

*



C20-AEI-303

7216

BOARD DIPLOMA EXAMINATION, (C-20)

FEBRUARY/MARCH — 2022

DAEI - THIRD SEMESTER EXAMINATION

DIGITAL ELECTRONICS

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Convert $(1011010.10111)_2$ to octal.
2. Subtract 1000 from 1100 by using 2's complement method.
3. State De-Morgan's theorems.
4. Draw half-adder circuit using exclusive-OR gate and an AND gate.
5. State the function of the full-adder.
6. Draw the diagram of 2X4 decoder.
7. List the conditions for eliminating the race around condition.
8. Define modulus of the counter.
9. List various types of memories.
10. State the need for A/D conversion.

*

PART—B

8×5=40

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **eight** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. (a) Explain the working of NAND, NOR gates using truth tables.

(OR)

(b) Explain the working of an exclusive-OR gate with truth table.

12. (a) Realise a half-adder using NAND gates only.

(OR)

(b) Draw and explain the operation of 4X1 multiplexer.

13. (a) Explain JK flip-flop with the help of truth table.

(OR)

(b) Differentiate between synchronous and asynchronous counters in any four aspects.

14. (a) Explain the working of serial in serial out, serial in parallel out registers.

(OR)

(b) Explain the basic principle of working of RAM.

15. (a) Explain D/A conversion using R-2R ladder network.

(OR)

(b) Explain A/D conversion using counter method.

*

PART—C

10×1=10

- Instructions :** (1) Answer the following question.
(2) The question carries **ten** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 16.** Design asynchronous ripple counter (MOD-10) with the help of flip-flops and gates.

★ ★ ★

030 030 030 030 030

*