Registration No: | | | | | | | | | | |

Total Number of Pages: 01 **M.TECH**

P2CTCC16

2nd Semester Regular Examination 2016-17

EMBEDDED SYSTEM

Branch: COMPUTER ENGG, COMPUTER SCIENCE, COMPUTER SCIENCE AND ENGG, COMPUTER SCIENCE AND TECH.

Time: 3 Hours

Max Marks: 100

Q.CODE:Z808

Answer Question No.1 which is compulsory and any FOUR from the rest.

The figures in the right hand margin indicate marks.

Q1 **Answer the following questions:** **(2 x 10)**

a) Enlist some microcontrollers that are employed in the design of Embedded Systems.

b) What are the different execution modes of ARM registers?

c) Compare between ARM and THUMB instruction sets.

d) What is SDL?.

e) What is a SPI? Name some applications where it is used.

f) Differentiate between Hard, Soft and Firm Real Time Tasks.

g) Enlist the important features of State Charts.

h) What is the use of Co-simulation in Co-design?

i) What are the Activity and Sequence Diagrams of UML?

j) Differentiate between periodic, aperiodic and sporadic task.

Q2 **a)** Discuss the Features and Design Metrics of Embedded Systems. **(10)**

b) Differentiate between Fine Grain and Coarse Grain logic blocks. Discuss the FPGA Design Flow **(10)**

Q3 **a)** Discuss the Structure of ARM7? What are its different pipeline organizations? **(10)**

b) Discuss the Control and Status Signals in ARM7. **(10)**

Q4 **a)** Explain Bluetooth protocol Layers. **(10)**

b) What is a Petri net? Discuss its properties. **(10)**

Q5 **a)** What are the necessary and sufficient conditions for RMS techniques? Enlist some of its disadvantages.What are the pros and cons of the EDF Scheduling? **(10)**

b) A system consists of three periodic tasks: (4, 1), (6, 2), and (8, 3). Construct an EDF Schedule and a RM Schedule for this system. Report any missed deadlines. **(10)**

Q6 **a)** Discuss the Partitioning Methodology. **(10)**

b) Discuss the I^2C Protocol definition of the Frame bits. Where is the CAN bus used? How does this protocol define the frame bits? **(10)**

Q7 **Elaborate on any two of the following** **(10X2)**

a) USB- Data transfer, Class and Connectors

b) UML specification of an Elevator Control System

c) Partitioning using Particle Swarm Optimization

d) Write the following programs in assembly language of ARM

i) Finding a minimum in a set of numbers

ii) Concatenate two null-terminated string