**22CTU102N/22CTU102**

**PSG COLLEGE OF ARTS & SCIENCE**
(AUTONOMOUS)

**BSc DEGREE EXAMINATION MAY 2024**
(First Semester)

Branch – **COMPUTER TECHNOLOGY**

**DIGITAL ELECTRONICS & COMPUTER SYSTEM ARCHITECTURE**

Time: Three Hours Maximum: 75 Marks

**SECTION-A (10 Marks)**
Answer **ALL** questions
**ALL** questions carry **EQUAL** marks (10 × 1 = 10)

| Question No. | Question | K Level | CO |
|---|---|---|---|
| 1 | Complements are used in digital computers for simplifying the ..... operations and for logical manipulation<br>a) Addition b) Subtraction<br>c) Division d) Multiplication | K1 | 1 |
| 2 | In which law of this expression represents [x * y = y * x]?<br>a)Commutative Law b)Associative Law<br>c) Distributive Law d) Identity Law | K2 | 1 |
| 3 | How many input bits are used in Full Adder combinational circuit that forms the arithmetic addition?<br>a)2 b)4 c)3 d)8 | K1 | 2 |
| 4 | Which among the following is a Universal Gate?<br>a) AND b)OR c)NAND d)NOT | K2 | 2 |
| 5 | The transfer of information from a memory word to the outside environment is called.....operations.<br>a) Read b) Write c) Transfer d) Complement | K1 | 3 |
| 6 | Find the name of the Microoperations :F ⟵0<br>a) Assign zero to F b) Clear<br>c) Decrease by zero d) Increase by zero | K2 | 3 |
| 7 | The Arithmetic Expression of AB*CD*+ represents ..... Notation<br>a) Infix b) Prefix c) Postfix d) Polish | K1 | 4 |
| 8 | A Stack is a storage device that stores information in ..... manner.<br>a)FIFO b)LIFO c)Intermediate d)Circular | K2 | 4 |
| 9 | The ..... interface transfer data into and out of the memory unit through the memory bus.<br>a)DMA b) IOP *c)Flag* *d)Polling* | K1 | 5 |
| 10 | The performance of cache memory is frequently measured in terms of a quantity called.....<br>a)Mapping b)Register<br>c)Hit Ratio d)Cache Memory | K2 | 5 |

**SECTION - B (35 Marks)**
Answer **ALL** questions
**ALL** questions carry **EQUAL** Marks (5 × 7 = 35)

| Question No. | Question | K Level | CO |
|---|---|---|---|
| 11.a. | Convert the$(10110001101011)_2$ to octal and hexadecimal | K2 | 1 |
| | (OR) | | |
| 11.b. | Illustrate the digital logical gates with an example diagram | | |

**Cont...**

| | | | |
|---|---|---|---|
| 12.a. | Demonstrate the four variables K-Map with an example. | K2 | 2 |
| | (OR) | | |
| 12.b. | Outline about types of flip flops. | | |
| 13.a. | Construct 4-bit arithmetic circuit with a neat diagram and function table. | K3 | 3 |
| | (OR) | | |
| 13.b. | Identify the list of logic Microoperations. | | |
| 14.a. | Distinguish various Addressing Modes. | K4 | 4 |
| | (OR) | | |
| 14.b. | Narrate the Stack Organization. | | |
| 15.a. | Describe the Asynchronous Data Transfer | K5 | 5 |
| | (OR) | | |
| 15.b. | State about Virtual Memory | | |

## SECTION -C (30 Marks)

Answer **ANY THREE** questions

**ALL** questions carry **EQUAL** Marks (3 × 10 = 30)

| Question No. | Question | K Level | CO |
|---|---|---|---|
| 16 | Explain about complements with an example. | K5 | 1 |
| 17 | Discuss about half adder and full adder with a neat diagram. | K5 | 2 |
| 18 | Distinguish on Arithmetic Logic Shift Unit. | K3 | 3 |
| 19 | Examine the Data transfer and Manipulation. | K4 | 4 |
| 20 | Elaborate Main Memory. | K4 | 5 |

Z-Z-Z END