

B. Sc. (Part-III) Examination, 2017
Mathematics- Fourth Paper (Optional)

(D) Principles of Computer Science

Note :- Answer any five questions in all. Question No. 1 is compulsory. Answer one question from each unit. Marks allotted to each question are indicated in the right hand margin.

- 1. Answer the following short answer questions : $3.5 \times 10 = 35$**
- Write the full form of : BIT, IP, USB, CPU.
 - What do you understand by the term "instruction cycle"?
 - Explain stepwise refinement process.
 - Differentiate between LLL and HLL.
 - What do you understand by stack?
 - What is meant by congestion problem in a network.
 - What is understood by a software metric? Explain with examples.
 - What are the non-linear data structures?
 - What do you mean by spanning tree?
 - Name the different iterative structures in C++.

Unit-I

- 2. What do you understand by the hexadecimal number system? Write its digit set and explain the process of addition of two hexadecimal numbers with examples. 10 Or**
- 3. Explain with examples : MGKVPonline.com 5+5**
- Primary Memory
 - Secondary Memory devices.

Unit-II

- 4. Discuss the role of the Operating System as a Resource Manager of the Computer System. 10 Or**
- 5. Discuss the OSI Network Model and the role of the different layers in this model. 10**

Unit-III

6. (a) What are the essential properties of an algorithm? Explain. **5+5**
(b) Write the algorithm for generating the N^{th} term of the Fibonacci Sequence of numbers. **MGKVPonline.com** **Or**
7. (a) What do you understand by Recursion? How is recursive solution different from the iterative solution of a problem? **5+5**
(b) Write the recursive algorithm for computing the GCD of two integer number.

Unit-IV

8. What are the steps or phases involved in the software life cycle? Explain the activities that take place in each phase. **10 Or**
9. What is meant by Linked List? Explain the process of inserting a node into and deleting a node from a singly linked list, why is a linked list known as a 'dynamic' data structure? What are the applications of a linked list? **10**

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