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| **QUESTIONBANK(DESCRIPTIVE)**  **Subject Name with Code: DIGITAL ELECTRONICS AND COMPUTER ORGANIZATION -23A30402.**  **Course &Branch :B.TECH CSE,CS**  **Year& Semester: II-I Regulation:R23** | |

**UNIT - I**

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| **S.No.** | **Question** | **[BT Level] [CO][ PO]** | **[Marks]** |
| **2 Marks Questions (Short)** | | |  |
|  | What are don’t care? What is significance of don’t care’s? | L1,CO1,PO1 | 2M |
|  | What are universal gates? Realize AND, OR gates using universal gates? | L1,CO1, PO1 | 2M |
|  | State the different ways for representing the signed binary numbers? | L1,CO1, PO1 | 2M |
|  | What are the unsigned binary numbers? | L1,CO1, PO1 | 2M |
|  | Define k- map? Name its advantages and disadvantages? | L1,CO2, PO1 | 2M |
|  | Write the properties of logic gates? | L1,CO1, PO1 | 2M |
|  | What are min term and max term? | L1,CO1, PO1 | 2M |
|  | Difference between 1’s complement and 2’s complement? | L4,CO1, PO1 | 2M |
|  | Draw the truth table of following function F=XY+XY’+Y’Z? | L1,CO2, PO1 | 2M |
|  | Define encoder? | L1,CO3, PO1 | 2M |
|  | What is De-multiplexer? | L1,CO3, PO1 | 2M |
|  | Compare a decoder with a demultiplexer? | L4,CO3, PO1 | 2M |
|  | Implement following function F=∑m(1,2,3,7) using 3\*8 decoder? | L3,CO3, PO1 | 2M |
|  | What are the applications of multiplexers? | L1,CO3, PO1 | 2M |
|  | State any two theorems? | L1,CO2, PO1 | 2M |
| **Descriptive Questions (Long)** | | |  |
|  | Convert following numbers  (1)(10101100111.0101)2=(?)10  (2)(153.513)10=(?)8  (3)(163.789)10=(?)8  (4)(292)16=()2  (5)(4433)5=()10  (6) Gray to binary conversion:(11011) | L4,CO1,PO1 | 10M |
|  | Simplify the following using K-MAP  (a)Y(A,B,C)=Σm(0,2,4,5,6,7)  (b)f(a,b,c,d)=πM(1,2,4,7,12,14) | L4,CO2,PO1 | 10M |
|  | What is Boolean algebra and properties of Boolean algebra? | L1,CO2,PO1 | 10M |
|  | 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 | 10M |
|  | Implement the Boolean expression Y=A`+BC` using NOR gate | L3,CO2,PO1 | 10M |
|  | (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 |
|  | (a)perform BCD using 9’s complement for 54 -28  (b)State and prove the De-morgans theorem? | L1,CO2,PO1 | 10M |
|  | (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 | L1,CO3,PO1 | 10M |
|  | (a)What is multiplexer? design 8 to1 multiplexer?  (b)F(A,B,C,D)=∑m(0,1,5,6,7,9,10,15) using 8x1 mux? | L1,CO3,PO1 | 10M |

