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Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Microprocessors

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
at least TWO full questions from each part.**

PART – A

- 1 a. Trace the development of intel 86 family of microprocessors briefly indicating the additional features introduced at each stage of development from 8086 to Pentium IV. (10 Marks)
- b. Explain the functions of the following registers in 8086 CPU:
i) The segment registers ii) The instruction queue iii) The flag register. (10 Marks)
- 2 a. Explain the (MOD-REG-R/M) byte of an 8086 instruction, with its interpretations. (04 Marks)
- b. What do the following instructions do?
i) ROL ii) RCL iii) STD iv) XCHG AX, [BX]. (08 Marks)
- c. What are assembler directives? Explain the significance of the following: i) Assume
ii) EXTRN iii) PUBLIC. (08 Marks)
- 3 a. What are string instructions? How do they help in reducing the number of instructions used in a program? (10 Marks)
- b. Distinguish between MACRO and procedure. (04 Marks)
- c. Write an algorithm and a program to convert the given four digit BCD data to its equivalent hexadecimal value. (06 Marks)
- 4 a. Explain the interrupt structure in 8086. Write the functions of at least five dedicated software interrupts in 8086. (10 Marks)
- b. With a note on the interrupt instructions in 8086 (05 Marks)
- c. Describe the action taken by 8086 when Nmi pin is activated. (05 Marks)

PART – B

- 5 a. With relevant interface diagram, write a flow chart and program code for 4 × 4 matrix keyboard detect, debounce and encode procedure. (10 Marks)
- b. Explain how to interface stepper motor to an 8086 processor. (10 Marks)
- 6 a. Explain with a neat block diagram the architecture of arithmetic processor 8087. (10 Marks)
- b. Write a program to compute the volume of a sphere using 8087 instructions (Use formula $V = 2\pi R^3/3$). (10 Marks)
- 7 a. With appropriate circuit diagrams, explain how you would generate, data, address and control buses for memory and I/O interfacing from an 8086 processor in the MAX mode of operation. (10 Marks)
- b. Explain the features of USB and LPT interface. (10 Marks)
- 8 a. Describe the basic 486 architecture. (05 Marks)
- b. List the extended registers found in 80386 microprocessor. (06 Marks)
- c. What are the unique features of a Pentium processor? (09 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.