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C20-EC-303

7241

BOARD DIPLOMA EXAMINATION, (C-20)

FEBRUARY/MARCH — 2022

DECE - 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 the following number systems into binary number system :
(a) $(257)_8$
(b) $(FE70)_H$
2. Compare weighted codes with unweighted codes.
3. Draw the symbols with truth tables of the following gates :
(a) NOT
(b) NAND
4. Define the terms propagation delay and noise margin.
5. Draw the logic diagram with truth table of half-adder circuit.
6. State any three applications of demultiplexers.
7. List any three types of tri-state buffers.

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8. What is the necessity of clock in digital circuits?
9. Define the term modulus of a counter. How many flip-flops are required to construct mod-5 counter?
10. State any three differences between flash ROM and NVRAM.

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 with circuit diagram of Totem-pole output TTL NAND gate.

(OR)

(b) Compare the TTL, CMOS and ECL logic families.

12. (a) Explain the working of 4-bit parallel adder using full-adders with circuit diagram.

(OR)

(b) Explain the working of BCD to decimal decoder with circuit diagram.

13. (a) Explain with circuit diagram the working of JK master-slave flip-flop.

(OR)

(b) Explain the working of 4-bit synchronous counter with circuit diagram.

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14. (a) Explain the working of 4-bit shift right register with circuit diagram.

(OR)

- (b) Draw the logic diagram, truth table and timing diagram for a clocked D-flop and explain its operation.

15. (a) Explain the working of diode ROM with circuit diagram.

(OR)

- (b) Compare static RAM with dynamic RAM.

PART—C

10×1=10

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

16. Why are NAND and NOR gates called universal gates? Justify.

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