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BOARD DIPLOMA EXAMINATION, (C–14)

MARCH/APRIL—2018

DECE—FIFTH SEMESTER EXAMINATION

MICROCONTROLLER APPLICATIONS

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. List the features of ADC 0848.

2. Write an 8051 assembly language program to toggle bit 4 of port 2 continuously.

3. List the 8051 instructions used for accessing external data memory.

4. List any three features of serial EEPROM chip 24C02.

5. List any six LCD command codes.

6. What is key bouncing? Mention the key de-bouncing methods. 2+1

7. List any three features of DS12887 RTC.

8. Write the address locations for hh:mm:ss of the alarm in DS12887 RTC.

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9. Why do we place a driver between the microcontroller and the relay?

10. Draw an interfacing diagram of stepper motor with 8051 microcontroller.

PART—B 10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Draw the interfacing diagram of DAC 0800 to 8051 and write an ALP to generate a sawtooth waveform at the output of DAC. 5+5

12. Draw and explain the interfacing of 8K × 8 external program ROM with 8051 and find its address range. 5+5

13. *(a)* Describe the pin details of serial EEPROM chip 24C02. 7

(b) Distinguish among SRAM, DRAM and NVRAM. 3

14. *(a)* List the reasons for the popularity of LCDs. 5

(b) Draw the interfacing diagram of LCD with 8051 microcontroller. 5

15. Draw the interfacing diagram of 4 × 4 matrix keyboard with 8051 and write an ALP to find the key code whenever a key is pressed. 4+6

16. *(a)* State the functions of the following pins of DS12887 RTC : 5

(i) AS

(ii) MOT

(iii) DS

(iv) R/W

(v) SQW

(b) Draw the format of control register A of DS12887 and state the significance of each bit. 5

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17. *(a)* Draw the interfacing diagram of DS12887 RTC to 8051 microcontroller. 5

(b) Write a C program to set the date to April 10th, 2016 in DS12887 RTC. 5

18. *(a)* Explain how pulse width modulation is used to control the speed of a small DC motor. 5

(b) Draw the interfacing circuit for controlling a small DC motor using MOSFET. 5

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