(6 Pages)

Reg. No. : .....

Code No. : 20620 E **Sub. Code : SACS 21/ SASE 21**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2021.

Second Semester

Computer Science/Software Engineering — Allied

DIGITAL DESIGN

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 1 = 10$ marks)

Answer ALL questions.

Choose the correct answer :

1. The BCD code is sometimes referred to as ————.

   (a) 8421

   (b) 7421

   (c) 6311

   (d) 5421

2. The other name for gray code is ————————.

(a) Excess 3-code

(b) BCD

(c) Reflected code

(d) ASCII character code

3. A five variable map requires ———————— squares.

(a) 5 (b) 16

(c) 64 (d) 32

4. $x \oplus y =$ ————————

(a) $xy + x'y'$ (b) $x'y'$

(c) $xy' + x'y$ (d) $xx' + yy'$

5. What is the 2's complement of (1001) ?

(a) 0110 (b) 1110

(c) 0101 (d) 0111

6. A circuit with many inputs but only one output is called a ————————.

(a) Demultiplexer

(b) Multiplexer

(c) Combinational circuit

(d) Sequential circuit

7. A basic RS flip-flop can be constructed by cross-coupling of which basic logic gates?

(a) AND or OR gates

(b) XOR or XNOR gates

(c) NOR or NAND gates

(d) AND or NOR gates

8. A flip-flop circuits can be used for ————.

(a) Counting (b) Scaling

(c) Rectification (d) Demodulation

9. ———————— numbers are used extensively in micro process work.

(a) Binary (b) Octal

(c) Decimal (d) Hexadecimal

10. Based on how binary information is entered or shifted out, shift registers are classified into ———— categories.

(a) 2 (b) 3

(c) 4 (d) 5

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Convert the binary numbers to octal and hexadecimal :

(i) 1000.1001

(ii) 10000011.100011.

Or

(b) Write short note on ASCII code.

12. (a) Explain the universal gates.

Or

(b) Discuss about the Don't Care Conditions.

13. (a) Write short notes on Encoder.

Or

(b) Discuss in detail, 2's Complement Arithmetic with example.

14. (a) Discuss the principles of RS flip-flops.

Or

(b) How the Edge-Triggered JK flip-flops works? Explain.

15. (a) Explain Universal shift register.

Or

(b) Write a note on Serial-in-Parallel out.

PART C — ($5 \times 8 = 40$ marks)

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

Each answer should not exceed 600 words.

16. (a) In the following :

(i) What is the binary equivalent of decimal 363?

(ii) Convert octal to binary 34.562.

Or

(b) Explain about Excess-3 Code and Gray Codes.

17. (a) Write a note on Pairs, Quads and Octets.

Or

(b) Write any four laws of Boolean Algebra and construct the truth table.

18. (a) Discuss about the JK master slave flip-flop.

Or

(b) Explain the operation of Edge-Triggered D-flip flop.

19. (a) Discuss on seven segment decoder.

Or

(b) Explain in brief on the working principles of multiplexer.

20. (a) Write about Serial in Serial out register.

Or

(b) Write about parallel in parallel out register.

———————