K24U 1690

Reg. No. : .....

Name : .....

NAI JYOTHI COLLEGE KANNUR DT. 670511 POST BAG No: 5, CHERUPUZHA

Second Semester B.C.A. Degree (CBCSS – OBE – Regular/Supplementary/ Improvement) Examination, April 2024
(2019 Admission Onwards)
Core Course
2B02BCA : DIGITAL SYSTEMS

Time : 3 Hours Max. Marks : 40

PART – A
(Short Answer)

Answer **all** questions. **Each** question carries **1** mark. **(6×1=6)**

1. Expand the term ASCII.
2. What is the 2's complement of 1101101_2 ?
3. State De Morgan's Law.
4. Mention names of Universal gates.
5. If input to D flip flop is 1, output produced will be _____
6. _____ is a volatile memory.

PART – B
(Short Essay)

Answer **any 6** questions. **Each** question carries **2** marks. **(6×2=12)**

7. Perform binary addition on numbers 110110 and 101010.
8. Convert the following :
   a) $110110101_2 = ?_8$
   b) $1024_{10} = ?_{16}$

P.T.O.

9. Write note on multiplexer.
10. Write note on AND gate.
11. Mention any 4 rules and laws of Boolean algebra.
12. Write truth table of half adder.
13. What is a shift register ?
14. Write features of PROM.

PART – C
(Essay)

Answer **any 4** questions. **Each** question carries **3** marks. **(4×3=12)**

15. Briefly explain BCD code.
16. Write note on encoders.
17. Compare SOP and POS expressions.
18. Short note on parallel binary adder.
19. Explain any two edge triggered flip flops.
20. What do you mean by flash memory ?

PART – D
(Long Essay)

Answer **any 2** questions. **Each** question carries **5** marks. **(2×5=10)**

21. Simplify using K-map Y = A'B'C'D' + A'B'CD' + A'BCD' + A' BCD + AB'C'D' + ABCD' + ABCD .
22. Explain parity generator/checker in detail.
23. Describe various shift registers in detail.
24. Explain synchronous counters in detail.

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PART – A

(Short Answer)

Answer **all** questions. **(6×1=6)**

1. If A and B are the inputs of a half adder, the sum is given by _____, while the carry is given by _____
2. _____ is a digital circuit that is capable of storing only a single bit.
3. The primary memory of a personal computer consists of both _____
4. According to Boolean law : A + 1 = _____
5. A De-multiplexer is a combinational circuit that has _____ input line and _____ output lines.
6. BCD stands for _____

PART – B

(Short Essay)

Answer **any 6** questions. **(6×2=12)**

7. Convert $(1973)_{10}$ to the hexadecimal number system.
8. What do you mean by ASCII ?
9. Describe AND and OR gate with Graphic Symbol, Truth Table.

P.T.O.

10. Write a short note on decoder.
11. Briefly explain the master slave arrangement of flip flops.
12. State and prove De Morgan's Law.
13. What is a shift register ?
14. What is EPROM ?

PART – C

(Essay)

Answer **any 4** questions. **(4×3=12)**

15. Compare multiplexers and demultiplexers.
16. Describe the procedure involved in K-Map technique for reducing boolean expression with a suitable example.
17. Prove that ABC + ABC' + AB'C + A'BC = AB + AC + BC.
18. How will you calculate 1's complement and 2's complement ? Explain with an example.
19. Write a short note on ripple counter.
20. What do you mean by flash memory ?

PART – D

(Long Essay)

Answer **any two** questions. **(2×5=10)**

21. Write a note on parity generators/checkers.
22. Explain SOP and POS Minimization with examples.
23. Compare and contrast the construction and working of RS and JK flip flops.
24. What are shift registers ? Draw and explain bidirectional shift registers.

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II Semester B.C.A. Degree (C.B.C.S.S. – O.B.E. – Regular/Supplementary/ Improvement) Examination, April 2022
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Core Course
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Time : 3 Hours Max. Marks : 40

PART – A

Answer **all** questions. **Each** question carries **one** mark.

1. Give the base value and numbers of hexadecimal number system.
2. How many flip flops are needed for MOD 7 counter ?
3. In which input condition JK Flip Flop generates toggle output condition ?
4. Mention the number of input and output of demultiplexer.
5. List one example for sequential for a sequential circuit.
6. Specify any one error detection code.

