Register Number:……..

KUMARAGURU
college of technology
character is life

MCA DEGREE EXAMINATIONS: JUNE 2018

(Regulation 2017)

First Semester

MASTER OF COMPUTER APPLICATIONS

P17CAT1002: Computer Organization

COURSE OUTCOMES

CO1: Possess basic knowledge for the design of digital logic circuits and apply to computer organization.
CO2: Understand the functional units of the processor.
CO3: Familiarize with the representation of data, addressing modes and instruction sets.
CO4: Understand the major components of a computer including CPU and Input/output organization.
CO5: Know about the memory hierarchy and its impact of computer Performance

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Give the graphic symbol and the truth table of Exclusive – OR gate	CO1	[K_3]
2.	Simplify the Boolean function F (A, B, C) = Σ (3, 4, 6, 7) using a map.	CO1	[K_4]
3.	Differentiate between a decoder and an encoder?	CO2	[K_3]
4.	Draw the block diagram of a 4-bit shift register.	CO2	[K_3]
5.	Convert the binary numbers – 101110, 1110101 to decimal numbers	CO3	[K_4]
6.	What is the use of the special purpose registers PC and MAR?	CO3	[K_3]
7.	Write the micro-operation for the following Boolean function : I. F=xy' II. F=x+y'	CO3	[K_4]
8.	What is stored program computer organization?	CO4	[K_2]
9.	What is program interrupt?	CO5	[K_3]
10.	What is the purpose of strobe control?	CO5	[K_3]

Answer any FIVE Questions:-

PART B (5 x 4 = 20 Marks)
(Answer not more than 80 words)

11.	Design an Half Adder. Give its Boolean equation for sum and carry.	CO1	[K_4]
12.	Design a register with parallel load.	CO2	[K_4]

13. Convert : CO3 [K_4]

I. F3A7C2 to binary and octal

II. 1938 to octal and hexadecimal

14. List the four categories of micro-operations performed in a digital computer CO3 [K_3]

15. Discuss in detail the Bus and Memory transfers of typical digital computer CO4 [K_3]

16. Draw the block diagram of associative memory and explain its operation. CO5 [K_3]

Answer any FIVE Questions:-
PART C (5 x 12 = 60 Marks)
(Answer not more than 300 words)

Q.No. 17 is Compulsory

17. a) Simplify the following Boolean function in product-of-sums form by means of a four-variable map. Draw the logic diagram with OR-AND gates. (8) CO1 [K_5]

$F(A, B, C, D) = \Sigma (0, 2, 8, 9, 10, 11, 14,15)$

b) Discuss isolated versus memory-mapped I/O used in computers (4) CO5 [K_3]

18. a) Describe the functionality of SR and D flip flops. Give their characteristic table. (8) CO1 [K_3]

b) Simplify the following expression using Boolean algebra : (4) CO1 [K_4]

I. AB + A (CD + CD')
II. (BC'+A'D)(AB' + CD')

19. a) Design a 4 –to- 1 multiplexer. Draw its circuit diagram and give its functional table. (8) CO2 [K_4]

b) Construct a simple binary counter using JK flip-flops. (4) CO2 [K_L]

20. a) Explain DMA in detail. (8) CO3 [K_4]

b) Discuss the two methods of timing control organizations found in computers (4) CO4 [K_3]

21. a) Discuss in detail the various phases of the instruction cycle of a basic computer. (8) CO4 [K_3]

b) Write short notes on memory reference instructions. (4) CO4 [K_3]

22. a) Describe the various addressing modes used in a general purpose computer (8) CO5 [K_3]

b) Explain how an IOP relieves the CPU from the IO operations (4) CO5 [K_3]

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