

ET704M-2 / PEC-2- Embedded Systems

P. Pages : 2



Time : Three Hours

GUG/S/25/14251

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Assume suitable data wherever necessary.
 3. Diagrams and Chemical equation should be given wherever necessary.
 4. Illustrate your answers wherever necessary with the help of neat sketches.

- 1.** a) Explain the design challenges in an embedded systems. **8**
- b) With the help of block diagram explain different program layers in the embedded software. **8**

OR

- 2.** a) What is an embedded system. Draw and explain basic building blocks of the hardware in an embedded system. **8**
- b) What are the types of processors architecture explain them in brief. **8**
- 3.** a) Explain the segment types and pages in an exemplary program. **8**
- b) Define array and queue explain with neat diagram array and queue at a memory block. **8**

OR

- 4.** a) Explain three stage pipeline and super-scalar processing and branch and data dependency penalties. **8**
- b) With neat block diagram explain how memory interface with processor and I/O devices. **8**
- 5.** a) What is multiple functional calls draw and explain programming model for multiple functions calls in main() function. **8**
- b) Explain-
- i) A queue between sockets.
 - ii) The queue of the packets on a network.

OR

- 6.** a) What is object oriented programming. Draw and explain a programming model in which there are three software timers in a active list. **8**
- b) With the help of neat diagram explain FIFO queue for accounting the acknowledgements on the network. **8**

7. a) What is task states. Explain states of task with task states diagram. **8**
b) Explain mutex and mailboxes. Also state their management function calls. **8**

OR

8. a) What is real time system. Explain the characteristics of real time systems also Draw block diagram of real time system. **8**
b) Explain different types of priority inversion under priority ceiling protocol. **8**
9. a) Define inter process communication. Explain different types of IPC used. **8**
b) Draw and explain an embedded system for an adaptive cruise control system in a car. **8**

OR

10. a) What is kernel. Explain structure of kernel. **4**
b) Explain -
i) Process
ii) Task
iii) Threads
c) What is pipes. Explain pipe messages in a message block with its top pointed by *pFRONT and end by *pBACK. **8**