PART – B

Answer **any six** out of eight. **Each** question carries **two** marks.

7. What is full adder ?
8. What is demultiplexer ?
9. What is latch ?
10. What are up/down counter ?
11. What is a register ?

P.T.O.

12. Why NAND is known as a universal gate ?

13. Define a Karnaugh map and state its use.

14. Draw the block diagram of clocked RS flip-flop.

PART – C

Answer **any four** out of six. **Each** question carries **three** marks.

15. What is a flip flop ?

16. Explain different types of shift registers.

17. State the laws and rules of Boolean algebra.

18. Show the steps in converting a binary number to its equivalent gray code .

19. Give the logic symbol of Master Slave J-K flip-flop.

20. Give the timing diagram for 3 bit synchronous counter.

PART – D

Answer **any two** out of four. **Each** question carries **five** marks.

21. Describe different types of gates with truth tables.

22. Explain Demultiplexer with logic diagram.

23. Write notes on full adder.

24. Explain mod 10 Asynchronous counter.

K20U 0443

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II Semester B.C.A. Degree CBCSS (OBE)-Regular Examination, April 2020
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Core Course
2B02 BCA : DIGITAL SYSTEMS

Time : 3 Hours Max. Marks : 40

PART – A

Answer **all** questions (**1** mark **each**).

1. What do you mean by XNOR gate ?
2. What is a Bidirectional shift registers ?
3. What is SOP ?
4. What is the octal equivalent of binary number 10111101 ?
5. What is parity generators ?
6. What are the applications of the Hexa decimal system ?

PART – B

Answer **any 6** questions (**2** marks **each**).

7. Find the 2's complement of 101110011.
8. State Duality principle.
9. What are operating characteristic of flip-flops ?
10. Explain POS expression using suitable examples.
11. Explain with figures how NAND gate and NOR gate can be used as Universal gate.
12. Explain the purpose of floating point representation.
13. What are the basic functions of master slave flipflops ?
14. What do you mean by BCD Codes ?

P.T.O.

PART – C

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

15. Explain Flash Memories.
16. Explain the application of ROM, PROM, EPROM.
17. Write short notes on Edge triggered flip flops.
18. State and prove De-Morgan's Theorem.
19. Explain the working of a Shift register.
20. Write short notes on GRAY and UNICODE ?

PART – D

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

21. What is a demultiplexer ? Explain with suitable block diagram and logic circuit of 1 to 16 demultiplexer.
22. With a neat diagram, explain the working of a synchronous counters.
23. Explain Encoder and Decoder.
24. What are Adders ? Explain different types of Adders ? Draw its diagram.

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K21U 3443

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PART – A

Answer **all** questions (**1** mark).

1. How many entries will be in the truth table of a 3 input NAND gate ?
2. Define ASCII.
3. What is SOP and POS ?
4. What are the applications of the octal number system ?
5. What is a multiplexer ?
6. What is a Race condition ?

PART – B

Answer **any 6** questions (**2** marks).

7. What is the difference between PROM and EPROM ?
8. What are the limitations of the Karnaugh Map ?
9. What is Full-Adder ?
10. What is Encoder ?
11. How can X-OR can be used as inverter ?
12. Write down the characteristics of Shift Register.
13. Write short notes on Excess 3 code.
14. What are the advantages and disadvantages of the K-Map method ?

P.T.O.

PART – C

Answer **any 4** questions (**3** marks).

15. Explain the significance of complements in binary number system. Distinguish between 1's complement and 2's complement.

16. What is a flip flop ? Why flip flops are considered to be the building block of computer memory ?

17. What is Universal gate ? Realise NAND as Universal gate.

18. Explain the advantages of Bidirectional Shift Registers.

19. Explain the working principle of demultiplexers.

20. How will you implement a full subtractor from a full adder.

PART – D

Answer **any 2** questions (**5** marks).

21. What is the function of shift register ? With the help of simple diagram explain its working.

22. Answer the following :
    i) Draw symbol and construct the truth table for three input Ex-OR gate.
    ii) What is the principle of Duality theorem ?
    iii) What are Minterms and Maxterms ?
    iv) Define : Noise margin, Propagation delay.

23. Write short notes on ROM.

24. Compare and contradict synchronous and asynchronous counters.