

T.Y.B.Sc: Electronic Instrumentation: Paper-II

Duration: 3 hrs

Total Marks: 100

- N.B. (1) Figures to the right indicate full marks.
(2) All questions are compulsory.
(3) Use of non programmable calculator is allowed.
(4) Symbols have their usual meaning unless stated otherwise.

- Q.1.** Attempt any **TWO**. **12**
- a)** What are decoders? Explain 3-to-8 decoders with the help of logic diagram and function table.
- b)** What are the advantages of multiplexer? Implement the expression using a multiplexer.
$$F(A,B,C,D)=\sum m(0,2,3,6,8,9,12,14)$$
- c)** Discuss the prime memory classification.
- Q.2.** Attempt any **TWO**. **12**
- a)** What are the various components of microprocessor based product. Describe their functions.
- b)** Explain microprocessor initiated operations with the help of 8085 bus organization.
- c)** Write an assembly language program to transfer a block of 0A bytes from one memory location to another.
- Q.3.** Attempt any **TWO**. **12**
- a)** Explain how information is stored and retrieved from the stack using the instructions PUSH and POP and the stack pointer register.
- b)** Write an assembly language program to add two sixteen bit numbers using DAD instruction
- c)** In 8255 PPI write a BSR control words and subroutine to set bits PC_7 and PC_3 and reset them after 10 mS.

(P.T.O.)

Q.4. Attempt any **TWO**. **12**

- a) Explain the basic concepts of Object Oriented Programming.
- b) Using C++ write a program to find greater of three numbers.
- c) Explain function Prototyping, Call by reference, Return by reference.

Q.5. Attempt any **FOUR**. **12**

- a) What are the basic concepts of charge coupled device memory.
- b) Draw a logic diagram of 5-to-32 line decoder using two 4-to-16 line decoders.
- c) State the function of each of the following 8085 instructions-
 - i) XRA R ii) INR B iii) JZ 2020H
 - iv) CMA v) SUB R vi) STAX B
- d) Draw the symbols used in flowchart and give their meaning.
- e) State the functions of the following-
 - i) $y = x;$ ii) endl; iii) $a! = b;$
 - iv) $a = 16 \% 3;$ v) $intb = ++a;$ vi) $area = pow(4, 2);$
- f) What is the output of the following program?

```
# include <iostream.h>
int main( )
{
    int a,b,c;
    a=2,b=5,c=10;
    Cout<<"Value="<<(a+b*-c)<<endl;
    Cout<<"Value="<<(-c/b*c-a)<<endl;
    Cout<<"Value="<<(-a + ++b%a)<<endl;
}
```

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