



**GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY**  
(AN AUTONOMOUS INSTITUTION)  
(Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu)  
(Accredited by NAAC with "A" Grade, NBA (EEE,ECE&ME) & ISO9001:2008 Certified Institution)

### QUESTIONBANK(DESCRIPTIVE)

**Subject Name with Code: DIGITAL ELECTRONICS AND COMPUTER ORGANIZATION -23A0402T**

**Course & Branch :B.TECH CSE,CS**

**Year& Semester: II-I**

**Regulation:R23**

### UNIT - I

S.No.	Question	[BT Level] [CO][ PO]	[Marks]
<b>2 Marks Questions (Short)</b>			
1.	What are don't care? What is significance of don't care's?	L1,CO1,PO1	2M
2.	What are universal gates? Realize AND, OR gates using universal gates?	L1,CO1,PO1	2M
3.	State the different ways for representing the signed binary numbers?	L1,CO1, PO1	2M
4.	What are the unsigned binary numbers?	L1,CO1, PO1	2M
5.	Define k- map? Name its advantages and disadvantages?	L1,CO2, PO1	2M
6.	Write the properties of logic gates?	L2,CO1, PO1	2M
7.	What are min term and max term?	L1,CO1, PO1	2M
8.	Differences between 1's complement and 2's complement?	L4,CO1, PO1,PO2	2M
9.	Write the truth table for following function $F=XY+XY'+Y'Z$ ?	L2,CO2, PO1,PO2	2M
10.	Define Decoder?	L1,CO3, PO1	2M
11.	What is De-multiplexer?	L1,CO3, PO1	2M
12.	What is Multiplexer?	L1,CO3, PO1	2M
13.	What are the applications of multiplexers?	L1,CO3, PO1	2M
14.	State any two theorems?	L1,CO2, PO1	2M
<b>Descriptive Questions (Long)</b>			
15.	Convert following numbers (1)(10101100111.0101) <sub>2</sub> =(?) <sub>10</sub> (2)(153.513) <sub>10</sub> =(?) <sub>8</sub> (3)(292) <sub>16</sub> =(?) <sub>2</sub> (4)(4433) <sub>5</sub> =(?) <sub>10</sub> (5) Gray to binary conversion:(110011)	L4,CO1,PO1,PO2	10M
16.	Simplify the following using K-MAP (a) $Y(A,B,C)=\sum m(0,2,4,5,6,7)$ (b) $f(A,B,C,D)=\pi M(1,2,4,7,12,14)$	L4,CO2,PO1,PO2	10M
17.	What is Boolean algebra and properties of Boolean algebra?	L1,CO2,PO1	10M
18.	Simplify the following Boolean expression using K-MAP and implement that using NAND GATES $F(W,X,Y,Z)=XZ+W'XY'+WXY+W'YZ$	L4,CO2,PO1,PO2	10M
19.	Implement the Boolean expression $Y=A'+BC'$ using NOR gate	L3,CO2,PO1,PO2,PO3	10M
20.	(a)What is number system and types of number system and explain it. (b) What is Signed and unsigned binary numbers? Different ways for representing the signed binary numbers and give examples?	L1,CO1,PO1	10M
21.	(a)perform BCD using 9's complement for 54 -28? (b)State and prove the De-morgans theorem?	L1,CO2,PO1,PO3	10M
22.	(a)Define decoder? Explain in detail about 3to8 decoder? (b)Implement the following Boolean expression in terms of 3 to 8 decoder $F=A'BC+AB'+B'C$	L3,CO3,PO1,PO3	10M
23.	(a) Explain about 8 to1 multiplexer? (b)What is multiplexer? $F(A,B,C,D)=\sum m(0,1,5,6,7,9,10,15)$ using 8x1 mux?	L2,CO3,PO1,PO2,PO3	10M

