?
(vi)	Differentiate between a parallel and a serial adder.
(vii)	Difference between a combinational and a sequential circuit.
(viii)	What is a latch?
(ix)	What is Race around condition?
(x)	List some applications of counters.
(xi)	Differentiate between synchronous and asynchronous counters.
(xii)	What is the basic difference between a RAM and a ROM cell?
(xiii)	What is PLA? How it is different from PAL?
(xiv)	Differentiate between SRAM and DRAM.
(xv)	Draw the circuit of master slave JK flip flop.

## PART-B

2	What are De-Morgan's theorems? Prove them.	5
3	(i) Discuss the operation of a one bit comparator. (ii) Differentiate between half adder and full adder with the help of truth tables.	5
4	Convert JK flip flop to T flip flop.	5
5	What is EAPROM? How it is different from PROM.	5

## PART-C

6	(i) Minimize $F(A, B, C) = \Sigma (0,2,4,6)$ using K-map. (ii) Implement using only 4 logic gates: $Y = AD + BCD' + B'CD$	10
7	Simplify and minimize using Quine McClusky method: $F(A,B,C,D) = \Sigma (0,1,2,3,4,6,8,9,10,11)$	10
8	How 16:1 Multiplexer can be constructed using two 8:1 multiplexers. Draw the circuit Diagram and truth table for the same. Explain in detail.	10
9	(i) Discuss the working of BCD to seven segment decoder. (ii) Discuss the working of Carry look ahead adder.	10
10	What is a flip flop? Discuss the working of RS flip flop. How RS flip flop differs from JK Flip flop. Explain with the help of truth tables.	10
11	(i) Explain the working of 2 bit ripple up counter. (ii) What is Universal shift register? Discuss.	10

12	What are the characteristics of A to D converters? Discuss the working of R-2R ladder Network in detail.	10
13	(i) Discuss the write and read operation of a RAM cell. (ii) What is ROM? Discuss different types of ROM in detail.	10