



17ELN15/25

First/Second Semester B.E. Degree Examination, July/August 2021 Basic Electronics

Time: 3 hrs.

USN

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Max. Marks: 100

Note: Answer any FIVE full questions.

- a. With a neat sketch of VI characteristics of PN Junction Diode. Explain forward and reverse characteristics of it. (06 Marks)
 - b. Discuss the working of full wave rectifier with necessary waveforms with the utilization of two diodes. (07 Marks)
 - c. Consider an bridge rectifier with capacitor filter input 230V, 50Hz. Find the output DC output voltage if an filter of 1000 μ F is used, calculate the ripple factor and the DC output voltage with filter by considering load resistance of 100 Ω . (07 Marks)
- 2 a. Explain briefly the CB configuration of PNP transistor with its input and output characteristics. (08 Marks)
 - b. Explain Avalanche Breakdown and Zener Breakdown. (06 Marks)
 - c. Derive the relationship between CB mode DC current gain and CE mode DC current gain. (06 Marks)
 - a. Explain the working of collector to basic bias and voltage divider bias circuit. (08 Marks) b. Draw the DC load line and determine the operating point for the transistor circuit having $\beta = 50$, $R_C = 1K\Omega$, $R_B = 100k\Omega$ and $V_{CC} = 5V$. (06 Marks)
 - c. Define stability factor for transistor bias circuit and thermal stability of Bias circuit.

(06 Marks)

(04 Marks)

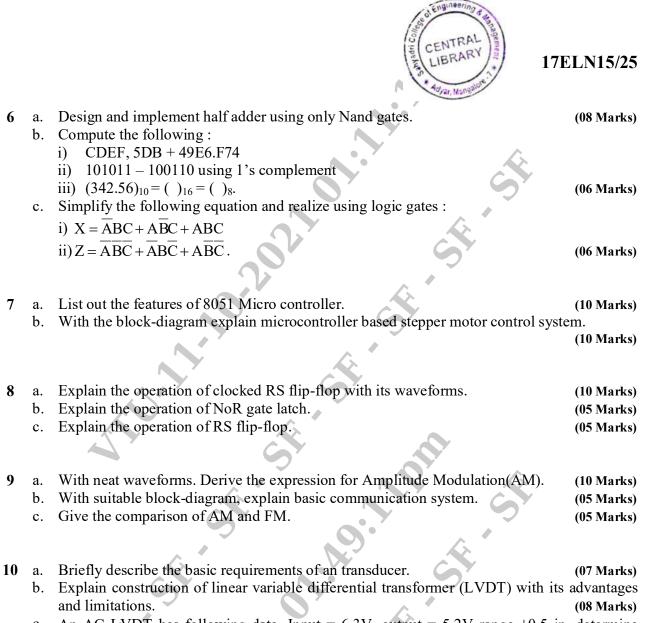
(06 Marks)

- a. List the ideal and typical characteristics of OP-AMP. (08 Marks)
 b. With relevant equations and circuit diagram, describe OP-AMP as Adder and Integrator. (08 Marks)
 - c. Explain the need for an OP-AMP.
 - a. State and prove De-Morgan's theorems. (06 Marks)
 b. Using respective truth-tables, show the implementation of not gate, and gate, OR-Gate and NOR gate using only Nand gate. (08 Marks)
 - c. Perform the following :

i) $(ABCD)_{16} = ()_{10} = ()_8 = ()_2$

ii) $(24742)_8 = ()_{10} = ()_{16} = ()_2.$

fImportant Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.



c. An AC LVDT has following data, Input = 6.3V, output = 5.2V range ± 0.5 in, determine output voltage Vs core position for a core movement going from +0.45 in to -0.30 in and also output voltage when core is -0.25 in from center. (05 Marks)

