



- 1 The maximum number of items a queue can hold is called its \_\_\_\_\_. 1
- (a) Space
  - (b) Length
  - (c) Both a and b
  - (d) None

- 1-e. RTX allow inter-task communication through \_\_\_\_\_. 1
- (a) Semaphores
  - (b) Mutexes
  - (c) Events
  - (d) All of above

2. Attempt all parts:-

- 2.a. What is a long-term scheduler? 2
- 2.b. Define deadlock? 2
- 2.c. What are Data Type Modifiers? 2
- 2.d. What are Blocking Memory Functions? 2
- 2.e. Write the Mutex decleration. 2

SECTION B 20

3. Answer any five of the following:-

- 3 Classify the RTOS in detail. 4
- 3 What is POSIX compatibility? 4
- 3 What do you mean by Context save and context switching? 4
- 3 Why the signals are different from all the other types of kernel objects? 4
- 3.e. Describe the various phases of Embedded development used in embedded system product development life cycle. 4
- 3.f. How to suspend the program based on scheduler? 4
- 3.g. Write a short note on Mailboxes & Signals. 4

SECTION C 35

4. Answer any one of the following:-

- 4-a. Differentiate between Normal Linux kernal and Real time kernal on the basis of its scheduling policies. 7
- 4-b. Describe the Architecture of Chibios-RT in detail. 7

5. Answer any one of the following:-
- 5-a. Explain the architecture of device driver, with neat sketch and give the applications of device drivers. 7
- 5-b. Explain Semaphore obtain and release services. 7
6. Answer any one of the following:-
- 6-a. Discuss Super-loop based approach. Write the 'C' program code for the super loop. 7
- 6-b. What is Integrated development environment (IDE)? Discuss in detail all important aspects. 7
7. Answer any one of the following:-
- 7-a. Write a program to show use of counting semaphore to synchronize a task with an interrupt. Also show the output produced when program is executed. 7
- 7-b. Write the pseudo code for non-interlocked one- way data communication, interlocked one- way data communication and interlocked two way data communication. 7
8. Answer any one of the following:-
- 8 Describe the differences in Version 5 of CMSIS (Cortex Microcontroller Software Interface Standard) compared to version1.3. 7
- 8 Describe the configuration of a semaphore and use it to signal between two tasks. 7