

Total No. of Questions: 12]

SEAT No. :

P781

[6006]-14

[Total No. of Pages : 2

**F.Y. M.C.A. (Engineering)
PRINCIPLES OF PROGRAMMING
(2019 Pattern) (Semester-I) (310904)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data if necessary.*

- Q1) a)** Explain software development process in detail. [6]
- b) What are the 6 steps of problem solving? Explain in detail with example? [6]

OR

- Q2) a)** What is the difference between internal documentation and external documentation. [6]
- b) What is an algorithm? What are the advantages of writing an Algorithm [6]
- Q3) a)** Explain User-defined types and abstract data types. [6]
- b) Explain Type checking, Type Conversion and Type compatibility. [6]

OR

- Q4) a)** Discuss selection and iterative structures in detail. [6]
- b) Explain the two types of parameters. How do they differ? [6]
- Q5) a)** Explain the top down and bottom up approach. [6]
- b) Explain the difference between local and global variables. [5]

OR

- Q6) a)** Explain cohesion and coupling in detail. [6]
- b) Write a program which uses a recursive algorithm. Explain how Subroutines are generated? [5]

P.T.O.

- Q7) a)** What is efficiency of an algorithm with example? [6]
b) Write algorithm for Generating Prime numbers? [6]

OR

- Q8) a)** Write algorithm for generating Pascal triangle? [6]
b) State the Difference Between Procedural and Non-procedural Language? [6]

- Q9) a)** How to calculate complexity of algorithm? Explain with example. [6]
b) Write notes on. [6]
i) Big O notation
ii) Ω notation
iii) Φ notation

OR

- Q10) a)** Write algorithm of linear search and calculate best, worst and average case complexity of it? [6]
b) Write notes about time complexity? [6]

What is the time complexity of following code:

```
int a = 0, i = N;  
while (i > 0)  
{  
    a+=i;  
    i/=2;  
}
```

- Q11) a)** How array data structure is useful in sequential storage? Explain any 3 applications of array data structure? [6]
b) Explain step by step bubble sort working? [5]

OR

- Q12) a)** How binary search is superior to linear search technique? Discuss limitations of Binary search. [6]
b) Write notes on Database management system. [5]

