



K18U 0550

Reg. No.:

Name:

II Semester B.C.A. Degree (C.B.C.S.S. – Reg./Supple./Imp.)
Examination, May 2018
Core Course
2B02BCA : DIGITAL SYSTEMS
(2014 Admn. Onwards)

Time : 3 Hours

Max. Marks : 40

SECTION – A

Answer **all** questions. **Half** mark **each**.

1. a) The time required for the pulse to go from its low level to its high level is called _____
- b) The primary function of _____ circuit is to store a binary digit.
- c) Name the IC with AND-OR-INVERT logic.
- d) _____ operation requires all low inputs to produce a high output.
- e) _____ is a major disadvantage of an asynchronous counter.
- f) MSB in the gray code is same as the corresponding bit in the binary number.
True or False.
- g) A quantity having continuous value is called _____
- h) 01100100 divided by 00011001 is _____

(8x.5=4)

SECTION – B

Answer **any 7** questions. **2** marks **each**.

2. What is demultiplexing ?
3. Define duty cycle.
4. Write a short note on digital data.
5. Draw the logic diagram of a decimal-to-BCD encoder.

P.T.O.



6. What is ripple counter ?
7. Check each of the following even parity codes for an error :
 - a) 100010101
 - b) 1110111001
8. Draw the block diagram of a 2-bit parallel adder.
9. Distinguish between synchronous and asynchronous inputs.
10. Draw the logic diagram and logic symbol of a gated RS flip-flop.
11. Draw the logic circuit of gated D-latch. (7x2=14)

SECTION - C

Answer **any 4** questions. **3** marks **each**.

12. Perform the following conversions :
 - a) $(111\ 00.11)_2$ to octal
 - b) $(101101.101)_2$ to hexadecimal
 - c) ABC to octal
13. Minimise the following expressions using K-map.
 - a) $X = \overline{A}BC + \overline{A}BC + \overline{A}BC + \overline{A}BC + \overline{A}BC$
 - b) $X = \overline{A}BCD + \overline{A}BCD + \overline{A}BCD + \overline{A}CD + \overline{A}BCD$
14. Design a logic circuit to implement the operation specified in the following table.

Input			Output
A	B	C	X
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0



- 15. Draw the logic symbol, logic diagram and truth table of a full subtracter.
- 16. Compare multiplexers and demultiplexers.
- 17. Draw the logic diagram, logic symbol and truth table of a positive edge-triggered JK flip-flop. (4×3=12)

SECTION – D

Answer **any 2** questions. **5** marks **each**.

- 18. State and prove rules of Boolean Algebra. Draw logic diagrams.
- 19. Explain the functions of BCD-to-Seven-Segment decoder with logic diagrams and decoding functions.
- 20. Perform the following binary operations :
 - a) $10111 - 11011$
 - b) $11101 + 10101$
 - c) 10011×1110
 - d) $10110 \div 1001$
- 21. What are shift registers ? Draw and explain the diagram of SIPO shift register. (2×5=10)