25SSP102

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc (SS) DEGREE EXAMINATION DECEMBER 2025
(First Semester)

Branch – **SOFTWARE SYSTEMS (five years Integrated)**

COMPUTER ORGANIZATION AND 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	Identify the octal equivalent of the decimal number (417)10 is _____ a) (641)8 b) (619)8 c) (640)8 d) (598)8	K1	CO1
	2	Select the 2's complement equivalent of 11001011. a) 01010111 b) 11010100 c) 00110101 d) 11100010	K2	CO1
2	3	What value is to be considered for a "don't care condition"? a) 0 b) 1 c) Either 0 or 1 d) Any number except 0 and 1	K1	CO2
	4	Which of the following are known as universal gates? a) NAND & NOR b) AND & OR c) XOR & OR d) EX-NOR & XOR	K2	CO2
3	5	Which of the following digital logic circuits can be used to add more than 1 – bit simultaneously? a) Full – adder b) Ripple – carry adder c) Half – adder d) Serial adder	K1	CO3
	6	What will be the frequency of the output from a JK flip – flop, when J = 1, K = 1, and a clock with pulse waveform is given? a) Half the frequency of clock input b) Equal to the frequency of clock input c) Twice the frequency of clock input d) Independent of the frequency of clock input	K2	CO3
4	7	Which format is typically used to store data? a) BCD b) Decimal c) Hexadecimal d) Octal	K1	CO4
	8	Which registers can interact with the secondary storage? a) MAR b) PC c) IR d) R0	K2	CO4
5	9	Who initiated the DMA transfer? a) Processor b) The process being executed c) I/O devices d) OS	K1	CO5
	10	What happens to a process when it requests a DMA transfer? a) Then the process is temporarily suspended b) The process continues execution c) Another process gets executed d) process is temporarily suspended & Another process gets executed	K2	CO5

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.	Describe briefly about Binary Numbers.	K2	CO1
		(OR)		
	11.b.	Classify the Number base Conversions.		
2	12.a.	Explain the Boolean Functions with example.	K4	CO2
		(OR)		
	12.b.	Analyze Two and Three Variable Map Method and Simplify the Boolean Function $F(x,y,z)=\sum(0,2,4,5,6)$.		
3	13.a.	Illustrate the Half -Adder and Full Adder with neat circuit diagram.	K3	CO3
		(OR)		
	13.b.	Examine the design of a BCD to Decimal Decoder.		
4	14.a.	Explain the Instruction Codes in Computer Organization.	K2	CO4
		(OR)		
	14.b.	Elaborate about Instruction Set Completeness.		
5	15.a.	Illustrate the Concept of Memory Hierarchy with neat diagram.	K3	CO5
		(OR)		
	15.b.	Illustrate how general registers are organized in a computer system.		

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	Explain about Complements & its types with example.	K4	CO1
2	17	Examine the types of logic gates.	K4	CO2
3	18	Classify the types of Flipflops with neat diagram.	K4	CO3
4	19	Explain briefly about Instruction Cycles.	K4	CO4
5	20	Explain about ALU Design.	K4	CO5

Z-Z-Z END