Candidate Seat no…….

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

Fourth Semester of B. Tech (CE/IT) Examination

May 2015

CE216 Computer Organization and Peripherals

Date: 04.05.2015, Monday **Time: 10.00 am To 01.00 pm** **Maximum Marks: 70**

Instructions:

1. The question paper comprises two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

Q - 1 **Answer the question below.** **[07]**

a. What is register transfer language?

b. What are the three states of Three-State Buffers?

c. Draw Only: Digital Circuit of Binary Incrementer.

d. How many memory references are required in direct address and indirect address?

e. What are the four phases of instruction execution?

f. Explain following terms:
Binary Code, Symbolic Code

g. What is pseudo instruction?

Q – 2.a Provide the significance of following registers in CPU. **[04]**
PC, AR, DR, IR, INPR, OUTR, AC, TR

Q – 2.b **Answer any two questions.** **[10]**

(i) List and explain Shift micro-operations.

(ii) Hoes does microprocessor handles interrupts. Draw Flow chart.

(iii) By taking suitable subroutine assembly language program explain, What is subroutine?

Q - 3 **Answer any TWO.** **[14]**

a. Draw Common Bus System diagram and explain procedure of transferring data from memory M using address location AR to register AC.

b. Draw Artimatic circuit for following funcation table.

Select			Input	Output	
S_1	S_0	C_{in}	Y	$D = A + Y + C_{in}$	Microoperation
0	0	0	B	$D = A + B$	Add
0	0	1	B	$D = A + B + 1$	Add with carry
0	1	0	$\overline{B}$	$D = A + \overline{B}$	Subtract with borrow
0	1	1	$\overline{B}$	$D = A + \overline{B} + 1$	Subtract
1	0	0	0	$D = A$	Transfer A
1	0	1	0	$D = A + 1$	Increment A
1	1	0	1	$D = A - 1$	Decrement A
1	1	1	1	$D = A$	Transfer A

c. Write an assembly language program to multiply two positive numbers.(Numbers are 13_{10}, 10_{10})

SECTION – II

Q - 4 Answer the question below. **[07]**

a. Perform following arithmetic operation using 2's complement integers. **[1]**
i). 35+(-10) ii). 20- (-4)

b. What is instruction pipeline? **[1]**

c. What are the status bits available in basic computer? **[1]**

d. Write down the classification of computer according to Flynn. **[1]**

e. Draw Only: Flow chart of Booth Multiplication. **[3]**

Q – 5.a Convert the following arithmetic expression to postfix notation **[04]**
(1) A * B *(C +D *D)/F
(2) A*B*(C+(D/F))/K
(3) A+B*C/(G*H)/K
(4) A+B/C

OR

Q – 5.a What are the problems associated with Instruction pipeline? **[04]**

Q – 5.b Answer any TWO. **[10]**

(i) How does CPU manipulate stack using Stack Pointer (SP)?

(ii) Write down the characteristics of CISC and RISC architecture.

(iii) What are the basic difference between branch instruction, Subroutine call and Interrupt?

Q – 6. Answer any TWO. **[14]**

a. By taking suitable example, explain various addressing modes.

b. Draw and explain block diagram of General Register Organization of Computer. How the control word is crated for R1 ← R2 + R3 Operation.

c. Write a short note on Design of control Unit.

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