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**Reg. No. :**

**Question Paper Code: 46063**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Sixth Semester

Electronics and Instrumentation Engineering

14UEI603 - REAL TIME EMBEDDED SYSTEMS ARCHITECTURE

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. In 8051 which interrupt has highest priority?

(a) IE1 (b) TF0 (c) IE0 (d) TF1

2. The 8051 has \_\_\_\_\_\_\_\_ 16-bit counter/timers.

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

3. Which of the following commands will move the value at port 3 to register 2?

(a) MOV P2, R3 (b) MOV R3, P2 (c) MOV 3P, R2 (d) MOV R2, P3

4. 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

5. 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

6. Deadline-driven constraints so called

(a) Reality-time constraints (b) Real-time constraints (c) Real-data constraints (d) None of these

7. JSP stands for

(a) Java Service page (b) Java Server Pages

(c) Java Servlet Pages (d) Java Single Pages

8. 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

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

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| 10. An interrupt that can be temporarily ignored is  (a) Vectored interrupt (b) Non-maskable interrupt (c) Maskable interrupt (d) High priority interrupt |

PART - B (5 x 2 = 10 Marks)

11. List the features of 8051.

12. Write a program to toggle all bits of P1 every 200ms.

13. **What is an embedded system?**

14. What do you meant by bus arbitration?

15. **What is the difference between mutexes and semaphores?**

PART - C (5 x 16 = 80 Marks)

16. (a) Explain with a neat block diagram the architecture of 8051 microcontroller. (16)

Or

(b) With neat diagram, explain in detail about the block diagram of 8051 microcontroller. . (16)

17. (a) Write a program to interface liquid crystal display with 8051 microcontroller and display the message “Success”. (16) Or

(b) Explain about Data transfer, control & I/O instructions of 8051 Micro controller.(16)

18. (a) Explain in detail about design process of an embedded system. (16)

Or

(b) Discuss in detail about the build process of embedded system. (16)

19. (a) Explain in detail about ISA bus. (16)

Or

(b) Describe in detail about the serial communication using controller area network bus. (16)

20. (a) Explain about Non maskable interrupts. (16)

Or

(b) Discuss in detail about the different concepts of semaphores with necessary diagram. (16)