BE/Sem VII/ETRX/CBSGS/ESD/N·D-17

Q.P. Code: 24212

Time: 3 Hours **Total Marks: 80**

Note: 1) Question No.1 is compulsory.

2) Attempt any three questions from remaining five questions.

3) Assume suitable data if necessary.

4) Figures to the right indicate full marks.

Q.1) Answer the following questions. **20M**

a) Explain the significance of uCOS-II functions **5M**
i) OSTaskCreate() ii) OSSemPend()

b) Interrupt handling of Cortex-M3 **5M**

c) Compare black box and white box testing **5M**

d) Explain CAN extended protocol format with suitable diagram **5M**

Q.2) a) Design a vegetable vending machine which dispenses vegetables to customer. **10M**
For this develop,
i) FSM which describes the functioning of the system
ii) Hardware block diagram
iii) List of components with justification
iv) Design challenges and suggest solutions

b) What are the different features of Cortex M3 and explain its impact on design, development of hand held devices. **10M**

Q.3) a) What need is of debug and trace facility? How Cortex M3 support it? **10M**

b) What are the features of MSP430 make it low power device. Draw diagram of MSP 430 basic clock module and give its details. **10M**

Q.4) a) Define FSM. Explain and draw FSM for tea-coffee vending machine **10M**

b) What is an inter process communication? Explain the various IPCs used in RTOs. **10M**

Q.5) a) What is data structure? Explain various data structures in detail. **10M**

b) What is shared data problem? Explain the solutions to avoid shared data problem. **10M**

Q.6) a) Explain need of Zig –Bee in wireless sensor networks. Describe the functional model with hardware block diagram. **10M**

b) Write a short note on **10M**
i) Logic Analyzer
ii) Role of watch-dog timer in embedded system