

19002094



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Reg. No.....

Name.....

M.Sc. DEGREE (C.S.S.) EXAMINATION, NOVEMBER 2019

Third Semester

Faculty of Science

Branch II—Physics—A—Pure Physics

Elective : Bunch A—Electronics

PH3EA1—INTEGRATED ELECTRONICS AND DIGITAL SIGNAL PROCESSING

(2012—2018 Admissions)

Time : Three Hours

Maximum Weight : 30

Part A

*Answer any **six** questions.*

Weight 1 each.

1. Describe the diffusion process. What is meant by impurity profile ?
2. Explain about the Photolithography process.
3. Explain why 'Buried Layer' is used ?
4. Distinguish between finite impulse response and infinite impulse response.
5. Give an example of a linear time varying system such that with a periodic input The corresponding output is not periodic.
6. Briefly describe properties of the continuous -time Fourier transform.
7. Explain about time reversal and time shifting properties of Z-transform.
8. Define causality and time variance of systems.
9. Briefly describe wet and dry etching.
10. What are the major applications of Fourier transform in digital signal processing.

(6 × 1 = 6)

Part B

*Answer any **four** questions.*

Weight 2 each.

11. Explain why we need correlate signals.
12. What is epitaxy ? What are major difference between epitaxy and crystal growing ?

Turn over





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13. Explain the basic concepts of filtering by illustrating about ideal band pass filter.
14. Find the Z-transform of $x[n] = na^n u[n]$.
15. Briefly describe about the FIR filter using rectangular window.
16. Enlist advantages of ICs over discrete components.

(4 × 2 = 8)

Part C

Answer all questions.

Weight 4 each.

17. (a) Prove that convolution in time domain is equal to multiplication in frequency domain.

Or

- (b) Explain the finite word length effects in DSP computations.

18. (a) Deduce the relation between discrete time Fourier transform and Z transform.

Or

- (b) Show the scaling property of continuous-time Fourier transform.

19. (a) Explain all the properties of region of convergence of Z transform with brief description for each property.

Or

- (b) Explain about monolithic resistors and various kinds of diffused resistors.

20. (a) Explain the typical DSP with the help of neat block diagram.

Or

- (b) Describe about the Dirichlet condition for convergence of Fourier transform and of Fourier series.

(4 × 4 = 16)

