

**M. G. UNIVERSITY BTECH DEGREE EXAMINATION MODEL QUESTION PAPER**

**ELECTRONICS AND INSTRUMENTATION ENGINEERING**

**VIIIth SEMESTER**

**( EI 010 804 L04 )REAL TIME EMBEDDED SYSTEMS**

**MAX MARKS:100**

**DURATION: 3 hrs**

**PART –A (answer all questions)**

**(3marks each)**

1. Differentiate between hard real time and soft real time embedded systems with examples of each
2. How does a macro differ from a function?
3. List a couple of kernel services/functions in an operating system
4. Briefly describe the term 'mutex'.
5. What are the types of RTOSes available?

**PART –B (Answer all questions)**

**(5 marks each)**

6. Explain any 5 uses of timer in a system.
7. Enumerate with examples the uses of null pointer.
8. Name the five states of a task and describe each one.
9. How can inter process communication be achieved using pipes?
10. List the basic functions available in a commercial RTOS.

**PART-C (Answer any one )**

**(12 marks each)**

11. Explain any two serial communication protocols with necessary diagrams

Or

12. Write short notes on

(a) Watch dog timer

(b) HDLC

13. (a) List the advantages and disadvantages of embedded programming in C++.

(b) Describe the various pre-processor structural elements in a program.

Or

14. What are the uses of function call? With the help of a pseudo code explain how multiple function calls are done in cyclic order.

15. (a) Differentiate between function, ISR and task

(b) Explain in detail the functions of a device manager

Or

16. (a) Explain the various strategies adopted for managing memory in a system

(b) Explain the layered architecture of system that employs an OS.

17. (a) Using a hypothetical example, explain dead lock situation in the concept of semaphores.

(b). Describe an IPC method which uses the shortest time for communication.

Or

18. Explain queues and message boxes used for inter process communication. What are the various RTOS functions available to use them in an application.

19. Write short notes on

(a) Semaphore related functions in any popular RTOS

(b) Time delay functions

Or

20. With necessary examples and pseudo codes describe how system level functions are invoked in an RTOS.