

Pre. Ph.D. Course Work (2017 Course) : SUMMER - 2018
(Computer Engg)

SUBJECT: PAPER-II- COMPUTER ENGINEERING

Day : **Tuesday**
Date : **26/06/2018**

S-2018-4786

Time: **10.00 AM TO 01.00 PM**
Max. Marks: 100.

N.B.:

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the **RIGHT** indicate full marks.
 - 3) Draw neat labeled diagrams **WHEREVER** necessary.
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- Q.1** In a Boolean algebra L . Show that De Morgan's laws given by $(a \wedge b)' = a' \vee b'$ (10) and $(a \vee b)' = a' \wedge b'$ hold for all $a, b, \in L$.

OR

Write an algorithm to find sum of any path from root to leaf such that the sum of all nodes along the path is maximum compared to all other path. Analyze the algorithm.

- Q.2** What are the main differences between a Network Operating system and a Distributed Operating system? What are the major issues in designing – Distributed Operating system? (10)

OR

Explain the use of Banker's algorithm for Deadlock Avoidance with example.

- Q.3** What is virtual memory? Explain. Discuss the steps involved in the address translation of virtual memory with necessary block diagram. (10)

OR

State cache mapping techniques. Draw and discuss them with their merits and demerits.

- Q.4** Give a recursive algorithm to find the k^{th} smallest element of a set S . Write the recurrence equation and perform asymptotic analysis for worst case. (10)

OR

What do you mean by greedy method? Explain in detail how to apply greedy method to solve fractional knapsack problem. Write the algorithm also.

- Q.5** Suppose that you are developing the software for a nuclear power plant control system. Select the most appropriate mode for the project and use the COCOMO model to give a crude estimate of the total number of person months required for the development. Assuming that the estimated software size is 10,000 delivered source instructions. (10)

OR

What do you understand by clean room software development? Explain the clean room software development process with neat diagram.

P.T.O.

- Q.6** How many types of deployment models are used in cloud? Which one is best and why? Discuss the principles of security in cloud computing. (10)

OR

What are the advantages of using real time data in big data analytics? List any two possible web data from which effective analysis can be carried out. Justify your answer with an example.

- Q.7** Explain briefly about the information storage? What are the major components in storage system environment? Explain. (10)

OR

Explain the virtuous cycle of information. How to manage the storage infrastructure? Explain.

- Q.8** Sketch a semantic net about the information associated with a university course in knowledge development and explain in detail. (10)

OR

What is data mining functionality? Explain different types of data mining functionality with example.

- Q.9** Draw and explain physical layer of 802:11 wireless networks in detail. (10)

OR

Explain the significance of switching? What are different switching techniques used in computer networks? Discuss.

- Q.10** Explain the rotation of an object about an arbitrary point (i.e. other than origin) and also derive the concentration matrix. (10)

OR

Write a program to display a set of values $\{f_i\}$ as a rectangular mesh.

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