

M.E DEGREE EXAMINATIONS: JUNE/ JULY 2013

Second Semester

APPLIED ELECTRONICS

ANE506: Embedded Systems

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

1. Define life line and focus of control in UML.
2. What are the various types of relationships between class and object?
3. What is CPSR and state its purpose in ARM processor?
4. What are the two external interfaces used in SHARC and state the purpose of using each interface?
5. Draw the structure of Ethernet packet and define each field.
6. What do you mean by allocation and scheduling in embedded system design?
7. Distinguish between static and dynamic systems.
8. Define 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) (i) Explain the step by step design process of embedded system (12)
(ii) What are the characteristics of Embedded computing system? (4)

(OR)

- b) (i) Explain the principle of operation of a model train controller. Also explain the requirements and detailed specifications of it. (12)
(ii) Distinguish between structural description and behavioral description (4)

12. a) (i) Explain the instructions that are used to perform the following operations in ARM Processor. (10)

(i) Arithmetic and logical operations

(ii) Shift/Rotate

(iii) Load/store and (iv) Compare.

- (ii) Explain the various addressing modes of SHARC Processor with examples. (6)

(OR)

- b) Explain the system design process of an alarm clock.
13. a) (i) Explain the signals during a transfer of a byte when using the I²C bus and also the format of the bits at the I²C bus with diagrams (12)
(ii) Draw the structure of IP packet and explain each field. (4)
- (OR)**
- b) What is the role of set-top box in digital TV system? Draw and explain the hardware and software architecture of set-top box.
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. (6)
(ii) Explain the challenges in validating timing constraints in priority driven systems? (10)
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. (10)
(ii) With neat diagram, explain the time slicing RTOS task scheduling model. (6)
