M.E., DEGREE EXAMINATIONS, APRIL/MAY 2014

(Regulation 2009)

Second Semester

APPLIED ELECTRONICS

ANE506: Embedded Systems

Time: Three hours **Maximum Marks: 100**

Answer ALL questions

PART A (10 x 2 = 20 Marks)

1. State the various relationships between class and object.
2. Compare requirements and specification.
3. What is CPSR and state its purpose in ARM processor?
4. Compare little endian and big endian modes
5. Draw the structure of IP packet
6. What is the function of SHARC link ports?
7. Compare Static and dynamic systems
8. Define on 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 conceptual specifications of it.

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

(1) Fixed point ALU operations

(2) Floating point ALU operations

(3) Shifter operations

(ii) Explain the various addressing modes of SHARC processor. (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 I^2C bus and also the format of the bits at the I^2C bus with diagrams. (8)

(ii) Explain the serial communication using CAN bus in detail (8)

(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 challenges in validating timing constraints in priority driven systems? (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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