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G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.



UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2024.

(For those admitted in June 2023 and later)

PROGRAMME AND BRANCH: B.Sc., INFORMATION TECHNOLOGY

| SEM | CATEGORY | COMPONENT | COURSE CODE | COURSE TITLE |
|-----|----------|-----------------------|-------------|-------------------------------|
| I | PART III | ELECTIVE GENERIC-1 | U23IT1A1 | DIGITAL LOGIC FUNDAMENTALS |

Date & Session: 14.11.2024 / FN

Time : 3 hours

Maximum: 75 Marks

| Course Outcome | Bloom's K-level | Q. No. | SECTION - A (10 X 1 = 10 Marks) Answer <u>ALL</u> Questions. | | | |
|----------------|-----------------|--------|--|--|--|--|
| CO1 | K1 | 1. | Logical negation is implemented by ____ gate. a) AND b) NOT c) OR d) XOR | | | |
| CO1 | K2 | 2. | Which combination leads to a NAND gate? a) NOT AND b) NOT OR c) NOT NOT d) NOT XOR | | | |
| CO2 | K1 | 3. | $A(A + B) = ?$ a) AB b) B c) A+B d) A | | | |
| CO2 | K2 | 4. | A/An ____ is a combinational circuit that performs the reverse operation of a Decoder. a) Multiplexer b) Demultiplexer c) Encoder d) Flip-flop | | | |
| CO3 | K1 | 5. | What is the 2's complement representation of 1101 0110? a) 00101011 b) 00101110 c) 00101010 d) 00101111 | | | |
| CO3 | K2 | 6. | The _____ is a TTL-compatible integrated circuit (IC) that can be used as an oscillator to provide a clock waveform. a) 555 timer b) Schmit Trigger c) TTL Clock d) Counter | | | |
| CO4 | K1 | 7. | How many VALID entries are present in the truth table of RS flip-flop? a) 1 b) 2 c) 4 d) 3 | | | |
| CO4 | K2 | 8. | A binary ripple counter can be constructed using _____ flip-flop. a) RS b) JK c) D d) T | | | |
| CO5 | K1 | 9. | ROM stands for _____. a) Random Only Memory b) Read Only Memory c) Read Of Memory d) Random Of Memory | | | |
| CO5 | K2 | 10. | In the time measurement instrument, the contents of the counter and display unit will then be proportional to the _____ of the unknown input signal. a) count b) time period c) delay d) speed | | | |

| Course Outcome | Bloom's K-level | Q. No. | SECTION - B (5 X 5 = 25 Marks) Answer <u>ALL</u> Questions choosing either (a) or (b) | |
|----------------|-----------------|--------|---|--|
| CO1 | K3 | 11a. | Implement the basic gates AND, OR. (OR) | |
| CO1 | K3 | 11b. | Demonstrate the Excess 3 code and Gray code. | |
| CO2 | K3 | 12a. | Use BCD to Decimal decoder to decode 0110, 1001. (OR) | |
| CO2 | K3 | 12b. | Demonstrate the working of Exclusive-OR gate. | |

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|-----|----|------|---|
| CO3 | K4 | 13a. | Compare Binary addition and multiplication. (OR) |
| CO3 | K4 | 13b. | Analyze Clock waveforms. |
| CO4 | K4 | 14a. | Examine the output states of a RS Flip Flop. (OR) |
| CO4 | K4 | 14b. | Inspect the functioning of Ripple Counter. |
| CO5 | K5 | 15a. | Assess Random Access Memory. (OR) |
| CO5 | K5 | 15b. | Evaluate Switching circuits. |

| Course Outcome | Bloom's K-level | Q. No. | SECTION – C (5 X 8 = 40 Marks) Answer <u>ALL</u> Questions choosing either (a) or (b) |
|----------------|-----------------|--------|--|
| CO1 | K3 | 16a. | Show the universality of NAND and NOR gates. (OR) |
| CO1 | K3 | 16b. | i) Convert Decimal 695 to Octal number. ii) Convert Hexadecimal 7CF to Decimal number. |
| CO2 | K4 | 17a. | Examine Karnaugh map simplification. (OR) |
| CO2 | K4 | 17b. | Analyze De-multiplexer. |
| CO3 | K4 | 18a. | Explain 2's complement arithmetic. Review. (OR) |
| CO3 | K4 | 18b. | Inspect an Arithmetic building blocks. |
| CO4 | K5 | 19a. | Assess the flip flops used in JK Master Slave Flip Flops. (OR) |
| CO4 | K5 | 19b. | Observe the 4 bits result of Serial In Serial Out Register as a waveform. |
| CO5 | K5 | 20a. | Categorize different ROMs. (OR) |
| CO5 | K5 | 20b. | How do Multiplexing Displays work? Appraise. |