

S. J. S.

M. B. Patel Science College, Anand
S. Y. B. Sc. (Computer Science)
Third Semester
Internal Theory Test, 2011-2012
US03CCS02: Computer Organization
22nd September, Thursday, 2011

Time: 2.00 pm to 5.00 pm

Total Marks: 60

Q-1	Select appropriate option. (Attempt Any TWELVE out of FIFTEEN)	12
1	Computer hardware refers to the _____ parts of a computer. (a) Logical (b) Physical (c) Data (d) None of above	
2	OCR stands for _____. (a) Optical Character Recognition (b) Opac Character Reader (c) Optical Character Reader (d) None of above	
3	The output unit supplies the converted results to the (a) Outside world (b) Computer inside (c) Harddisk (d) None of above	
4	Radix in the Binary Number System is _____. (a) 0 & 1 (b) 1 & 2 (c) 5 & 6 (d) None of above	
5	In Hexadecimal Number system, base is ____ (a) 10 (b) 16 (c) 15 (d) None of above	
6	In Hexadecimal Number system, F is stands for ____ (a) 09 (b) 10 (c) 15 (d) None of above	
7	In Signed and Magnitude method '0' represents ____. (a) +ve (b) -ve (c) both a & b (d) None of above	
8	In even parity, the number of 1's is ____ (a) even (b) odd (c) both a & b (d) None of above	
9	Character code ASCII is ____ (a) 7-bit code (b) 9-bit code (c) both a & b (d) None of above	
10	_____ performs operations such as mathematical and Boolean, to carry out the instruction. (a). ALU (b). Control Unit (c). ALB (d). None of above	
11	_____ points to the next instruction to be executed after finishing the current instruction. (a). Program counter (b). Program counting (c). Instruction register (d). None of above	
12	_____ has two or more CPUs sharing a common memory. (a). Multiple processors (b). Array Processors (c). Multifunction units (d). All of above	
13	Pen drives can be connected with computer or laptop by (a) USB port (b) PS2 port (c) PORT NO.80 (d) None of these	
14	DDR is a type of (a) Pen drive (b) Hard disk (c) RAM (d) Processor	
15	SATA is a type of (a) Pen drive (b) Hard disk (c) RAM (d) Processor	

Q-2	Answer the following questions. (Attempt Any SIX out of TEN)	12
1	What are the five basic operations performed by any Computer System?	
2	List out the limitations of Primary Storage.	
3	Explain the conversion of Decimal to Binary method.	
4	What is 3-bits grouping conversion method?	
5	What is signed and magnitude method?	
6	Write the full form of ASCII and ANSI.	
7	What is the function of 'Control unit' & 'Arithmetic logic unit'?	
8	Write the functions of each stage in 'Pipeline machine'.	
9	Write the function of MAR and MBR registers.	
10	What is 'Pen drive'?	
	ATTEMPT any FOUR out of FIVE (Q-3 to Q-7)	
Q-3		
(a)	Draw a block diagram of Basic Organization of a Computer System and explain the functions of the various units.	5
(b)	What are registers? Name some of the commonly used.	4
	OR	
Q-3		
(a)	Write a brief note on 'Applications of the Computer Systems'.	5
(b)	Write a brief note on Output Unit.	4
Q-4		
(a)	What is Number System? List the base and radix of Binary, Octal and Hexadecimal number system.	5
(b)	Explain the conversion of Binary to Decimal with suitable example.	4
	OR	
Q-4		
(a)	What is 4-bits Hexadecimal to Binary method? Explain.	5
(b)	Explain the conversion of Octal to Decimal with suitable example.	4
Q-5		
(a)	Explain the storage representation of integers in Signed and Magnitude and 1's complement methods.	5
(b)	Explain the error detection and correction of one-bit parity method.	4
	OR	
Q-5		
(a)	What is Hamming Code? Explain in brief with suitable example.	5
(b)	Explain the Excess notation? Explain it with suitable example.	4
Q-6		
(a)	Write the steps of Instruction Execution Cycle.	5
(b)	Write short note on 'Multifunctional Units'.	4
	OR	

Q-6		
(a)	Write short note on 'Pipeline machine'.	5
(b)	Write short note on 'Array processor'.	4
Q-7		
(a)	Write short note on 'Hard Disk'.	5
(b)	List the advantages and disadvantages of CD.	4
	OR	
Q-7		
(a)	Write short note on 'Indirect Addressing'.	5
(b)	Write short note on 'Stack Addressing'.	4

