BCA 3rd Semester (Honours) Examination, 2019-20
BACHELOR OF COMPUTER APPLICATION

Course ID :   **Course Code : BCA-302**

Course Title : Computer Organization and Architecture

Time: 4 Hours   **Full Marks : 80**

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Group-A

1. Answer *all* the questions: 1×10=10

   (i) The main virtue for using single bus structure is
     (a) First data transfer
     (b) Cost effective connectivity and speed
     (c) Cost effective connectivity and ease of attaching peripheral device
     (d) All of the above
     (e) None of the above

   (ii) _____ format is usually used to stored data.
     (a) BCD
     (b) Decimal
     (c) Hexadecimal
     (d) Octal
     (e) None of the above

   (iii) The ALU makes use of _____ to store the intermediate results.
     (a) Register
     (b) Accumulator
     (c) Heap
     (d) Stack
     (e) None of the above

   (iv) The return address from the interrupt service routine is stored on the —
     (a) System Heap
     (b) Processor Register
     (c) Processor Stack
     (d) Memory
     (e) None of the above

(v) The addressing mode which makes use of in-direction pointer is

    (a) Indirect addressing mode

    (b) Index addressing mode

    (c) Relative addressing mode

    (d) Offset addressing mode

    (e) None of the above

(vi) Which method of representation of number occupies a large amount of memory than others?

    (a) Sign magnitude

    (b) 1's compliment

    (c) 2's compliment

    (d) 1's and 2's compliment

    (e) None of the above

(vii) The register used to store flag is called as —

    (a) Flag register

    (b) Status register

    (c) Test register

    (d) Log register

    (e) None of the above

(viii) The return address of the subroutine is pointed to by —

    (a) IR

    (b) Special memory register

    (c) MAR

    (d) PC

    (e) None of the above

(ix) The DMA transfer are performed by a control circuit called as —

    (a) Device interface

    (b) DMA controller

    (c) Data controller

    (d) Overlooker

    (e) None of the above

(x) To increase the speed of memory access in pipelining we make use of —

    (a) Special memory location

    (b) Special purpose register

    (c) Cache

    (d) Buffer

    (e) None of the above

Group-B

2. Answer *any ten* questions: 2×10=20

(i) What is Computer architecture?

(ii) Name different types of instructions with an example of each.

(iii) What are the different types of interrupts?

(iv) What is Snooping cache?

(v) What technique should be used to automatically moved program and data blocks into the physical main memory when they are required for execution?

(vi) Define horizontal format in context of microprogrammed control unit.

(vii) What do you mean by Direct addressing mode?

(viii) Define high impedance.

(ix) What does DMA stand for?

(x) What digital function should be used to convert the octal code to binary code?

(xi) Explain if the internal bus connects only register within CPU, how would you get data to and from memory.

(xii) Define hazard.

(xiii) Define vector interrupt. Give example.

(xiv) What is virtual memory in computer?

(xv) The CPU is busy but you want to stop and do some other task. How do you do it?

Group-C

3. Answer *any four* questions: 5×4=20

(i) Explain what are the different types of hazards.

(ii) How many types of memory hierarchy in computer architecture? Briefly explain.

(iii) What are the different types of interrupts in a system? Explain.

(iv) Write down the difference between interrupt service routine and subroutine.

(v) What are the different types of fields that are part of an Instruction? Explain.

(vi) What are the steps involved in an Instruction cycle?

Group-D

4. Answer *any three* questions: 10×3=30

(i) (a) Briefly discuss different types of addressing modes with example.

(b) What is subroutine? 8+2=10

(ii) (a) What is instruction pipeline? Explain it with example.

(b) Discuss bus based organization of CPU. 6+4=10

(iii) (a) Briefly explain how does DMA transfer takes place.

     (b) How do you remove hazards in instruction pipeline?

     (c) Explain the timing of register transfer with example.   4+3+3=10

(iv) (a) What do you mean by address sequencer?

     (b) Explain the components of the Von-neumann architecture.

     (c) How does vector interrupt works?   2+6+2=10

(v) (a) Briefly discuss different types of micro-operations.

     (b) Write the difference between memory mapped I/O and peripheral mapped I/O.

     (c) Discuss on different types of read and write microoperations.   3+3+6=10

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