Seat No._____

GANPAT UNIVERSITY

B. Tech. Semester: VII Electronics and Communication Engineering
Regular Examination (CBCS) Nov–Dec 2014
2EC704 (A) Embedded Systems

Time: 3 Hours

Total Marks: 70

Instruction:
1. Attempt all questions.
2. Answers to the two sections must be written in separate answer books.
3. Figures to the right indicate full marks.
4. Assume suitable data, if necessary.

Section- I

Que. – 1 (A) List the various application areas of embedded systems and give examples for each. **5**

(B) Write short note on following: **5**
   1. I2C Bus
   2. Debug port

(C) Differentiate between hard and soft real time system. **2**

OR

Que. – 1 (A) Discuss about recent trends in embedded systems. **5**

(B) Explain various processor architectures and also explain DMA. **5**

(C) Can mobile devices be categorized as embedded systems? Discuss. **2**

Que. – 2 (A) Which are the ways to extend the range of Timer/Counter? Discuss with example and necessary diagrams. **5**

(B) Discuss about serial data transmission using UARTs. **4**

(C) Define the following terms: **2**
   1. Memory write ability
   2. Storage permanence

OR

Que. – 2 (A) What is the function of watchdog timer in embedded system? Explain in detail with example. **5**

(B) What are the applications of PWM? Explain PWM with suitable example with necessary diagrams. **4**

(C) What is the difference between Mask PROM and OTP ROM? **2**

Que. – 3 (A) Given an analog output signal whose voltage should range from 0 to 5 V, and an 8 bit digital encoding, calculate the correct encoding for 3.5V using successive approximation method. **4**

(B) List the difference between ARM instruction mode and Thumb mode. **4**

(C) Three processes with process P1, P2, P3 with estimated completion time 4, 12, 9 milliseconds respectively enters the ready queue together in the order P1, P2, P3. Calculate the waiting time and Turn Around Time (TAT) for each process. Also calculate average waiting time and Average Turn Around Time in LCFS algorithm. **4**

Section- II

Que. – 4   (A)   What is fixed priority arbiter? Enlist pros and cons of it.   5

          (B)   Using diagram, explain peripheral to memory transfer with DMA controller.   5
Assume that system is using vectored interrupt.

          (C)   What are the limitations of polling using software?   2

OR

Que. – 4   (A)   Compare memory-mapped I/O and standard I/O.   5

          (B)   What is Daisy-chain arbitration? Enlist pros and cons of it.   5

          (C)   Draw the diagram to implement port based I/O using bus based system.   2

Que. – 5   (A)   With the help of diagram explain how strobe/handshake compromise   6
protocol is fast as well as secure.

          (B)   Explain ARM core data flow model.   5

OR

Que. – 5   (A)   Explain process state transition using diagram.   6

          (B)   Enlist and explain ARM instruction features which differs from standard   5
RISC instruction set.

Que. – 6   (A)   Explain the ARM registers which contains the flag bits as well as various   4
control fields.

          (B)   Define and differentiate GPOS and RTOS.   4

          (C)   List the salient features of USB protocol.   4

End of Paper