TOTAL PAGES: 2

22CTU102N/ 22CTU102

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2023
(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)

Module No.	Question No.	Question	K Level	CO
1	1	The 1's complement of 10 is: a) 10 b) 11 c) 110 d) 01	K1	1
	2	Which of these sets of logic gates are known as universal gates? a) XOR, NAND, OR b) OR, NOT, XOR c) NOR, NAND, XNOR d) NOR, NAND	K2	2
2	3	Find the simplified expression A'BC'+AC'. a) B b) A+C c) (A+B)C' d) B'C	K1	2
	4	Which of the following circuit has its output dependent only upon the present input? a) Logic Gates b) Flip Flops c) Combinational Circuits d) Sequential Circuits	K2	2
3	5	The operations executed on data stored in registers are called _____. a) register operations b) microoperations c) macro operations d) shift operations	K1	3
	6	Which symbol is used to perform Exclusive-OR microoperations? a) $\wedge$ b) $\vee$ c) $\oplus$ d) $\odot$	K2	3
4	7	Relate the interrupts that arise from illegal or erroneous use of an instruction or data. a) External b) Software c) Internal d) Asynchronous	K1	4
	8	Which status bit is set to 1, if the exclusive-OR of the last two carries is equal to 1? a) C b)V c) S d) Z	K2	4
5	9	Which method of asynchronous employs a single control line to time each transfer? a) Strobe b) Handshaking c) Timing Diagram d) Clock Pulse	K1	5
	10	A _____ can be constructed with three-state buffers. a) bidirectional bus b) RAM c) ROM d) bootstrap loader	K2	5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the various types of binary codes.	K2	1
		(OR)		
	11.b.	Summarize the common postulates used to formulate various algebraic structures.		
2	12.a.	Outline about Two and Three Variable K maps with example.	K2	2
		(OR)		
	12.b.	Interpret about Demultiplexers.		
3	13.a.	Make use of gates to implement binary Adder-Subtractor	K3	3
		(OR)		
	13.b.	Explain the shift microoperations.		
4	14.a.	Classify the instruction formats of the CPU.	K4	4
		(OR)		
	14.b.	Examine the types of Data manipulation instructions.		
5	15.a.	Explain the handshaking method of data transfer.	K5	5
		(OR)		
	15.b.	Interpret the different mapping techniques used in cache memory.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

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

Module No.	Question No.	Question	K Level	CO
1	16	Translate the 672_{10} to Binary, Octal and Hexadecimal number system.	K4	1
2	17	Examine the functions of JK Flip Flop with necessary diagram.	K4	2
3	18	Analyze the operations of Arithmetic Logic Shift Unit.	K4	3
4	19	Classify the types of stack organization and explain it.	K4	4
5	20	Explain about Virtual memory organization.	K5	5

Z-Z-Z END