## UNIT - II

S.No.	Question	[BT Level] [CO][PO]	[Marks]
<b>2 Marks Questions (Short)</b>			
1.	Distinguish between combinational and sequential logic circuit?	L4,CO3,PO1	2M
2.	Define shift register?	L1,CO3,PO1,PO2	2M
3.	Write about ripple counter?	L2,CO3,PO1	2M
4.	What are the applications of flip-flop?	L1,CO3,PO1	2M
5.	Define Bi-directional shift register?	L1,CO3,PO1	2M
6.	Differentiate latch and flip-flop?	L4,CO3,PO1	2M
7.	Distinguish between synchronous and asynchronous counter.?	L4,CO3,PO1	2M
8.	Define Computer memory and computer program?	L1,CO4,PO1	2M
9.	Define program counter and instruction register?	L1,CO4,PO1	2M
10.	What is system software?	L1,CO4,PO1	2M
11.	Define CPI(cycles per instruction)?	L1,CO4,PO1	2M
12.	Define different buses in bus structure?	L1,CO4,PO1	2M
<b>Descriptive Questions (Long)</b>			
13.	Explain working of clocked SR-flip flop with truth table, characteristic, excitation table?	L2,CO3,PO1,PO2,PO3	10M
14.	Explain working of clocked D-flip flop with NAND gates and explain its operation using truth table?	L2,CO3,PO1,PO2,PO3	10M
15.	Explain working of clocked JK flip-flop with NAND gates and explain its operation using truth table?	L2,CO3,PO1,PO2,PO3	10M
16.	Explain working of clocked T-flip flop with NAND gates and explain its operation using truth table?	L2,CO3,PO1,PO2,PO3	10M
17.	Explain the conversion of flip-flops with suitable example?	L2,CO3,PO1,PO2,PO3,PO4	10M
18.	Convert S-R flipflop to J-K flipflop using conversion techniques	L3,CO3,PO1,PO2,PO3,PO4	10M
19.	Explain about 3 bit Asynchronous up counter?	L2,CO3,PO1,PO2,PO3	10M
20.	Explain master slave JK flip-flop with a neat diagram?	L2,CO3,PO1,PO2,PO3	10M
21.	Explain about Universal shift register?	L2,CO3,PO1	10M
22.	What is Shift register? Explain the types of shift registers?	L1,CO3,PO1	10M
23.	Write the differences between synchronous counter and asynchronous counters?	L2,CO3,PO1	10M
24.	Explain about 3 bit Asynchronous or ripple down counter.	L2,CO3,PO1,PO2,PO3	10M
25.	Explain about 3 bit Synchronous up/down counter ?	L2,CO3,PO1,PO2,PO3	10M
26.	Explain various types of computers and their applications?	L2,CO4,PO1	10M
27.	Explain the function of each functional unit in the computer system?	L2,CO4,PO1	10M
28.	Explain about the Von Neumann architecture and its structure?	L2,CO4,PO1	10M
29.	Explain the multiprocessors and multi computer systems?	L2,CO4,PO1	10M
30.	Explain about computer generations?	L2,CO4,PO1	10M

## UNIT - III

S.No.	Question	[BT Level] [CO][ PO]	[Marks]
<b>2 Marks Questions (Short)</b>			
1.	State the principle of operation of fast adder?	L1,CO4,PO1	2M
2.	What are the main features of Booth's algorithm?	L1,CO4,PO1	2M
3.	How can we speed up the multiplication process?	L1,CO4,PO1	2M
4.	What is the advantage of using Booth algorithm?	L1,CO4,PO1	2M
5.	Discuss the principle behind Booth's multiplier?	L3,CO4,PO1	2M
6.	Find the bit-pair code for multiplier 11010?	L1,CO4,PO1,PO2	2M
7.	Recode the multiplier 101100 for Booth's multiplication?	L1,CO4,PO1,PO2	2M
8.	What is register file?	L1,CO4,PO1	2M
9.	Define micro instruction?	L1,CO4,PO1	2M

10.	What is data path?	L1,CO4,PO1	2M
11.	What is meant by hardwired control?	L1,CO4,PO1	2M
12.	What are the advantages and disadvantages of micro programmed control?	L1,CO4,PO1	2M
13.	Compare Hardwired and Micro programmed control unit?	L4,CO4,PO1	2M
14.	List the two techniques used for grouping of control signals?	L2,CO4,PO1	2M
15.	Design full subtractor using half subtractor?	L4,CO4,PO1	2M
<b>Descriptive Questions (Long)</b>			
16.	Explain about Adders & Subtractors operations in Computer Arithmetic's?	L2,CO4,PO1,PO2,PO3	10M
17.	Multiply the sign numbers by using Booth's multiplication algorithm for the numbers 10111(-9) and 10011(-13) and draw it's flow chart?	L2,CO4,PO1,PO2,PO3,PSO1	10M
18.	Explain about fast adders?	L2,CO4,PO1	10M
19.	Differentiate between Fixed point and Floating point representations of data?	L4,CO4,PO1	10M
20.	Discuss about functioning of micro programmed control unit?	L2,CO4,PO1	10M
21.	Draw and explain typical hardwired control unit?	L2,CO4,PO1	10M
22.	Explain about multiple bus organization?	L2,CO4,PO1	10M
23.	Explain about execution of a complete instruction?	L2,CO4,PO1	10M
24.	Perform the division of 1000(dividend) and 0011(divisor) using restoring division algorithm?	L2,CO4,PO1,PO2,PO3,PSO1	10M
25.	Perform the division of 1010(dividend) and 0011(divisor) using non-restoring division algorithm?	L2,CO4,PO1,PO2,PO3,PSO1	10M
26.	Design half adder/subtractor and full adder/ subtractor ?	L4,CO3,PO1,PO2,PO3	10M
27.	Explain the circuit diagram of full subtractor and full adder using half Adders?	L2,CO3,PO1,PO2,PO3	10M

