

F 6526

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Reg. No.....

Name.....

M.Sc. DEGREE (CSS) EXAMINATION, JANUARY 2015

Third Semester

Faculty of Science

Branch : II—Physics—A—Pure Physics

Elective Bunch A—Electronics

PH 3E A1—INTEGRATED ELECTRONICS AND DIGITAL SIGNAL PROCESSING

(2012 Admission onwards)

Time : Three Hours

Maximum Weight : 30

Part A

Answer any six questions.

Weight 1 each.

1. Mention advantages of IC over discrete component of circuit.
2. What is meant by discretionary wiring and fixed inter-connection pattern ?
3. Draw the volt ampere characteristics for the diode.
4. What are periodic signals with example ?
5. What are the advantages of FIR filters over IIR filters ?
6. Define Discrete Time Fourier Transform.
7. What do you understand by discrete time system ? Give various types of discrete time system with suitable equation.
8. What do you understand by digital filters ? Explain the various types, of digital filters.
9. Explain the properties of Fourier transform.
10. What is the importance of Sampling Theorem ?

(6 × 1 = 6)

Part B

Answer any four questions.

Weight 2 each.

11. Explain three most popular diode structures.
12. Explain Schottkey diode formed by IC technique.
13. Write a note on inductors in IC.

Turn over

14. Explain Gibbs phenomenon.
15. Compare bilinear transformation and Impulse invariant method of IIR filter design.
16. What is Z transform ? Also explain the inverse Z transform ? What are the Applications of Z transform ?

(4 × 2 = 8)

Part C

*Answer all questions.
Weight 4 each.*

17. (a) Describe epitaxial growth process..

Or

(b) Explain the design rules for monolithic layout.

18. (a) Explain how signals are classified according to their nature and characteristics in time domain.

Or

(b) Explain the designing technique of FIR by approximation of derivative method.

19. (a) Explain convolution and correlation of DT and CT signals.

Or

(b) (i) Discuss the properties of Discrete Fourier Transform.

(ii) Explain decimation in time FFT algorithm.

20. (a) What are the different types of IIR realization ? Explain direct form I in detail.

Or

(b) Explain the typical digital signal processing system with the help of a neat block diagram Explain each block.

(4 × 4 = 16)