EMBEDDED SYSTEM (SEMESTER - 8)

CS/B.TECH (ECE-NEW)/SEM-8/EC-803B/09

1. .....
Signature of Invigilator

2. .....
Signature of the Officer-in-Charge

Reg. No. | | | | | | | | | | | | | | |

Roll No. of the Candidate | | | | | | | | | | | | | | |

CS/B.TECH (ECE-NEW)/SEM-8/EC-803B/09

ENGINEERING & MANAGEMENT EXAMINATIONS, APRIL – 2009

EMBEDDED SYSTEM (SEMESTER - 8)

Time : 3 Hours] [Full Marks : 70

INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
2. a) In **Group – A**, Questions are of Multiple Choice type. You have to write the correct choice in the box provided **against each question**.
   b) For **Groups – B** & **C** you have to answer the questions in the space provided marked 'Answer Sheet'. Questions of **Group – B** are Short answer type. Questions of **Group – C** are Long answer type. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

No additional sheets are to be used and no loose paper will be provided

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Marks Obtained

	Group – A										Group – B			Group – C			***Total Marks***	***Examiner's Signature***
Question Number																		
Marks Obtained																		

.....
Head-Examiner/Co-Ordinator/Scrutineer

8849-B/E (25/04)

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GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10

i) A microcontroller unit must have

a) Oscillator and reset circuits

b) oscillator, reset, watchdog and linear circuits

c) oscillator circuits

d) external memory interfacing circuits. ☐

ii) A program that combines object code files into an executable program is called a

a) compiler b) linker

c) loader d) assembler. ☐

iii) A device driver would ordinarily be written in

a) machine language

b) assembly language

c) a platform-independent language, such as JAVA

d) an application-oriented language. ☐

iv) Which chip has a large number of arrays with each element having fusible links ?

a) GPP b) ASSP

c) FPGA d) Register.

v) The main function of RTOS is

a) Real time task scheduling and interrupt latency control

b) Device management

c) Process managment

d) Memory management.

vi) Which one of following is used as an additional processing unit for running the application specific tasks in place of processing using embeded software ?

a) Microcontroller b) DSP

c) FPGA d) ASSP.

vii) Real time means

a) actual time

b) time from start of task

c) time measured using the system clock of RTOS

d) time that has a fixed unalterable zero reference in which a clock advances at constant interval and which cannot be reloaded.

viii) An architecture used in any microcontroller is

a) Harvard b) Vonneuman

c) Princeton d) Both (a) and (c).

ix) ARM architecture is of

a) 32-bit b) 8-bit

c) 16-bit d) none of these. ☐

x) EEPROM is

a) flash also

b) for erase at a time of one byte and flash for a sector of byte

c) different from flash

d) works identically for erase as well as write. ☐

xi) If there is no data transfer in serial communication and the line is high, it is called

a) MARK b) STOP BIT

c) SPACE d) START BIT. ☐

xii) Which of the following are commercially claimed RTOSs ?

a) Linux b) Windows CE

c) Windows NT d) Sun Solaris. ☐

xiii) More address pins, the more memory locations are inside the chip.

a) True b) False

c) Insufficient data d) none of these. ☐

xiv) A powerful modelling language which is extensively used in the software development process, specially designed for

a) UML b) C

c) SMI d) JAVA. ☐

xv) Which one of the following scheduling algorithm checks the rate of occurance of the task ?

a) RMA b) EDF

c) Co-operative d) All of these. ☐

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. What are the advantages of DMA based data transfer over the interrupt driven data transfer ?

3. Briefly explain salient feature of an embeded system with (a) Hardwired control and (b) Micro-program control.

4. Design an EX-OR gate using FPGA and LUT.

5. How do the following indicate the start and end of a byte or dataframe ?

   a) UART

   b) HDLC.

6. a) Compare Von-Neumann and Harvard achitecture of a processor based system.

   b) What do you mean by the memory hierarchy in an embed system ?

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following questions. 3 × 15 = 45

7. a) Describe the efficiency measuring parameters of an embedded system.

   b) Describe the different components of an embedded system.

   c) Describe the design methodology of an embed system.

   d) Describe the different types of microphones are used in an embedded system.

   2 + 4 + 4 + 5

8. a) What are different utility in mail box, pipe and queue in RTOS ?

   b) What are the different management techniques is adopted and why in real time OS ?

   c) What are the different interrupt rules in real time system ? 5 + 5 + 5

9. a) How does a microprocessor differs from a microcontroller ?

b) What are the specific features of an embedded system processor ?

c) Compare RISC and CISC architecture.

d) Now-a-days high performance embedded systems use either an RISC processor or a processor with an RISC core with a code-optimized CISC instruction set. Why ? Explain. 2 + 4 + 6 + 3

10. a) Briefly describe the technique to embed a software into the target system.

b) What is ROM emulator ?

c) If the memory is flash memory then what are the difficulties to face ?

d) How can a priority scheduling algorithm be implemented ? 5 + 3 + 2 + 5

11. Write short notes on any *three* of the following : 3 × 5

a) Cache memory and cache controller

b) Sigma delta ADC

c) FPGA

d) UART

e) DMAC.

END