**UNIT - II**

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| **S.No.** | **Question** | **[BT Level] [CO][PO]** | **[Marks]** |
| **2 Marks Questions (Short)** | | |  |
|  | Distinguish between combinational and sequential logic circuit? | L4,CO3,PO1 | 2M |
|  | Define shift register? | L1,CO3,PO1 | 2M |
|  | Write about ripple counter. | L1,CO3,PO1 | 2M |
|  | Write a note on sequential logic circuit | L1,CO3,PO1 | 2M |
|  | Define up-down counter? | L1,CO3,PO1 | 2M |
|  | What are the applications of flip-flop? | L1,CO3,PO1 | 2M |
|  | Define Bi-directional shift register? | L1,CO3,PO1 | 2M |
|  | Differentiate latch and flip-flop? | L4,CO3,PO1 | 2M |
|  | Distinguish between synchronous and asynchronous counter.? | L4,CO3,PO1 | 2M |
|  | Define Computer memory and computer program? | L1,CO4,PO1 | 2M |
|  | Define program counter and instruction register | L1,CO4,PO1 | 2M |
|  | What is system software | L1,CO4,PO1 | 2M |
|  | Define CPI | L1,CO4,PO1 | 2M |
|  | Define different buses in bus structure | L1,CO4,PO1 | 2M |
| **Descriptive Questions (Long)** | | |  |
|  | What is SR-flip flop? Explain working of clocked SR-flip flop and characteristic, excitation table? | L1,CO3,PO1 | 10M |
|  | Draw the circuit diagram of clocked D-flip flop with NAND gates and explain its operation using truth table? | L1,CO3,PO1 | 10M |
|  | Draw the circuit diagram of clocked JK-flip flop with NAND gates and explain its operation using truth table? | L1,CO3,PO1 | 10M |
|  | Draw the circuit diagram of clocked T-flip flop with NAND gates and explain its operation using truth table? | L1,CO3,PO1 | 10M |
|  | Explain the conversion of flipflops with suitable example? | L1,CO3,PO1 | 10M |
|  | Explain about 4 bit Asynchronous binary counter? | L2,CO3,PO1 | 10M |
|  | Explain master slave JK flip-flop with a neat diagram? | L2,CO3,PO1 | 10M |
|  | Explain about Universal shift register? | L2,CO3,PO1 | 10M |
|  | What is Shift register? Explain the types of shift registers? | L1,CO3,PO1 | 10M |
|  | Difference between synchronous counter and asynchronous counters? | L4,CO3,PO1 | 10M |
|  | Explain about Asynchronous or ripple down counter? | L2,CO3,PO1 | 10M |
|  | Explain about Synchronous up/down counter? | L2,CO3,PO1 | 10M |
|  | Explain various types of computers and their applications? | L2,CO4,PO1 | 10M |
|  | Explain the function of each functional unit in the computer system? | L2,CO4,PO1 | 10M |
|  | Explain about the Von Neumann architecture and its structure? | L2,CO4,PO1 | 10M |
|  | Explain the multiprocessors and multi computer systems? | L2,CO4,PO1 | 10M |
|  | Explain about computer generations? | L2,CO4,PO1 | 10M |

**UNIT - III**

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| **S.No.** | **Question** | **[BT Level] [CO][ PO]** | **[Marks]** |
| **2 Marks Questions (Short)** | | |  |
|  | State the principle of operation of a carry look-ahead adder. | L1,CO4,PO1 | 2M |
|  | What are the main features of Booth’s algorithm? | L1,CO4,PO1 | 2M |
|  | How can we speed up the multiplication process? | L1,CO4,PO1 | 2M |
|  | What is the advantage of using Booth algorithm? | L1,CO4,PO1 | 2M |
|  | Discuss the principle behind Booth’s multiplier? | L3,CO4,PO1 | 2M |
|  | Discuss the role of Booth’s algorithm in design of fast multipliers? | L3,CO4,PO1 | 2M |
|  | Write the algorithm for restoring division | L1,CO4,PO1 | 2M |
|  | Write the algorithm for non restoring division | L1,CO4,PO1 | 2M |
|  | Write the Add/subtract rule for floating point numbers | L1,CO4,PO1 | 2M |
|  | What are the difficulties faced when we use floating point arithmetic? | L1,CO4,PO1 | 2M |
|  | Give the booth’s recoding and bit-pair recoding of the computer. 1000111101000101 | L1,CO4,PO1 | 2M |
|  | What is register file | L1,CO4,PO1 | 2M |
|  | Define micro instruction | L1,CO4,PO1 | 2M |
|  | What is datapath | L1,CO4,PO1 | 2M |
|  | What is meant by hardwired control | L1,CO4,PO1 | 2M |
|  | What are the advantages and disadvantages of micro programmed control | L1,CO4,PO1 | 2M |
|  | Compare Hardwired and Micro programmed control unit | L4,CO4,PO1 | 2M |
|  | List the two techniques used for grouping of control signals | L1,CO4,PO1 | 2M |
|  | Design full subtractor using half subtractor? | L2,CO4,PO1 | 2M |
| **Descriptive Questions (Long)** | | | |
|  | Explain about Addition & Subtraction operations in Computer Arithmetic’s? | L2,CO4,PO1 | 10M |
|  | Explain restoring division for 1010(divended) and 0011(divisor)? | L2,CO4,PO1 | 10M |
|  | Explain about fast adders? | L2,CO4,PO1 | 10M |
|  | Explain Floating-Point Multiplication and Division Algorithms | L2,CO4,PO1 | 10M |
|  | Differentiate between Fixed point and Floating point representations of data. | L4,CO4,PO1 | 10M |
|  | Describe how a multiplication algorithms functions. | L2,CO4,PO1 | 10M |
|  | Discuss about functioning of micro programmed control unit | L2,CO4,PO1 | 10M |
|  | Draw and explain typical hardwired control unit | L2,CO4,PO1 | 10M |
|  | Explain about multiple bus organization | L2,CO4,PO1 | 10M |
|  | Explain about execution of a complete instruction | L2,CO4,PO1 | 10M |
|  | Multiply 10111 with 10011 using Booth’s algorithm | L3,CO4,PO1 | 10M |
|  | Design half adder/subtractor and full adder/ subtractor using NAND and NOR gates? | L3,CO3,PO1 | 10M |
|  | Explain the circuit diagram of full subtractor and full adder? | L2,CO3,PO1 | 10M |

