

Total No. of Questions : 12]

SEAT No. :

P1808

[4859]-211

[Total No. of Pages : 3

B.E. (Computer Engineering)
c-EMBEDDED SYSTEMS
(2008 Course) (Semester-I) (Elective-II)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *In Section-I, attempt Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4, Q. No. 5 or Q. No. 6.*
- 2) *In Section-II, attempt Q. No. 7 or Q. No. 8, Q. No. 9 or Q. No. 10, Q. No. 11 or Q. No. 12.*
- 3) *Answers to the two sections must be written in separate answer books.*
- 4) *Neat diagrams must be drawn wherever necessary.*
- 5) *Figures to the right indicate full marks.*
- 6) *Assume suitable data, if necessary.*

SECTION-I

- Q1)** a) Which characteristics of an Embedded system make it different than a General Purpose system? [6]
- b) Explain how Digital Signal processor and Media processor are different than a general purpose processor. [6]
- c) Explain different steps in Embedded system design process. [6]

OR

- Q2)** a) Draw a layered architecture of Embedded system. Discuss various components in the Embedded System. [6]
- b) Discuss recent trends in Embedded Systems. [6]
- c) What challenges are faced while designing an embedded system. [6]

OR

- Q3)** a) Discuss different structural units in a processor in an embedded system. Mention few advanced units. [8]
- b) Discuss various actions taken to reduce the power consumption in an embedded system. [8]

P.T.O.

Q4) a) A robotic control system is to be designed. For this application, select the appropriate processor based on: [8]

i) Instruction cycle time.

ii) Bus width.

iii) MIPS.

iv) On chip cache.

v) On chip RAM/ROM.

b) Draw the architecture of ARM7 core. How ARM9 family is different than ARM7? [8]

Q5) a) Discuss the topology used by devices to communicate through USB protocol. Mention different types of data transfer. [8]

b) Compare RS232 and RS485 standards. [5]

c) What is the need of data converters in embedded systems? [3]

OR

Q6) a) Which optical devices are commonly used in embedded system? Explain with suitable examples. [8]

b) Discuss different fields in the data frame of CAN bus protocol. What are the applications of CAN? [8]

SECTION-II

Q7) a) With the help of neat diagram, explain software development cycle for embedded system. [8]

b) Explain usage of stacks and queues in embedded system programming. [10]

OR

- Q8)** a) What is the use of an emulator in embedded system design? Explain with the help of diagram. [10]
b) What are the advantages and disadvantages of programming in C++ for Embedded system? [8]

- Q9)** a) Explain the kernel services in an OS. [8]
b) What are the OS units at an RTOS kernel? [8]

OR

- Q10)** a) Discuss different ways in which interrupts are handled in RTOS environment. [6]
b) Compare assembly language programming and high level language programming. [4]
c) Discuss various handheld operating systems. [6]

- Q11)** a) Differentiate between soft real time operating system and hard real time operating system. [4]
b) Discuss different applications where VxWorks is used. Also list its features. [6]
c) Give details of hardware and software components of mobile phone. [6]

OR

- Q12)** a) Enlist the software and hardware requirements of digital camera. [8]
b) Differentiate between soft real time operating system and hard real time operating system. [4]
c) Write a short note (Any One): [4]
i) μ COS-II
ii) Special OS features for automotive systems.

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