## UNIT - IV

S.No.	Question	[BT Level] [CO][ PO]	[Marks]
<b>2 Marks Questions (Short)</b>			
1.	What are the various types of semiconductor memories?	L1,CO5,PO1	2M
2.	Define Hit ratio?	L1,CO5,PO1	2M
3.	Define Miss Penalty?	L1,CO5,PO1	2M
4.	Distinguish Between Static RAM and Dynamic RAM	L4,CO5,PO1	2M
5.	Distinguish between asynchronous DRAM and synchronous RAM	L4,CO5,PO1	2M
6.	What is virtual memory	L1,CO5,PO1	2M
7.	What is cache memmory	L1,CO5,PO1	2M
8.	Define TLB buffer	L1,CO5,PO1	2M
9.	Give the characteristics of magnetic disk	L1,CO5,PO1	2M
10.	Wite a note on RAID	L2,CO5,PO1	2M
11.	Write a short notes on CD-ROM, WORM, Erasable Optical memory	L2,CO5,PO1	2M
12.	Difference between SRAM and DRAM	L4,CO5,PO1	2M
<b>Descriptive Questions (Long)</b>			
13.	Discuss about memory hierarchy	L2,CO5,PO1,PO5,PSO1	10M
14.	Explain about Semiconductor RAM memories.	L4,CO5,PO1,PSO1	10M
15.	Explain about ROM and its Organization	L2,CO5,PO1,PO5,PSO1	10M
16.	Explain the secondary storage memory	L2,CO5,PO1,PO5,PSO1	10M
17.	Explain the Performance Considerations and Virtual memory	L2,CO5,PO1,PSO1	10M
18.	Explain briefly about the Cache memory and different mapping methods of Cache memory.	L2,CO5,PO1,PSO1	10M

## UNIT – V

S.No.	Question	[BT Level] [CO][ PO]	[Marks]
<b>2 Marks Questions (Short)</b>			
1.	What is memory mapped I/O/	L1,CO6,PO1	2M
2.	Differentiate Programmed I/O and interrupt I/O	L4,CO6,PO1	2M
3.	Differentiate Memory mapped I/O and I/O mapped I/O	L4,CO6,PO1	2M
4.	What is a DMA & DMA transfer	L1,CO6,PO1	2M
5.	Define PCI,SCSI,USB	L1,CO6,PO1	2M
6.	What is an I/O channel?	L1,CO6,PO1	2M
7.	What is an I/O interface?	L1,CO6,PO1	2M
8.	Define interrupt?	L1,CO6,PO1	2M
9.	Define Synchronous bus.	L1,CO6,PO1	2M
10.	Define Asynchronous bus.	L1,CO6,PO1	2M
11.	What is a bus?	L1,CO6,PO1	2M
12.	Write a note on input and output, serial ports	L2,CO6,PO1	2M
<b>Descriptive Questions (Long)</b>			
13.	What is the purpose of DMA? Draw the block diagram for DMA controller and explain about DMA transfer in a computer.	L1,CO6,PO1,PO5,PSO1	10M
14.	Explain Asynchronous bus with neat timing diagram?	L2,CO6,PO1,PSO1	10M
15.	Explain Synchronous bus with neat timing diagram?	L2,CO6,PO1,PSO1	10M
16.	Explain in detail about the Bus Arbitration Techniques?		
17.	Explain in detail about the standard I/O interface?	L2,CO6,PO1,PO5,PSO1	10M
18.	Explain in detail about the interrupts and its types?	L2,CO6,PO1,PO5,PSO1	10M
19.	Explain about the interfacing circuits?	L2,CO6,PO1,PSO1	10M

**Signature of the Staff:**

**Signature of Department Academic Committee Member 1:**

**Signature of Department Academic Committee Member 2:**

**Signature of Department Academic Committee Member 3:**