M. B. PATEL SCIENCE COLLEGE, ANAND

US03ECS01 – Digital Computer Electronics

Internal Examination – September-2011

S. Y. B. Sc. (Third Semester) Date : 24/09/2011

Time : 2.00 pm to 5.00 pm

Total Marks : 60

Q.1 Select appropriate option. (Attempt any TWELVE out of SIXTEEN) [12]

1. An invert gate is also called a _____ gate.
A. NOR B. NOT C. XNOR D. NAND
2. The _____ gate has two or more input signals. All inputs must be high to get a high output
A. AND B. OR C. NAND D. NOR
3. De Morgan's first theorem says that a NOR gate is equivalent to a _____
A. bubbled OR B. bubbled NOR C. bubbled AND D. AND bubbled
4. The NOR gate has two or more input signals. If all inputs are _____ the output is high.
A. High B. Low C. Both A and B D. None
5. _____ is way to simplify the equation.
A. Boolean Algebra B. K-Map C. BOTH D. None
6. In K-Map, quad eliminates _____ variable
A. One B. Two C. Three D. Four
7. A _____ is a combinational circuit that converts binary information from the n coded inputs to a maximum of 2^n unique outputs.
A. Half adder B. Decoder C. Encoder D. Comparator
8. In Comparator, _____ gate is use for comparing bits in word.
A. XOR B. AND C. NOR D. XNOR
9. A combinational circuit that performs the arithmetic addition of two bits is called _____.
A. Full Adder B. Half Adder C. Binary adder D. Decoder
10. Half adder consist of _____ and _____ gates.
A. XOR, AND B. XOR, OR C. XNOR, AND D. XNOR, OR
11. A _____ is a logic circuit that can add two binary numbers.
A. Decoder B. Binary Adder C. AND gate D. OR gate.
12. The Full Adder circuit adds _____ digit at a time.
A. One B. Two C. Three D. Four
13. In D flip-flop, when CLK is low then input is _____
A. High B. Low C. Don't care D. Not change
14. A register is a group of _____ that work together as a unit.
A. flip-flop B. Decoder C. multiplexer D. gates
15. In shift right register, the arrival of the first rising clock edge sets the _____ flip-flop.
A. left B. right C. up D. down
16. A multiplexer also called a _____.
A. Data Multiplier B. Data Selector C. Data Inverter D. Data Remover

[P. T. O.]

Q.2 Answer the following questions (Attempt Any SIX out of TWELVE). [12]

1. Draw the circuit for $\bar{A}B + \bar{B}C + A\bar{C}$.
2. Explain associative law of Boolean algebra.
3. Define terms Gate and Inverter.
4. Describe pair in k-map.
5. Explain the function of decoder with truth table.
6. Simplify this using k-map $F(A,B,C) = \sum(1,2,5)$
7. Describe Half-adder in short.
8. Draw the circuit of full-adder.
9. Describe binary adder in short
10. Describe shift left register.
11. Explain controlled buffer register.
12. Explain ring counter in short.

ATTEMPT ANY THREE OUT OF FOUR

- Q.3** a. Explain XOR and AND gate with truth table. [04]
b. Explain Distributive and commutative law. [04]
c. Simplify $A B C + \bar{A} B C + A \bar{B} C$ and draw circuit. [04]

OR

- Q.3** a. State and Prove De Morgan's first and second theorem. [08]
b. Prove that $A\bar{B}\bar{C} + ABC = AB$ using truth table. [04]

- Q.4** a. Define Quad in k-map. Explain it with example. [05]
b. What is encoder? Explain 8x3 line encoder in detail. [04]
c. Explain comparator with example. [03]

OR

- Q.4** a. Derive the SOP and POS equation for $F(A,B,C,D) = \pi(1,2,5,6,8,12,14)$. [06]
Which one is less expensive?
b. Define Octet in k-map. Explain by giving example. Also explain concept of overlapping. [06]

- Q.5** a. Explain full adder. Draw a circuit diagram and prepare the truth table. [06]
b. Explain binary adder-subtractor. Draw circuit diagram. [06]

OR

- Q.5** a. Explain 4x1 multiplexer in detail. [04]
b. $12+9=21$, perform the operation using binary adder using diagram. [05]
c. Explain half subtractor with truth table and circuit diagram. [03]

- Q.6** a. Explain D flip-flop with proper circuit diagram. [04]
b. Explain shift-left and shift-right register. [04]

OR

- Q.6** a. Explain controlled buffer register with circuit diagram. [06]
b. Write short note on Ring counters with circuit diagram. [06]

@@@@ BEST LUCK @@@@