

N.B: Answer all questions of Part-A and any Five questions from Part-B.

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PART - A (25 Marks)

- 1. What are the essential structural units of a Microcontroller? How is it different from that of a Embedded processor? 2
- 2. Explain the advantage of a Cache with multiways and blocks in an embedded system. 3
- 3. How do the ARM7, ARM9, ARM11 differ? When do you prefer them? 3
- 4. How is break point interrupt for debugging embedded software? 2
- 5. Mention the use of Queues for implementing the protocol for a Network. 2
- 6. When do we program in JAVA for Embedded system design? 2
- 7. What is a timer? How does a counter perform prefix time initiated events generation? 3
- 8. Explain the use of Petrinet Model in the design of embedded system. 3
- 9. How is an LED circuit acts as a powerful analysis tool? 2
- 10. How do you set the system clock using function Void Ostime set (unsigned int counts)? 3

PART - B (5x10=50 Marks)

- 11. a) List and explain the essential characteristics of a processor structure in which every system designer needs to consider during processor selection and Hardware design. 6
- b) Explain three stage pipeline, superscalar processing, branch and data dependency penalties. 4
- 12. a) Explain the HW and SW features of phillips microcontroller. Mention some of its applications. 5
- b) A new generation automobile has about 100 embedded systems. How do the bus arbitration bits, control bits for address and data length, data, CRC check, acknowledgement and endian bits in CAN bus help the networking devices distributed in automobile embedded system. 5
- 13. a) What are the sophisticated interfacing features required in device ports? Explain them. 5
- b) How does the USB protocol provide for a device attachment, configure reconfigure and bandwidth sharing with other devices? 4
- 14. a) Explain the programming concepts for embedded programming in C++. 5
- b) Write a C program to transmit PPP data frames encapsulating 4096 data bits. Bits are to be transmitted in a sequence of 32-bit integers stored in Memory as in big-endian format. 5
- 15. a) Design a table to clearly distinguish the cases when there is concurrent processing of processes, with tasks and with threads by using a scheduler. 6
- b) Explain about device servicing without using ISRS? 4
- 16. a) Explain embedded system (ES) independent design followed by system integration and by ES-Concurrent.HW-SW codesign. 5
- b) Explain SW - HW tradeoff. What are the advantages and disadvantages of SW implementation instead of HW implementation? 5
- 17. Write short notes on: (5+5)