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Question Paper Code	12230
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**B.E./B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023**  
Sixth Semester  
**Electronics and Communication Engineering**  
**EC8691 - MICROPROCESSORS AND MICROCONTROLLERS**  
(Regulations 2017)

Duration: 3 Hours

Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

- |  | <i>Marks,<br/>K-Level, CO</i> |
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| 1. For 8086 microprocessor, the contents of the registers are CS=2001H, SS=6046H, IP=2456H, SP=2200H. Calculate the corresponding physical address for the addressed byte in (i) CS (ii) SS. | 2,K2,CO1                      |
| 2. Write a short note on Interrupts and Interrupt service routine.   | 2,K2,CO1                      |
| 3. List two differences between minimum mode and maximum mode configuration.   | 2,K2,CO2                      |
| 4. What are the signals used in 8086 Maximum mode operation?   | 2,K1,CO2                      |
| 5. Frame the Control word format to operate 8279 in 8 bit character right entry and encoded scan N-key rollover.   | 2,K3,CO3                      |
| 6. Differentiate the priority schemes available in 8257 DMA Controller.  | 2,K2,CO3                      |
| 7. Specify the RAM address location allotted for the SFRs TL0, DPH, IE and P2.   | 2,K2,CO4                      |
| 8. Why pull up resistor has to be externally interfaced with port 0?   | 2,K1,CO4                      |
| 9. Write an ALP to receive input from port P1.5 and if it is high then an output 35H is sent to port 0.  | 2,K3,CO5                      |
| 10. What are the bits available in TMOD register?  | 2,K1,CO5                      |

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

11. a) Explain the Internal Architecture of 8086 with neat diagram. 13,K2,CO1

**OR**

- b) How are 8086 instructions classified according to their functional categories? Give example. 13,K2,CO1

12. a) Describe the minimum mode 8086 system and its timing diagram Minimum Mode. 13,K2,CO2

**OR**

*K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create*

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b) Write an ALP for finding largest and smallest numbers in an array of numbers. *13,K2,CO2*

13. a) With a neat diagram discuss the various modes of operation of 8255. *13,K2,CO3*

**OR**

b) Explain how serial communication can be established in 8086 using 8251 IC. *13,K2,CO3*

14. a) Explain the architecture of the 8051 microcontroller with a neat diagram. *13,K2,CO4*

**OR**

b) (i) Enumerate the ports available in 8051. *6,K2,CO4*

(ii) Describe the memory organization in 8051 and Explain how external memory is interfaced with 8051. *7,K2,CO4*

15. a) Examine the different modes of operation of timers/counters in 8051 Microcontroller with its associated register. *13,K2,CO5*

**OR**

b) Develop an ADC and DAC interface with 8051 along with program. *13,K2,CO5*

**PART - C (1 × 15 = 15 Marks)**

16. a) (i) Explain the working of a common cathode type LED seven segment displays. *9,K3,CO6*

(ii) Discuss the working of an Alarm Controller. *6,K2,CO6*

**OR**

b) With neat sketch and program, explain the microprocessor based traffic light control system. *15,K2,CO6*