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

Total Number of Pages : 02 **B.Tech.**
PCS6D001

6th Semester Regular Examination 2017-18
EMBEDDED SYSTEMS
BRANCH : CSE
Time : 3 Hours
Max Marks : 100
Q.CODE : C492

Answer Part-A which is compulsory and any four from Part-B.
The figures in the right hand margin indicate marks.
Answer all parts of a question at a place.

Part – A (Answer all the questions)

Q1 **Answer the following questions: *multiple type or dash fill up type*** **(2 x 10)**

a) An _____ translates the assembly software into machine codes.

b) Example of CISC processor_____.

c) Which of the following describes the RTOS design philiosophy best
a. Maximize the throughput of the system
b. Maximize the processor utilization
c. Minimizing the response time
d. Response within certain stipulated time period

d) While designing an embedded system, which sub-task oriented process allocates the time steps for various modules that share the similar resources?
a. Simulation and Validation
b. Iteration
c. Hardware-Software Partitioning
d. Scheduling

e) Which mode of operation is exhibited by RS-485 standard?
a. Single ended
b. Differential
c. Both a and b
d. None of the above

f) In CPU structure, where is one of the operand provided by an accumulator in order to store the result?
a. Control Unit
b. Arithmetic Logic Unit
c. Memory Unit
d. Output Unit

g) In the branch instructions of ARM, what does the mnemonic BVC imply?
a. Overflow Set
b. Carry Set
c. Carry Clear
d. Overflow Clear

h) Which types of an embedded systems involve the coding at a simple level in an embedded 'C', without any necessity of RTOS?
a. Small Scale Embedded Systems
b. Medium Scale Embedded Systems
c. Sophisticated Embedded Systems
d. All of the above

i) Request for a resource or OS Service by a running Process is by using a
a. message
b. system call

c. message or system call
d. interrupt

j) Memory manager in RTOS for hard real time system must provide
a. memory protection among the tasks
b. dynamic block allocation
c. memory management unit functions
d. fixed-blocks allocations.

Q2 **Answer the following questions: *Short answer type :*** **(2 x 10)**

a) What are the skills required for medium scale embedded system designer?
b) What is the need of Real time clock in embedded system?
c) What is cross assembler?
d) Compare the advantages and disadvantages of data transfers using serial and parallel ports.
e) Differentiate between non maskable and maskable interrupts.
f) What do you mean by throwing an exception?
g) What is the most important feature in C that makes it a popular high level language for an embedded system?
h) What are the features of UML?
i) What is an integrated development system?
j) What are sources for dynamic power dissipation for a processor?

Part – B (Answer any four questions)

Q3 **a)** Illustrate with functional description about the different phases of Embedded design life cycle model. **(10)**
b) Compare software programming in assembly and C language. **(5)**

Q4 **a)** Explain with all necessary sketches to enable intra communications among peripherals using I^2C bus. **(10)**
b) Discuss about in-circuit emulator and watchdog timer. **(5)**

Q5 **a)** Explain the functionalities of RS 232 and RS 485 standard serial interface with neat diagram. **(10)**
b) How is an anonymous object denoted in UML? **(5)**

Q6 **a)** Explain real time characteristics of embedded operating system? Enlist steps to develop device drivers in embedded system. **(10)**
b) Explain the differences between an 'Host Computer System' and a 'Target System' in terms of their hardware and software. **(5)**

Q7 **a)** Explain the different task communication techniques in detail. **(10)**
b) What is a semaphore? Explain various uses of semaphores in a RTOS with examples **(5)**

Q8 **a)** Explain interprocess communication and synchronization. Explain process management and memory management in embedded system **(10)**
b) What are events? Explain the role of events in RTOS. **(5)**

Q9 **a)** Explain the basic architecture of ARM core. Write a program to add three numbers using ARM9 instruction sets. **(10)**
b) What are the different sources for static and dynamic power consumptions of a processor? **(5)**