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**Q 2218**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Sixth Semester

Mechatronics Engineering

EC 348 — MICROCONTROLLER AND APPLICATIONS

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define PSW of 8051.
2. What are the functions of pins EA and PSEN?
3. Write the description of SWAP instruction.
4. Give the use of AJMP instruction with an example.
5. Why are microcontrollers considered as embedded processors?
6. Why mode '0' is not suitable for 8051 serial communication?
7. What is the advantage of daisy chain approach used in multiple hardware interrupts?
8. Why flash A/D converters are more expensive than traditional SAR types?
9. Draw the star loop configuration of hybrid communication.
10. Which network configuration is preferred for long distances? Why?

PART B — (5 × 16 = 80 marks)

11. (a) Explain about the various blocks needed for data manipulation in 8051.

Or

- (b) Discuss the features of 8051 timers and their modes.

12. (a) Write detailed notes on various addressing modes in 8051 with at least two examples.

Or

- (b) (i) Explain the process of executing an instruction in Intel 8051.  
(ii) Write the meaning of XCHD, CJNE, MOVX and JBC instructions.
13. (a) Explain with neat flow chart how the hardware timers are operated in software and hardware modes. Discuss their advantages and disadvantages.

Or

- (b) Discuss in brief the various methods of transmitting a character serially in 8051.
14. (a) Explain how a 2 line  $\times$  20 character LCD display is interfaced with 8051.

Or

- (b) Interface a 8-bit D/A converter with 8051 and write a program to generate 1 kHz sine wave.
15. (a) With neat sketch, explain how the serial data can be transmitted in shift register mode.

Or

- (b) Draw an interfacing circuit using 8255 to perform the multitasking. Explain in detail.