

Reg. No.

Question Paper Code

11562

B.E./B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022

Fourth Semester

Electronics and Communication Engineering

(Common to Fifth Semester - Computer and Communication Engineering)

20ECPC402 - MICROCONTROLLERS AND EMBEDDED SYSTEMS

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

Answer ALL Questions

PART-A (10 × 2 = 20 Marks)

- | | <i>Marks,
K-Level, CO</i> |
|---|-------------------------------|
| 1. What is meant by pipe lined architecture? | 2,K1, CO1 |
| 2. What do you mean by stack? What is the byte length of stack pointer register? | 2,K1, CO1 |
| 3. Whether accumulator is special function register? | 2,K2, CO2 |
| 4. What is the type of addressing mode in these instructions?
1.RET, 2.MOV A,@R2 | 2,K1, CO2 |
| 5. What are the two types of I/O interfacing? | 2,K1, CO4 |
| 6. What is DMA? | 2,K1, CO3 |
| 7. What are the types of design flow in embedded systems? | 2,K1, CO5 |
| 8. What is meant by scheduling? | 2,K1, CO5 |
| 9. What are the advantages of ARM processor? | 2,K1, CO6 |
| 10. Compare ARM9 with ARM cortex. | 2,K2, CO6 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Explain the instruction set of 8086 microprocessor with two examples for each. 13,K2,CO1
- OR**
- b) What is meant by interrupt? Explain the types and operation of interrupt of 8086. 13,K2,CO1
12. a) Outline the functional blocks of 8051 microcontroller and explain in detail. 13,K2,CO2
- OR**
- b) How will you address the instructions of 8051 and explain it with suitable examples. 13,K2,CO2

13. a) Outline the block diagram of keyboard and display unit and explain each block. 13,K2,CO3

OR

b) Sketch the DMA controller block diagram neatly and explain the functions of each block. 13,K2,CO3

14. a) Explain the model train controller and design methodologies of the embedded system. 13,K2,CO5

OR

b) (i) Define CPU scheduler. Explain the scheduling algorithm. 6,K2,CO5
(ii) Define RTOS. What are the key characteristics of RTOS? 7,K1,CO5

15. a) Draw and explain the architecture of ARM processor. 13,K2,CO6

OR

b) Explain briefly about ARM Cortex M3MC Unit. 13,K2,CO6

PART - C (1 × 15 = 15 Marks)

16. a) Compare serial and parallel communication. Describe the various functional blocks of USART interfacing. 15,K2,CO4

OR

b) Explain how the traffic light controller is interfaced with the microprocessor with suitable block diagram and program. 15,K2,CO4