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Question Paper Code: R3205

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Third Semester

Computer Science and Engineering

R21UCS305-COMPUTER ORGANIZATION

(Common to IT, CSBS, AI&DS, CSE(AIML) & CYBER SECURITY)

(Regulations R2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. What is the straight-line sequencing? CO1- U
2. What is a branch instruction? CO1- U
3. What is Restoring Division? CO1- U
4. Perform addition of 36 and -17 using 2's complement arithmetic. CO2- App
5. $A = 5$, $A = 3+A$ and $B = 4xA$ what hazard does the above two instructions create when executed Concurrently? CO2- App
6. What is called static and dynamic branch prediction? CO1- U
7. What is locality of reference? CO 1- U
8. A block-set associative cache memory consists of 128 blocks divided into four block sets. The main memory consists of 16,384 blocks and each block contains 256 eight bit words. How many bits are needed to represent the TAG, SET and WORD fields? CO2- App
9. Why program controlled I/O is unsuitable for high-speed data transfer? CO 1- U
10. Compare exceptions and interrupts. CO 1- U

PART – B (5 x 16= 80 Marks)

11. (a) Write in detail about various types of addressing modes. CO1 – U (16)
Or
(b) Explain in detail the Basic operational concepts with neat diagram. CO1 – U (16)

12. (a) Perform Multiplication of integers 14 and -7 using Booth's Multiplication Algorithm. CO2- App (16)
- Or
- (b) Mr. Thomas has got a new laptop at memory address 101 Add A, B Instruction is residing. How will the processor fetch the instruction from the memory and execute the instruction based on various registers in the CPU. Also draw the architectural diagram of the above scenario. CO2- App (16)
13. (a) How does a superscalar processor exploit instruction-level parallelism (ILP) to improve performance? Provide an example with a simple sequence of instructions. CO1 - U (16)
- Or
- (b) Define parallel processing and explain the flynn's classification of computer with suitable diagram. CO1 - U (16)
14. (a) Discuss the Memory Hierarchy in computer system with regard to Speed, Size and Cost? CO1 - U (16)
- Or
- (b) What do you mean by virtual memory? Discuss how paging helps in implementing virtual memory. CO1 - U (16)
15. (a) Explain in detail about Accessing I/O devices. CO1- U (16)
- Or
- (b) Describe the data transfer method using DMA. CO1- U (16)