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Question Paper Code: 36503

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Sixth Semester

Electronics and Instrumentation Engineering

01UEI603 - REAL TIME EMBEDDED SYSTEMS ARCHITECTURE

(Regulation 2013)

Duration: 1:15hrs   Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. The 8051 has _____ 16-bit counter/timers.

    (a) 1   (b) 2   (c) 3   (d) 4

2. Match the following:

    1) TCON   (i)   contains status information

    2) SBUF   (ii) timer/counter control register.

    3) TMOD   (iii) idle bit, power down bit

    4) PSW   (iv) serial data buffer for Tx and Rx.

    5) PCON   (v) timer/ counter modes of operation

    (a) 1->ii, 2->iv, 3->v, 4->i, 5->iii   (b) 1->i,   2->v,   3->iv,   4->iii,   5->ii
    (c) 1->v, 2->iii, 3->ii, 4->iv, 5->i   (d) 1->iii, 2->ii, 3->i, 4->v, 5->iv

3. What is the order decided by a processor or the CPU of a controller to execute an instruction?
    (a) decode, fetch, execute   (b) execute, fetch, decode

    (c) fetch, execute, decode   (d) fetch, decode, execute

4. Abbreviate CISC and RISC

    (a) Complete Instruction Set Computer, Reduced Instruction Set Computer

    (b) Complex Instruction Set Computer, Reduced Instruction Set Computer

    (c) Complex Instruction Set Computer, Reliable Instruction Set Computer

    (d) Complete Instruction Set Computer, Reliable Instruction Set Computer

5. The Width of a processor's data path is measured in bits. Which of the following are common data paths?

    (a) 8 bits   (b) 12 bits   (c) 16 bits   (d) 32 bits

6. What are the essential tight constraint/s related to the design metrics of an embedded system?

    (a) Ability to fit on a single chip
    (b) Low power consumption
    (c) Fast data processing for real-time operations
    (d) All the above

7. What is the directional nature of two active wires SDA and SCL usually adopted in I2C Bus for carrying the information between the devices.

    (a) Uni-directional   (b) Bi-directional
    (c) Multi-directional   (d) None of these

8. The DMA transfers are performed by a control circuit called as

    (a) Device interface   (b) DMA controller
    (c) Data controller   (d) Over looker

9. Two partitions must be insulated to prevent operations on one half from affecting other, such floating-point operations are called

    (a) Single-instruction operation   (b) Vector operation
    (c) Paired single operations   (d) Fetch operation

10. Which of these is a digital input device?

    (a) pressure sensor   (b) servo
    (c) button   (d) potentiometer

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PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Draw the functional block diagram of 8051 and explain each block. (8)

12. Describe in detail about

    (i) Data transfer instruction (8)

13. Describe in detail about:

    (i) Memory management system (8)

14. List the serial communication bus and explain I^{2}C bus and CAN bus. (8)

15. Describe about the fifteen-point strategy for synchronization is suggested for real time programming for an embedded system. (8)

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