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Register Number
Name of the Candidate:

M.Sc. DEGREE EXAMINATION, May 2015

(PHYSICS)

(SECOND YEAR)

240: MICROCONTROLLER AND DIGITAL SIGNAL PROCESSING

Time: Three hours

Maximum: 100 marks

SECTION-A

(5×4=20)

Answer any FIVE questions

1. What is a microcontroller? How it is different from a microprocessor?
2. Explain the function of SCAN register.
3. Explain the function of flags in a microcontroller.
4. Distinguish between immediate and direct addressing mode.
5. What are the classification of discrete time systems?
6. Explain the importance of Up and down sampling technique.
7. State Nyquist theorem. Explain sample and hold technique.
8. Write note on music synthesis.

SECTION-B

(5×16=80)

Answer any FIVE questions

9. Explain the key features of 8051 architecture with a block diagram.
10. Explain the function of counter and timers with suitable examples.
11. Discuss in detail the register addressing mode instructions in 8051.
12. Draw the basic building block of DSP system and explain their function.
13. Discuss the basic concept involved in FFT based spectrum analysis.
14. Mention how DSP is implemented using a microcontroller.
15. Write an assembly language program to divide two eight bit numbers by bit rotation technique. Explain its working with an example.
16. Explain digital filter structure. Discuss in detail first order filter with a block diagram representation.
