

B.E/B.TECH Degree Examination, December 2020

Third Semester

IT16301-Computer Organization and Architecture

(Regulation 2016)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. What kind of instructions usually affect the program counter?
 - a.Call & Jump
 - b. Call & Return
 - c. Push & Pop
 - d. Return & Jump
2. Which operations are performed by stack pointer during its incremental phase?
 - a.Push
 - b.Pop
 - c.Return
 - d. All of the above
3. The pipelining process is also called as _____
 - a) Superscalar operation
 - b) Assembly line operation
 - c) Von Neumann cycle
 - d) None of the mentioned
4. What is ILP ?
 - a.Push
 - b.Pop
 - c.Return
 - d. All of the above
5. Explain briefly about indirect address with an example.
6. Solve $(5+4)*(3+2)$ using reverse polish notation.
7. What is the difference between cache and virtual memory?
8. Differentiate UMA and NON UMA.

PART B - (4 X16 = 64 marks)

09. (a) Draw and Explain the flowchart for Instruction cycle and Interrupt cycle (complete Computer description) with a neat diagram. **(16)**

(OR)

- (b) Design and develop a basic computer with a neat diagram. **(16)**

10. (a) Draw the flowchart for division algorithm using restore method and solve $9\%5$ using restore method. (16)

(OR)

- (b) Explain in detail various instruction format available in basic computer and write a program $(A+B)*(C+D)$ using various instruction formats. (16)

11. (a) Draw and explain in detail data path for R type instruction, load, store and branch instruction along with the control signals. (16)

(OR)

- (b) Explain in detail about the concept of pipeline architecture with a real time example, various hazards in pipeline architecture and techniques to overcome the hazards in pipeline architecture. (16)

12. (a) Explain how DMA is used for direct transfer of data between memory and peripherals. (16)

(OR)

- (b) Explain in detail the working of virtual memory, various types of virtual memory available and how to implement TLB in virtual memory with necessary block diagram. (16)