# PSG COLLEGE OF ARTS & SCIENCE (AUTONOMOUS)

# MSc(SS) DEGREE EXAMINATION MAY 2024 (First Semester)

## Branch - SOFTWARE SYSTEMS (five year integrated)

## COMPUTER ORGANISATION AND ARCHITECTURE

Time: Three Hours Maximum: 75 Marks

#### SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks  $(10 \times 1 = 10)$ 

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Module No.	Question No.	Question	K Level	СО		
1	1	Binary equivalent of the decimal 16 is a) 10000 b) 1111 c) 10001 d) 1001	K1	CO1		
	2	2's Complement of 10110 is a) 11010 b) 01010 c) 10100 d) 01110	K2	CO1		
2	3	In basic identities of Boolean algebra, x+x = a) 0 b) 1 c) x d) None of the above	K1	CO2		
	4	A flip flop is a binary cell capable of storing  bit of information.  a) 2 b) 4 c) 8 d) 1	K2	CO2		
3	5	Name the microoperation that shifts a signed binary number to the left or right.  a) Arithmetic shift b) Logical shift c) Circular shift d) None of the above	K1	CO2		
	6	Program counter holds the address of instruction.  a) previous b) next c) current d) None of the above	K2	CO3		
4	7	The postfix representation of the expression (3*4) + (5*6) is a) 34*56*+ b) 34*56+* c) 34+56*+ d) 34*5*6+	K1	CO3		
	8	A memory unit accessed by its content is called as  a) Virtual memory b) Associative memory c) Cache Memory d) Main memory	K2	CO4		
5	9	A command to activate the peripheral devices and to inform it what to do is termed as  a) I/O command b) Control Command c) Status Command d) None of the above	K1	CO4		
	10	A multiprocessor system with common shared memory is called as  a) Loosely coupled b) Tightly Coupled c) Multiport coupled d) None of the above	K2	CO4		

#### SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

 $(5 \times 7 = 35)$ 

ALL questions carry EQUILITIANS							
Module No.	Question No.	Question	K Level	СО			
1	11.a.	Discuss the floating-point representation in detail.					
	(OR)		K2	CO1			
	11.b.	Discuss complements in detail.					
2	12.a.	Explain Half Adder and Full Adder with neat diagram.					
			000				
	12.b.	Simplify the following Boolean functions using four-variable maps a) $F(A,B,C,D) = \sum (0,1,2,4,5,7,11,15)$ b) $F(A,B,C,D) = \sum (0,2,4,5,6,7,8,10,13,15)$	K3	CO2			
3	13.a.	Discuss the concept of timing and control of a basic computer.					
	(OR)		K3	CO3			
	13.b.	Explain shift operations in detail.					
	14.a.	Differentiate CISC and RISC Characteristics.					
4	(OR)		K4	CO4			
	14.b.	Explain the memory hierarchy with neat diagram.					
5	15.a.	Illustrate an example of I/O interface with neat diagram.					
	(OR)		K4	CO5			
	15.b.	Explain the concept of Time-shared common bus.					

### SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks

 $(3 \times 10 = 30)$ 

Module No.	Question No.	Question	K Level	СО
1	16	Convert the following to hexadecimal a) 2558 b)52010	K4	CO1
2	17	Explain logic gates in detail.	K4	CO2
3	18	Elaborate memory reference instructions in detail.	K4	CO3
4	19	Illustrate the data transfer and manipulation instruction with example.	K4	CO4
5	20	Explain direct memory access in detail.	K4	CO5