**0806E472**          Candidate's Seat No :_____

**M.Sc Sem.-2 Examination**

**P - 408**

**Electronics**

Time : 2-00 Hours]          **June 2022**          [Max. Marks : 50

| **Instructions :** | | |
| --- | --- | --- |
| i. | Attempt **any three** questions from Section I and Section II is compulsory. | |
| ii. | All symbols carry their usual meanings. | |
| iii. | Scientific calculator is allowed. | |

| | | **Section I** | |
| --- | --- | --- | --- |
| Q. I | A). | What is 'data communication'? List the difference between serial and parallel data transfer. List various types of communication systems and discuss synchronous data transfer format. | [7] |
| | B). | What is Modem? Draw and describe block diagram of a 'Typical Modem Device' and discuss following modulation techniques.<br>a). Frequency shift keying (FSK)<br>b). Amplitude shift keying (ASK)<br>c). Phase shift keying (PSK) | [7] |
| Q. II | A). | List two features of 8259 PIC. Draw the functional block diagram of 8259 programmable interval timer and discuss its various blocks. | [7] |
| | B). | What is the difference between 8253 and 8254 programmer interval timer? With help of functional block diagrams, discuss 8253 and 8254 programmer interval timers. | [7] |
| Q.III | A). | Give brief introduction of INTEL 8086 MPU. Draw the pin diagram and the block diagram of INTEL 8086 MPU, explain each blocks briefly. | [7] |
| | B). | Draw a circuit diagram of Sine to Square wave converter and draw waveforms of rectified output. Write a program to measure frequency of a signal. | [7] |
| Q.IV | A). | With help of a schematic diagram show interface connections a microprocessor-based system for measuring and controlling furnace temperature. Write a program to measure, control and display the temperature of a furnace. | [7] |
| | B). | Draw a schematic diagram of microprocessor-based water level indicator and automatic pumping. Write a program to measure and display water level of a tank employing a microprocessor-based system. | [7] |
| Q.V | A). | Discuss various basic data types used in C language. What are qualifiers? Mention four qualifiers (modifiers) available in C. | [7] |

| | B). | With help of examples discuss the following | [7] |
|---|---|---|---|
| | | i). escape sequences | |
| | | ii) type casting | |
| | | iii) define statement | |
| | | iv) conditional operator | |
| Q.VI | A). | Mention different methods of branching in C language. | [7] |
| | | Write a program to read three coefficients of the second degree quadratic equation, calculate and print the solutions of the equation based on the following equation | |
| | | $$x = (-b \pm \sqrt{b^2 - 4ac})/2a$$ | |
| | B) | Draw the block diagram of *else if* construction. | [7] |
| | | Given a point (x,y), write a program to find out whether it lies inside, outside or on a circle with unit radius and centre at (0,0). | |
| Q.VII | A). | Write for loops and required declaration statements for the following (no need to write whole programs) | [7] |
| | | i). to get factorial of 10 | |
| | | ii). to get sum of square roots of all numbers between 10 and 20 (inclusive) | |
| | | iii). to print the following sequence | |
| | | -5  0  5  10  15  20  25 | |
| | | iv). to print the following sequence | |
| | | 125  64  27  8  1  0 | |
| | B). | Write a program to read a positive number, generate a new number by reversing all digits.  The program also should check whether the reversed number and the original number are same or not and print a proper message. | [7] |
| Q.VIII | A). | Write a program to read 100 values and find out average of highest and lowest values.  Program should print lowest, highest and average of lowest and highest values. | [7] |
| | B). | Write a program to read marks scored by 50 students in 6 subjects out of 100 each.  Program should calculate and print   a). percentage marks of each student    b). class averages of each subject. | [7] |
| | | **Section II** | |
| Q. IX | | Attempt all questions (**One mark** each) | [8] |
| 1). | | 8253 PIT has ___ modes of operation. | |
| | A | 06 | |
| | B | 07 | |
| | C | 08 | |
| | D | 09 | |

| 2). | | The 8086 is 16 bit _____processor. | |
|---|---|---|---|
| | A | N-channel H-MOS | |
| | B | N-channel C-MOS | |
| | C | P-channel H-MOS | |
| | D | P-channel C-MOS | |
| 3). | | _____ data transfer is used for low-speed communication | |
| | A | synchronous | |
| | B | asynchronous | |
| | C | Both synchronous and asynchronous | |
| | D | serial | |
| 4). | | Intel 8086 has _____addressing modes. | |
| | A | 06 | |
| | B | 07 | |
| | C | 08 | |
| | D | 09 | |
| 5). | | Which of the following are keywords?<br>(i) void   (ii) main   (iii) tolower   (iv) continue   (v) while   (vi) printf | |
| | A | (i),  (ii)  &  (iii) | |
| | B | (ii),  (iii)  &  (iv) | |
| | C | (iii), (iv)  &  (v) | |
| | D | (iv), (v)  &  (vi) | |
| 6). | | Which of the following statement is false? | |
| | A | a+=b; | |
| | B | x = a++ + ++b; | |
| | C | a=+b; | |
| | D | 5+= a; | |
| 7). | | Write down output of the following program segment if the entered number is 10?<br>int  n;<br>printf("Enter a number : ");<br>scanf("%d", &n);<br>switch (n%2)<br>{       case 0 :<br>              printf("10 ");<br>       case 1 : | |

|  |  | printf("100 ");<br>printf("%d", 1000);<br>} |  |
|---|---|---|---|
|  | A | 10  1000 |  |
|  | B | 100  1000 |  |
|  | C | 10  100  1000 |  |
|  | D | 1000  100 |  |
| 8). |  | What is the output of following C program segment?<br>int x[3] = {20,30,40}, i=0;<br>++x[2];<br>while(i<3)<br>{   printf("%d ", i[x]);<br>    i++;<br>} |  |
|  | A | 20  30  40 |  |
|  | B | 20  31  40 |  |
|  | C | 20  30  41 |  |
|  | D | 20  31  41 |  |
|  |  | ********** |  |