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**B.Tech. DEGREE EXAMINATION, MAY 2017**
Third / Fourth Semester

15CS205J – MICROPROCESSORS AND MICROCONTROLLERS
*(For the candidates admitted during the academic year 2015 – 2016 onwards)*

**Note:**
(i) **Part - A** should be answered in OMR sheet within first 45 minutes and OMR sheet should be handed over to hall invigilator at the end of 45th minute.
(ii) **Part - B** and **Part - C** should be answered in answer booklet.

Time: Three Hours Max. Marks: 100

**PART – A (20 × 1 = 20 Marks)**
Answer **ALL** Questions

1. The instruction queue of 8086 consists of
   (A) 6-byte (B) 8-byte
   (C) 4-byte (D) 10-byte

2. The physical address when DS = 2345 H and IP = 1000 H is
   (A) 23450 H (B) 24450 H
   (C) 12345 H (D) 2345H

3. Segments in the real mode always have a length of
   (A) 32K (B) 16K
   (C) 64K (D) 8K

4. Which of the following instruction is in base with 16-bit displacement addressing?
   (A) MOV AX, [BX+06] (B) MOV AX, [BP+2000]
   (C) MOV AX, [BP+06] (D) MOV AX, [BP]

5. The coprocessor control instructions are
   (A) WAIT, LOCK, ESC (B) HALT, STC, CLC
   (C) ROR, RCR, ROL (D) DAA

6. The microprocessor is a _____ circuit that functions as the CPU of the computer
   (A) Electronic (B) Mechanic
   (C) Integrating (D) Processing

7. The RD, WR, M|IO is the heart of control for a _____
   (A) Minimum mode (B) Maximum mode
   (C) Compatibility mode (D) Control mode

8. When PUSH instruction is executed initially?
   (A) Upper byte of data is stored on stack and SP decremented by 1 (B) Upper byte of data is stored on stack and SP incremented by 1
   (C) Lower byte of data is stored on stack and SP decremented by 1 (D) Lower byte of data is stored on stack and SP incremented by 1

9. The output of the assembler in machine codes is referred to as
   (A) Object program (B) Source program
   (C) Macro instruction (D) Symbolic addressing

10. Step by step instructions written to solve any problem is called
   (A) Pseudocode (B) Algorithm
   (C) Assembler (D) Class

11. ASCII code used in keyboard for reading a input range from _____
   (A) 0000H-00FFH (B) 0001H-000FH
   (C) 0000H-000FH (D) 0001H-00FFH

12. Which mode is used for double handshake in 8255?
   (A) Mode 0 (B) Mode 1
   (C) Mode 2 (D) Mode 3

13. The pin that strobes the higher byte of the memory address generated by the DMA controller into the latches is
   (A) AEN (B) ADSTB
   (C) TC (D) ALE

14. Pentium 4 operates at
   (A) 5V (B) 1.25-1.40V
   (C) 2.5V (D) 1.6v

15. The Pentium processor core consist of
   (A) 21 million transistor (B) 7.5 million transistor
   (C) 42 million transistor (D) 3.1 million transistor

16. To exchange the content of A and $R_0$, which instruction is used
   (A) XCH A,$R_0$ (B) XCHG $A_1$ @$R_0$
   (C) XCHD A,@$R_0$ (D) XCH $R_0$,A

17. How many bytes of memory bit addressable is present in 8051 based microcontroller?
   (A) 8-bytes (B) 32-bytes
   (C) 16-bytes (D) 128-bytes

18. What will be the output after execution of the following instruction?
   MOV A, #55 and ANC A, #67
   (A) 54 (B) 45
   (C) 55 (D) 67

19. Which of the following instructions are used to swap nibbles inside the accumulator?
   (A) SWAP A (B) RR A; RR A
   (C) RR A; RR A; RR A (D) RRC A; RRC A; RRC A; RRC A

20. Which of the following instruction is used to read a string of bytes and send it to another memory location?
   (A) SCASB (B) MOVSB
   (C) LODSB (D) MOVSW



**PART – B (5 × 4 = 20 Marks)**
Answer **ANY FIVE** Questions

21. Suppose that EAX = 00001000H, EBX = 00002000H and DS = 0010H. Determine the addresses accessed by the following instructions assuming real mode operation
   (i) MOV [EAX + 2 * EBX], CL
   (ii) MOV DH, [EBX + 4 * EAX + 1000H]

22. What are the three program memory addressing and explain with examples?

23. What are macro sequence? How are parameters transferred to macro sequence?

24. Write short notes on three modes of operation to 8255.

25. Comparison between microprocessor and microcontroller?

26. What are the features of the intel 80C51 microcontroller?

27. Define assembler directives? Write any two assembler directives in 8086 microprocessor.

**PART – C (5 × 12 = 60 Marks)**
Answer **ALL** Questions

28. a. Draw the schematic block diagram of 8086 and explain the functions of each block.

**(OR)**

b. Describe the function and purpose of each program-visible register in the 8086 through Pentium microprocessor.

29. a. Explain in detail about the data movement instruction with examples.

**(OR)**

b.i. What is addressing modes? (2 Marks)

ii. Explain briefly the data addressing modes with an example. (10 Marks)

30. a. What is modular programming and describes the linker, linking task, library files, extrn and public apply to program modules.

**(OR)**

b. How to incorporate assembly language command within a C/C++ program in 32-bit application with an example.

31. a. Draw the architecture of 8237 and explain briefly with register set.

**(OR)**

b. Draw and briefly explain the internal structure of the Pentium pro microprocessor.

32. a. Draw the block diagram of the 8051 microcontroller and explain the operation of each block briefly.

**(OR)**

b.i. State the different types of instructions of 8051. (2 Marks)

ii. Explain any instructions from each group of the instructions with examples. (10 Marks)

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