**UNIT - IV**

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| **S.No.** | **Question** | **[BT Level] [CO][ PO]** | **[Marks]** |
| **2 Marks Questions (Short)** | | |  |
|  | What are the various types of semiconductor memories | L1,CO5,PO1 | 2M |
|  | Define Hit ratio | L1,CO5,PO1 | 2M |
|  | Distinguish Between Static RAM and Dynamic RAM | L4,CO5,PO1 | 2M |
|  | Distinguish between asynchronous DRAM and synchronous RAM | L4,CO5,PO1 | 2M |
|  | What is virtual memory | L1,CO5,PO1 | 2M |
|  | What is cache memmory | L1,CO5,PO1 | 2M |
|  | Define TLB buffer | L1,CO5,PO1 | 2M |
|  | Give the characteristics of magnetic disk | L1,CO5,PO1 | 2M |
|  | Wite a note on RAID | L1,CO5,PO1 | 2M |
|  | Write a short notes on CD-ROM, WORM, Erasable Optical memory | L1,CO5,PO1 | 2M |
|  | Difference between SRAM and DRAM | L4,CO5,PO1 | 2M |
| **Descriptive Questions (Long)** | | | |
|  | Discuss about memory hierarchy | L2,CO5,PO1 | 10M |
|  | Examine the use of cache memory and describe the mapping methods used in cache memory organization. | L4,CO5,PO1 | 10M |
|  | Explain about ROM and its Organization | L2,CO5,PO1 | 10M |
|  | Explain the different types of main memory | L2,CO5,PO1 | 10M |
|  | Explain the different mapping techniques in cache | L2,CO5,PO1 | 10M |
|  | Explain the secondary storage memory | L2,CO5,PO1 | 10M |
|  | Explain the Virtual memory | L2,CO5,PO1 | 10M |
|  | Explain about demand paging and page replacement techniques | L2,CO5,PO1 | 10M |
|  | Explain briefly about the direct and associative mapping in cache organization. | L2,CO5,PO1 | 10M |

**UNIT – V**

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| **S.No.** | **Question** | **[BT Level] [CO][ PO]** | **[Marks]** |
| **2 Marks Questions (Short)** | | |  |
|  | What is memory mapped I/O/ | L1,CO6,PO1 | 2M |
|  | Differentiate Programmed I/O and interrupt I/O | L4,CO6,PO1 | 2M |
|  | Differentiate Memory mapped I/O and I/O mapped I/O | L4,CO6,PO1 | 2M |
|  | What is a DMA & DMA transfer | L1,CO6,PO1 | 2M |
|  | Define PCI,SCSI,USB | L1,CO6,PO1 | 2M |
|  | What is an I/O channel? | L1,CO6,PO1 | 2M |
|  | What is an I/O interface? | L1,CO6,PO1 | 2M |
|  | Define interrupt? | L1,CO6,PO1 | 2M |
|  | Define Synchronous bus. | L1,CO6,PO1 | 2M |
|  | Define Asynchronous bus. | L1,CO6,PO1 | 2M |
|  | What is a bus? | L1,CO6,PO1 | 2M |
|  | Classification of interrupt | L1,CO6,PO1 | 2M |
|  | Write a note on input and output, serial ports | L1,CO6,PO1 | 2M |
| **Descriptive Questions (Long)** | | | |
|  | What is the purpose of DMA? Draw the block diagram for DMA controller and explain about DMA transfer in a computer. | L1,CO6,PO1 | 10M |
|  | Explain Asynchronous bus with neat timing diagram | L2,CO6,PO1 | 10M |
|  | Explain synchronous bus with neat timing diagram | L2,CO6,PO1 | 10M |
|  | Explain in detail about the interfacing circuits | L2,CO6,PO1 | 10M |
|  | Explain about I/O interface with the help of block diagram | L2,CO6,PO1 | 10M |
|  | Explain in detail about the interrupts and its types | L2,CO6,PO1 | 10M |
|  | Explain about the PCI Bus | L2,CO6,PO1 | 10M |
|  | Explain about the SCCI Bus | L2,CO6,PO1 | 10M |
|  | Explain about the USB Bus | L2,CO6,PO1 | 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:**