Before answering the question paper the candidate should ensure that they have been supplied the correct question paper. Complaints in this regard, if any, shall not be entertained after the examination.

Note: First question is compulsory. Attempt two questions from each section A and B.

Q.1       (5x4=20)
(a) Mention the purpose of operating system.
(b) Differentiate among real time operating system and distributed systems.
(c) Explain livelock. How it is different from deadlock?
(d) Differentiate among forward and backward error recovery

SECTION-A

Q.2 (a) Explain layered approach of operating system with suitable diagram.   (10)
(b) Explain application driven operating systems. Give some examples of application driven operating systems.   (10)

Q.3. Give a solution for the following synchronisation using semaphores
(a) Producer-consumer problem
(b) Readers writers problem   (20)

Q.4 (a) Describe the Bankers algorithms for Deadlock avoidance with supporting example.   (10)
(b) Consider a system which has four identical units of a resource R. There are three processes each with maximum claims of 2 units of resource R. Process can request these resources in any way, that is 2 in one shot or one by one. The system always satisfies its request if it is available. If the process does not request for any other kind of resource, show that system never deadlocks.   (10)

SECTION-B

Q.5 (a) How does Lamports algorithm guarantees mutual exclusion?   (10)
(b) Discuss the Suzuki –Kassami Broadcast algorithm.   (10)

Q.6 (a) Specify the type of failures. What do you mean by fault tolerance?   (10)
(b) Write short notes on dynamic voting protocol.   (10)

Q. 7. (a) Discuss the access control matrix. Give reasons why it is suitable for the protection of the system.   (10)
(b) What is cryptography? Describe it and list some algorithms known to you.   (10)