

**M.E. DEGREE EXAMINATIONS: JUNE 2011**

Second Semester

**APPLIED ELECTRONICS**

ANE506: Embedded Systems

**Time: Three hours**

**Maximum Marks: 100**

**Answer ALL questions:-**

**PART A (10 x 2 = 20 Marks)**

1. What are the characteristics of embedded computing system?
2. What are the three types of events in UML?
3. What is CPSR and state its purpose in ARM processor?
4. What data types does the SHARC support?
5. Draw the Ethernet packet format and define each field.
6. What is PDA? State its key features.
7. Compare Static and dynamic systems
8. Compare on line and off line scheduling
9. Mention any four examples of network operating system.
10. What are the various features of Vx Works?

**PART B (5 x 16 = 80 Marks)**

11. a) Explain the step by step design process of embedded system.

**(OR)**

- b) Explain the operation of a model train controller. Also explain the requirements and detailed specifications of it.

12. a) (i) Explain the instructions that are used to perform the following operations in ARM Processor. (8)

(i) Arithmetic and logical operations

(ii) Shift/Rotate

(iii) Load/store

(iv) Compare.

- (ii) Explain the various addressing modes of SHARC Processor with examples. (8)

**(OR)**

b) Explain the system design process of an alarm clock.

13. a) Explain the serial communication using I<sup>2</sup>C and CAN buses in detail

**(OR)**

b) Describe the major operations and hardware architecture of Ink jet printer.

14. a) Explain in detail the three scheduling approaches of real time embedded systems

**(OR)**

b) (i) Explain the earliest deadline first (EDF) algorithm. Check with an example. (8)

(ii) Explain the effective release time and effective deadline with one example. (8)

15. a) (i) Discuss the various goals of operating system. (6)

(ii) Explain the following services of Kernel in OS. (10)

1. Process Management

2. Memory Management

**(OR)**

b) (i) Explain the IEEE standard POSIX 1003.1B functions for standardization of RTOS and inter task communication functions. (8)

(ii) Explain in detail about cyclic scheduling models with time slicing used by RTOS schedulers. (8)

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