**Reg. No. :**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|

## Question Paper Code: 47404

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Seventh Semester

Electronics and Communication Engineering

14UEC704 EMBEDDED AND REAL TIME SYSTEMS

(Regulation 2014)

Duration: Three hours                                                     Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The embedded design process that starts with requirements is

    (a) Top - Down        (b) Bottom Up        (c) Redemption        (d) None

2. ARM7 is a _____ processor with _____Architecture

    (a) RISC, Harvard                          (b) CISC, Von Neumann

    (c) RISC, Von Neumann                       (d) CISC, Hardvard

3. A large memory is compressed into a small one by using _____

   (a) LSI semiconductor                        (b)VLSI semiconductor

   (c) CDR semiconductor                        (d) MSI semiconductor

4. Executable binary file generation is carried out by

    (a) Assembler        (b) Loader        (c) Linker        (d) Compiler

5. If the period of process is P,then the rate of the task is_____

   (a) ) $P^2$            (b) 2P            (c) 1/P            (d) P

6. The _____scheduling algorithm schedules periodic tasks using static priority policy with preemption.

   (a) Earliest deadline first                   (b) rate monotonic

   (c) FIFO                                       (d) priority

7. The interconnect network used in automotive electronics is

   (a) I$^2$C       (b) Ethernet       (c) Internet       (d) CAN

8. Internet enabled network has applications in

   (a) Hard Real time       (b) Soft Real Time       (c) In both a & b       (d) Non Real Time

9. Software Modem utilizes

   (a) PSK       (b) ASK       (c) FSK       (d) QPSK

10. Example of Lossy Data compression is

    (a) MPEG       (b) JPEG       (c) GIF       (d) a &b

PART - B (5 x 2 = 10 Marks)

11. How is ARM processor different from other processors?.

12. Write short notes on DMA.

13. Define context switching.

14. Discuss the need of distributed embedded systems.

15. What are the Foss tools used for embedded system development.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Illustrate in detail about the operation of ARM processor with neat sketch    (8)

    (ii) With necessary coding & examples, explain how flow of control is    (8)
    changed using branch instruction in ARM Processor

Or

(b) Describe the various stages involved in the embedded system design process.    (16)

17. (a) Elaborate in detail about the different types of Memory devices with neat sketch.

    (16)

Or

(b) Discuss in detail about the basic compilation process .    (16)

18. (a) Discuss about interprocess communication mechanism of embedded applications.

(16)

Or

(b) Illustrate Rate Monotonic algorithm with an example given below and compare it with EDF. (16)

| Process | Execution time | period |
|---------|----------------|--------|
| P1 | 1 | 4 |
| P2 | 2 | 6 |
| P3 | 3 | 12 |

19. (a) Write short notes on accelerators and Explain the $I^2C$ bus operation. (16)

Or

(b) Elaborate Internet enabled operation and state applications. (16)

20. (a) With a neat diagram, Describe how Personal Digital Assistant and data compressor are designed (16)

Or

(b) Elaborate the embedded design with the example of Data compressor. (16)

3