



R20 Regulation

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech V Semester Regular Examinations, January 2023

## EMBEDDED SYSTEMS DESIGN

### OPEN ELECTIVE

(Computer Science & Engineering)

Subject code: 305EA

Maximum Marks: 70

Date: 18.01.2023 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
  2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
  3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
  4. Each question carries 10 marks and may have a, b, c, d as sub questions.

#### Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Define the Embedded system?
- 2 Write the difference between microprocessor and microcontroller?
- 3 What is the role of reset circuit in embedded systems?
- 4 What is the use of RTC in embedded systems?
- 5 Explain any three Bottlenecks faced by Embedded Industry?
- 6 Define IoT and mention its applications?
- 7 Define thread?
- 8 Define Real time operating system and mention examples?
- 9 What is shared memory in the context of task communication?
- 10 What is device driver?

#### Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 A. Define embedded system? List the various application areas of embedded systems and give examples for each application area? [5M]  
B. Explain the typical Embedded system architecture with a neat sketch? [5M]  
OR
- 12 A. Explain the difference between Embedded Systems and General Computing Systems. [5M]  
B. Explain the purpose of Embedded systems with suitable example? [5M]
- 13 A. Explain the Core of the embedded system? [5M]  
B. How to design and implement firmware for embedded systems? [5M]  
OR
- 14 A. Discuss Real time clock with respect to an Embedded Hardware [5M]  
B. Explain briefly about Mixing Assembly and high level language [5M]
- 15 A. Explain the onboard communication interfaces? [5M]  
B. What are the major trends in processor architecture in embedded development? [5M]  
OR

- 16 A. What are the two aspects to Development Languages with respect to Embedded Systems Development? [5M]  
B. Explain the following popular strategic alliances, open source standards and frameworks specific to the mobile handset industry. [5M]  
(i) Open Mobile Alliance (OMA) (ii) Open Handset Alliance (OHA) (iii) Android.
- 17 A. Explain different types of operating systems? [5M]  
B. Explain the different multitasking models in operating system context [5M]  
OR
- 18 A. Compare various Task scheduling algorithms in RTOS? [5M]  
B. Explain process and threads of RTOS [5M]
- 19 A. Define message passing? Explain how the message passing is classified. [5M]  
B. Explain different task synchronization issues in interprocess communication. [5M]  
OR
- 20 A. Explain the Task communication of RTOS? [5M]  
B. Explain the RPC and sockets of RTOS? [5M]