Note: All questions are compulsory.

1. Here is an activity graph with time estimates for each activity in weeks.
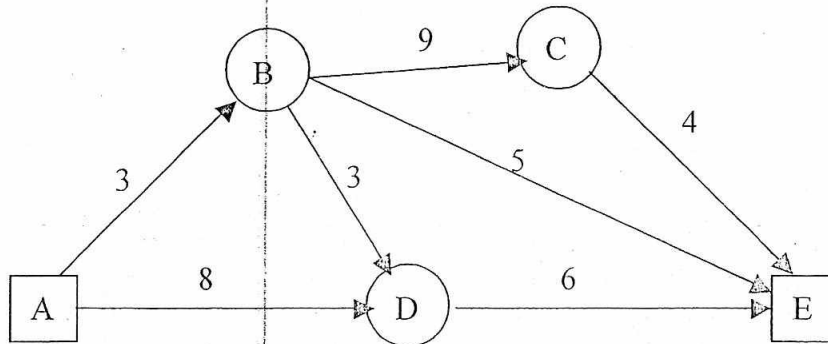
a.For each activity in the graph, calculate the slack (Time).
b. What is the critical path in the given graph?
c. Suppose that an extra member of staff is available who can work on either activity BE or activity BC, but not both.

   i. If she works on activity BE, the time estimate for BE is reduced from 5 weeks to 3 weeks. How much would the elapsed time to complete the complete project be reduced?
   ii. If she works on activity BC, the time estimate for BC is reduced from 9 weeks to 6 weeks. How much would the elapsed time to complete the complete project be reduced?   [10 Marks]

2. Why is the pure Waterfall model of software development not recommended for large-sale software projects?   [8 Marks]

3. An online information system is being developed using a modified version of the Waterfall model. It is likely to be based on Web technology.

   i How much should the choice of technology be considered during the feasibility study?

   ii In how much detail should the choice of technology be specified during the requirements phase of the project?   [8 Marks]

1|

4. You are developing the requirements for an online shopping system. To place an order, a user connects to the system, searches to find items to purchase, selects one or more items, and supplies credit card information to pay for them.

a. Create a <u>scenario</u> for a user making a purchase.

b. Develop a <u>use case diagram</u> and brief <u>specification</u> for a use case, *PlaceOrder*, which is modeled on this scenario. The use case should show a relationship to a previously specified use case, *Pay*, which models credit card payments. (You do not need to specify the *Pay* use case.)

c. A user might interact with the online shopping system in other ways. Draw a <u>diagram</u> for a different use case in which the same actor interacts with the online shopping system.

[12 Marks]

5. What do you mean by the term cohesion and coupling in context of software engineering; explain how these concepts are useful in good design of a system. - [6 Marks]

6. Discuss various testing methods used during software development. Suggest the testing methodology for fast response real time system. [8 Marks]

7. Explain the concept of feasibility analysis in software development. Describe in detail feasibility analysis of the scenario given in question number 4. [8 Marks]