Electronics and Communication Department

GLA University, Mathura

Topic wise Syllabus for Electronics Engineering BECG 0001 For End Term

1. Operational Amplifier
    - Circuit symbol of Op-Amp
    - Ideal Characteristics of Op-Amp
    - Application of Operational Amplifier (Op-Amp)
        - Circuit diagram and derivation of output voltage expression for Inverting Operational Amplifier (Op-Amp).
        - Circuit diagram and derivation of output voltage expression for Non-Inverting Operational Amplifier (Op-Amp).
        - Circuit diagram and derivation of output voltage expression for Operational Amplifier (Op-Amp) as Adder.
        - Circuit diagram and derivation of output voltage expression for Operational Amplifier (Op-Amp) as Integrator.
        - Circuit diagram and derivation of output voltage expression for Operational Amplifier (Op-Amp) as Differentiator.
        - Numerical on Adder, Inverting OP-Amp, Non Inverting Op-Amp
2. Digital Electronics
    - Minimization (simplification) of logic expression using K-Map
        - 4 Variable K-Map with don't care and without don't care.
        - 3 Variable K-Map with don't care and without don't care.
    - 1's and 2's complement.
    - Subtraction using 2's complement.
    - Conversion of Logic expression into Canonical SOP and Canonical POS (find minterm and maxterm for given expression).
    - Minimization (simplification) of logic expression using Boolean Algebra.
    - Circuit symbol and truth table for logic gates
        - Basic Gates: AND Gate , OR Gate, Not Gate
        - Universal Gates: NAND Gate, NOR Gate
        - Derived Gates: Ex-Or Gate, Ex-Nor Gate.
    - Design/Implement Basic Gates (i.e AND Gate, OR Gate, NOT Gate) using NOR Gate only.
    - Design/Implement Basic Gates (i.e AND Gate, OR Gate, NOT Gate) using NAND Gate only.
    - Binary addition and Subtraction.
    - Number System: conversion from one base to another Base.
3. Bipolar Junction Transistor
    - Input and Output Characteristics of BJT in Common Base Configuration (CB).
    - Input and Output Characteristics of BJT in Common Emitter Configuration (CE).
    - Comparison between CB, CE and CC configuration.
    - Working of NPN Bipolar junction Transistor.
    - Numerical on I_C, I_B, I_E, α, and β
4. Numerical on Bias Stabilization.
    - Voltage Divider / Potential Divider Bias Stabilization
    - Emitter Bias stabilization
    - Fixed Bias stabilization

5. Stability Factor
    - Definition and formula of Stability factor.
    - Derive Expression of Stability factor for BJT in common emitter configuration.
6. Field Effect Transistor
    - Comparison between BJT and FET

********** Revision of MID term Syllabus**********

1. Breakdown Mechanism.
    - Comparison between Zener breakdown and Avalanche Breakdown.
2. Clamper
3. V-I characteristics of p-n diode
4. Diode Resistance
    - Dynamic resistance (theory).
    - Static Resistance (theory).
5. Diode Capacitance
    - Transition /Depletion capacitance (theory).
    - Diffusion Capacitance (theory).
6. Rectifier
    - Circuit and working of Half wave rectifier.
    - Circuit and working of Bridge rectifier.
    - Numerical on rectifier (attempt question of tutorial sheet Q1 - Q5,Q5).

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