S – 6282

(Pages : 3)

Reg. No. : .....

Name : .....

First Semester M.Sc. Degree Examination, April 2024

Physics / Physics with Specialization in Nano Science / Physics with Specialization in Space Physics

PH 213 / PHNS 513 / PHSP 513 : BASIC ELECTRONICS

(2020 Admission Onwards)

Time : 3 Hours

Max. Marks : 75

SECTION – A

(Answer any **five** questions. Each question carries **3** marks)

1. Comment on impedance matching.
2. Define the purpose of comparator in electric circuits
3. Explain the applications of tunnel diodes.
4. What are multiplexers?
5. Differentiate synchronous and asynchronous counters.
6. What are avalanche photodiodes?
7. Briefly give the comparison between analog and digital instruments.
8. Define thermistors.

(5 × 3 = 15 Marks)

P.T.O.

SECTION – B

(Answer **three** questions. Each question carries **15** marks.)

9. (a) Discuss the concept of frequency response of an amplifier.

   (b) What are Gunn diodes?

OR

10. (a) Comment on monostable and astable multivibrator circuits using IC555 timer.

   (b) What are varacter diodes?

11. (a) Write short note on binary address and binary subtractors.

   (b) What are flip-flops in digital electronic circuits? Also explain JK Flip flop in detail.

OR

12. (a) Comment on binary multiplication and binary division.

   (b) With the help of schematic diagram, discuss SR flip flop in detail.

13. (a) Give a detailed view on LED's structure, quantum efficiency and power.

   (b) Write on signal distortion in optical fibres.

OR

14. (a) Account on the topic cathode ray oscilloscope.

   (b) Explain the classification of transducers.

(3 × 15 = 45 Marks)

SECTION – C

(Answer any **three** questions. Each question carries **5** marks.)

15. A simple low pass RC filter having cut off frequency 1kHz is connected to constant ac source of 10V. Calculate C if $R = 10k\Omega$.

16. Convert 11101, 10101, 1101 to its decimal equivalent.

17. How can we have stable display in CRO.

18. Add 11100 to 11010, 10100 to 11011.

19. Sketch the CRT circuit.

20. Explain the working of a four-bit asynchronous counter.

(3 × 5 = 15 Marks)
