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PRESIDENCY UNIVERSITY BENGALURU

 SCHOOL OF ENGINEERING

 MAKEUP EXAMINATION - JULY 2024

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| **Semester : 3&4** | **Date: 10-07-2024,**  |
| **Course Code: ECE3003** | **Time: 9:30 AM-12:30 PM** |
| **Course Name:****Microprocessor Programming and Interfacing** | **Max Marks :100** |
| **Program: B.TECH**  | **Weightage:50%** |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and non-programmable calculator are permitted.*
4. *Do not write any information on the question paper other than Roll Number.*

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| **PART A** |
|  **ANSWER ANY 5 QUESTIONS 5Q X 2M=10M** |
| 1 | Address lines are primarily used to interface ``memory. A larger number of address lines can access a large amount of memory. Determine the number of address lines required to access a 4M memory chip with microprocessor. | (CO 1) | [Knowledge] |
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| 2 | 8086 offers various addressing modes to user. The instruction, OR AL, FFh is an example of \_\_\_\_\_\_\_\_\_\_\_\_\_\_addressing mode. Mention the content of AL after execution of this instruction. | (CO 1) | [Comprehension] |
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| 3 | Write an ALP for 8086 instructions to exchange the contents of AX & BX registers. | (CO 2) | [Application] |
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| 4 | The memory of 8086 is segmented into various parts which is pointed by the segment registers. Mention all the segment registers. | (CO 1) | [Knowledge] |
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| 5 | Logical instructions are very useful in number crunching. Write two examples of logical instructions. | (CO 2) | [Comprehension] |
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| 6 | The status of the microprocessor result is reflected by the Flag register. Depending upon the value of result flag bits set or reset themselves for every operation. Illustrate with figure the size of the flag register of 8086 along with flag bits position. | (CO 2) | [Comprehension] |
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| 7 | 8086 comes in a 40 pin Dual in line package Some pins are kept active low. Give examples of 2 Active low pins with their use. | (CO 1) | [Knowledge] |
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| **PART B** |
|  **ANSWER ANY 5 QUESTIONS 5Q X 10M=50M** |
| 8 | 8255 is designed by **Intel** to increase the number of ports for I/O interfacing of the microprocessor. Explain the role and function of each major component of 8255, including the Control Register, Group A and Group B ports. | (CO3) | [Comprehension] |
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| 9 | What are different types of Memories that can be interfaced with the microprocessor. Explain each memory type in detail and usage in real world. | (CO4) | [Comprehension] |
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| 10 | 8086 microprocessor works in 2 modes, what are these modes and how are these modes switched and illustrate with pin diagram both the modes of microprocessor. | (CO2) | [Comprehension] |
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| 11 | The addressing modes is the way of specifying data to be operated by an instruction. Explain the different addressing modes of 8086 with 3 examples for each. | (CO2) | [Comprehension] |
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| 12 | The assembly language program is used by the user to program 8086. How does 8086 be programmed to find the number of 1's in 8-bit number. | (CO2) | [Application] |
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| 13 | Stack Segment is one of the 4 segments in 8086 Memory, Explain PUSH and POP instructions in context with Stack | (CO2) | [Application] |
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| 14 | Assembly languages program contain mnemonic codes that specify what the processor should do. Write an ALP to find odd or even for a given number. | (CO3) | [Application] |
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| **PART C** |
|  **ANSWER ANY 2 QUESTIONS 2Q X 20M=40M** |
| 14 | In Programming, control transfer instructions play an important part, what are control transfer instruction and explain the following control transfer instructions1) CALL 2) LOOP3 JNZ4) JP5) JNC6) JMP | (CO3) | [Application] |
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| 15 | 8086 is a very efficient and meticulously designed microprocessor with pipelining architecture. Write a complete architecture diagram explaining the blocks along with the PIN-out diagram of 8086. | (CO4) | [Application] |
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| 16 | 8086 provides instructions to perform all types of operations. Explain in detail the types of Instructions of 8086 citing 5 examples of each five of them. | (CO2) | [Comprehension] |
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