

(6 pages)

Reg. No. :

Code No. : 30051 E Sub. Code : GMPH 63

B.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2020.

Sixth Semester

Physics – Main

DIGITAL ELECTRONICS

(For those who joined in July 2012 – 2015)

Time : Three hours

Maximum : 75 marks

PART A — ($10 \times 1 = 10$ marks)

Answer ALL the questions.

Choose the correct answer :

1. The binary number corresponding to the decimal number 5 is
 - (a) 110
 - (b) 101
 - (c) 111
 - (d) 100

2. The hexadecimal number of the binary 1000 1100 is
- (a) 2A (b) 4C
(c) 6B (d) 8C
3. The value of Boolean expression $(\overline{A}B + AB)$ is
- (a) AB (b) $A\overline{B}$
(c) B (d) A
4. The value of $A + 1$ is
- (a) zero (b) A
(c) 1 (d) \overline{A}
5. The number of cells in a three variable Karnaugh map is
- (a) 3 (b) 6
(c) 8 (d) 10
6. How many entries are there on a four-variable Karnaugh map?
- (a) 4 (b) 8
(c) 16 (d) 32

7. A half adder
- (a) add two bits
 - (b) add three bits
 - (c) perform decimal addition
 - (d) has one output
8. A demultiplexer is
- (a) decoder
 - (b) encoder
 - (c) 8-bit
 - (d) 16-bit
9. A flip flop is
- (a) monostable multivibrator
 - (b) square wave generator
 - (c) astable multivibrator
 - (d) bistable multivibrator
10. Which counter have highest speed?
- (a) synchronous counter
 - (b) asynchronous counter
 - (c) ripple counter
 - (d) ring counter

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) (i) Convert $(1000)_2$ into its decimal equivalent.

(ii) Convert $(21.6)_{10}$ into binary number.

Or

- (b) Discuss the theory of BCD codes.

12. (a) Explain positive and negative logic gates.

Or

- (b) Describe the NAND gate with symbol and truth table.

13. (a) Solve using K-map. $BCD + \overline{ACD} + ABD$.

Or

- (b) What is K-map? Explain with examples.

14. (a) Differentiate multiplexer and demultiplexer.

Or

- (b) Discuss full adder circuit with truth table.

15. (a) Describe RS flip flop with diagram.

Or

- (b) Write short notes on Binary counter.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) (i) Explain binary addition and subtraction with examples.
(ii) Explain with example the hexadecimal and BCD number systems.

Or

- (b) Explain the different code systems with example.

17. (a) Use Boolean algebra to prove $(AB + BC + CA) = (A + B)(B + C)(C + A)$.

Or

- (b) Describe NAND, NOR, EX-OR, EX-NOR gates with circuit diagram and truth table.

18. (a) Explain the Karnaugh map with three variables.

Or

- (b) Describe the Karnaugh map with four variables.

19. (a) Explain the construction and working of a full adder.

Or

- (b) Explain the 1's and 2's complement adder and subtractor.

20. (a) Explain the action of a JK flip flop with diagram and truth table.

Or

- (b) Explain up/down counter.
