

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(First Semester)

Branch - **COMPUTER TECHNOLOGY**

DIGITAL ELECTRONICS AND 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	What is the base number for Hexadecimal number? a) 10 b) 2 c) 8 d) 16	K1	CO1
	2	When input signal 1 is applied to a NOT gate, the output is ____ a) 0 b) Either 0 or 1 c) 1 d) 2	K2	CO1
2	3	Which gate is two level logic gate? a) Exclusive OR b) NOR gate c) NAND d) OR gate	K1	CO2
	4	Select the following is used for D flip flop a) divider circuit b) delay switch c) time delay switch d) differentiator	K2	CO2
3	5	Which of the following is a bi-directional bus? a) Address bus b) Data bus c) I/O bus d) address/ data bus	K1	CO3
	6	Which operation are associated with serial transfer of data? a) Logical micro operation b) Arithmetic micro operation c) Shift micro operation d) None	K2	CO3
4	7	Identify the correct option : CPU consists of : a) ALU and Registers b) ALU and Control Unit c) ALU, Control Unit and Hard disk d) ALU, Control Unit and Monitor	K1	CO4
	8	The addressing mode, where you directly specify the operand value is ____ a) Immediate b) Direct c) Definite d) Relative	K2	CO4
5	9	Select a secondary storage device from the following a) Optical disk b) RAM c) ROM d) All of these	K1	CO5
	10	When power is switched off which memory losses its data? a) Non volatile memory b) Volatile memory c) Cache memory d) Secondary memory	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.	Perform binary subtraction of the following number using 1's complement and 2's complement i) 11010 – 1101 ii) 100 - 110000	K2	CO1
		(OR)		
	11.b.	Construct logic circuit and truth table for AND, OR and NOT gate.	K3	CO1
2	12.a.	Draw BCD adder and explain its working.	K3	CO2
		(OR)		
	12.b.	Explain the functioning of Demultiplexer with diagram.	K4	CO2
3	13.a.	With neat diagram, write a note on Register transfer notations for Arithmetic Micro Operations.	K3	CO3
		(OR)		
	13.b.	Write a note on shift micro operation.	K2	CO3
4	14.a.	Examine the concept of stack organization.	K3	CO4
		(OR)		
	14.b.	Classify various addressing modes of CPU.	K3	CO4
5	15.a.	Analyse the strobe control method of asynchronous data transfer.	K2	CO5
		(OR)		
	15.b.	Describe the Memory Hierarchy in computer system.	K3	CO5

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	Convert the following decimal numbers to the bases indicated a) 7562 to octal b) 1938 to hexadecimal c) 175 to binary	K2	CO1
2	17	Discuss about RS flip flop and Shift registers	K3	CO2
3	18	Design a 4-bit ALU which performs arithmetic, Logical and shift operations.	K4	CO3
4	19	Explain the design of micro-programmed control unit in detail.	K4	CO4
5	20	Elaborate the concept of Associative memory.	K4	CO5