Principles of Analog Electronics-II

Semester- II	Subject Code: BS21507	Lectures: 40

Objectives:
The syllabus aims in equipping students with, • Characteristic features of semiconductor devices • Elementary electronic circuits and applications • Understand basics of operational amplifiers and its applications

Unit 1: **Bipolar Junction Transistor and Circuits**	No. of Lect.=15
• Bipolar Junction Transistor (BJT) symbol, types, construction, working principle, I-V output Characteristics of CE configuration, parameters and specifications	4
• Applications of Transistor as a switch and as an amplifier.	2
• Transistor amplifier configurations- CB, CC and CE, comparative study of CB, CC, CE.	1
• Voltage, current & power gain of amplifier, voltage divider type biasing circuit, DC load line (CE), Q point and factors affecting stability of Q point.	4
• concept of class A, B and class C amplifiers based on Q point	1
• Single stage RC coupled CE amplifier, expression for gain, frequency response and bandwidth	3

BOS Members:

Ms. Nanda Ranade, (Subject Expert)

Mr. Manoj Kukade, (Subject Expert)

Mr. Prafulla Wadaskar. (Industry Expert)

Ms. Divya Jagannathan, (Alumni)

Ms. Swatee Sarwate , (Chairman)

Ms. Anitha Menon, (Internal Faculty)

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Unit 2: **JFET, MOSFET and IGBT**	No. of Lect.=12
• Symbol, types, construction, working principle, I-V characteristics, Specifications and parameters of : Junction Field Effect Transistor (JFET)	5
• Metal Oxide Semiconductor FET (MOSFET), Enhancement and Depletion mode MOSFET (as switch), comparison of JFET, MOSFET and BJT. Applications: MOSFET as a switch, CMOS as inverter	6
• Working principle of IGBT.	1

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Unit 3: **Operational Amplifier**	No. of Lect.=13
• Symbol, block diagram, Op amp characteristics, basic parameters (ideal and practical) such as input and output impedance, bandwidth, differential and common mode gain, CMRR, slew rate	3
• concept of negative feedback, Concept of virtual ground , Information about IC741, Op amp as inverting and non-inverting amplifier	4
• Applications of Op amp as voltage follower, adder, subtractor, integrator, Differentiator and comparator.	6

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Recommended Text / Reference Books:

- Basic Electronics: Bernard Grob, McGraw Hill Publication, 8thRevised Edition, 2010
- Electronic Principles: Albert Malvino, David J Bates, McGraw Hill 7th Edition, 2012
- Principals of Electronics: V.K. Mehta, S.Chand and Co.
- Basic Electronics: B.L.Theraja, S.Chand and Co.
- Electronic Devices and Circuits: Bolyestad, Tata McGraw Hill.
- Electronic Devices and circuits: A. Motorshed, Prentice Hall of India.

http://www.electronicsforu.com/electronicsforu/circuitarchives/view_article.asp?sno=300&article_type=1&id=260&tt=unhot

http://science.howstuffworks.com/

http://en.wikipedia.org/wiki/Battery_charger

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