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Question Paper Code : 10542

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2025.

Fourth/Fifth/Sixth Semester

Electronics and Communication Engineering

EC 8691 — MICROPROCESSORS AND MICROCONTROLLERS

(Common to : Biomedical Engineering/Computer Science and Engineering/Computer and Communication Engineering/Medical Electronics/Artificial Intelligence and Data Science/Information Technology)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Name the four 16-bit data registers in 8086 microprocessor.
2. Determine the contents of register AL and state of the flags after the following instructions are executed.
MOV AL, 6DH
MOV BH, 40H
AND AL, BH
3. What is the use of coprocessor?
4. List the specifications for system design using 8086.
5. Compare parallel and serial communication.
6. Name the operational modes of 8253 timer IC.
7. Give the program status word register format of 8051.
8. Find a number that when XORed to the A register, results in the number 3Fh in A.
9. What is timer mode 0 and 1 in 8051?
10. How is A/D converter interfaced with 8051?

PART B — (5 × 13 = 65 marks)

11. (a) Explain in detail the various addressing modes supported by 8086 microprocessor with suitable examples.
Or
(b) (i) Write an assembly language program in 8086 to display the string 'WELCOME'. (7)
(ii) Compare macros and procedures. (6)
12. (a) Draw and explain the timing diagrams for memory read and memory write bus cycles in 8086 minimum mode configuration.
Or
(b) Differentiate loosely coupled and closely coupled multiprocessor systems with suitable illustrations.
13. (a) With a neat block diagram, explain in detail about 8279 keyboard/display controller.
Or
(b) Draw the block diagram of 8255 PPI and explain the various ports and operating modes of the PPI.
14. (a) Explain the architecture of 8051 microcontroller with a neat block diagram.
Or
(b) What is meant by addressing mode? Explain the different addressing modes available in 8051 microcontroller.
15. (a) With a neat block diagram, explain the stepper motor control using 8051 microcontroller. Write an ALP for the same.
Or
(b) Explain 8051 serial port programming with suitable examples.

PART C — (1 × 15 = 15 marks)

16. (a) (i) Design a traffic light control system using 8086 microprocessor interface and write the ALP for the same. (10)
(ii) Elaborate with flow diagrams how the traffic light control system could be made more intelligent. (5)
Or
(b) Compare ARM processor with PIC microcontroller. List the criteria to be considered while choosing a processor for an application.