

RAYALASEEMA UNIVERSITY, KURNOOL
ANDHRA PRADESH

B.Sc., Electronics Syllabus
w.e.f. 2020-21
(CBCS)



B.O.S OF ELECTRONICS

RAYALASEEMA UNIVERSITY, KURNOOL
SYLLABUS

II B.Sc., DEGREE – SEMESTER – III

Part – II – Electronics

Paper – III – Analog circuits and Communication
(CBCS) w.e.f. 2020-21

Total Lectures: 60 Hours

04 Hours /week

UNIT- I: 12 Hours

Operational Amplifiers (Op-Amp): Introduction, Block diagram – Schematic representation- Pin configuration. Ideal characteristics of Op-Amp, Op-Amp parameters- Offset Voltage, Bias currents, CMRR, Slewrate. Concept of virtual ground Inverting amplifier, Non-inverting amplifier, Differential amplifier, Closed loop frequency response.

UNIT: II: 12 Hours

Op-Amp Applications: Inverter, Adder, Subtractor, Current follower ,Voltage follower , Comparator, Integrator, Differentiator, Sine wave generator, Square wave generator, Triangular wave generator, voltage regulator Schmitt trigger. IC-555 functional block diagram and mention its applications.

UNIT: III: 12Hours

Amplitude Modulation: Need for modulation, modulation-factor, Analysis of AM wave, frequency spectrum, power relations in the AM wave. Generation of AM- Transistor modulator. Detection of AM signals -Diode detector. Limitations of AM.

UNIT –IV: 12 Hours

Frequency Modulation: Theory of FM, Frequency deviation and carrier swing, modulation index, deviation ratio, percent modulation. Mathematical representation of FM, frequency spectrum and bandwidth of FM waves, Generation of FM signals: Reactance modulator. Detection of FM waves: Double tuned discriminator.

UNIT-V: 12 Hours

Block diagram of radio transmission and reception. Block diagram of Super heterodyne Receiver. Advantages of digital over analog communications, Sampling Theorem, TDM, FDM. PAM- Generation & Detection PWM- Generation & Detection, PPM- Generation & Detection.

Text Books:

1. Op-Amp Liner Integrated circuits By Ramesh Gaykwad
2. Linear Integrated Circuits by Roy and Choudary
3. Unified electronics vol II by JP Agarwal and Amit Agarwal
4. Electronics communications – George Kennedy
5. Antennas and Wave Propagation by G.S.N.Raju
6. Principles of communication system by Herbert Taub & e.L. Schilling

Reference books:

1. Micro Electronics. Jacob Millan Mc Graw Hill
2. Electronic Devices and Circuits . Mithal G.K Thana Publicshers
3. Electronic Devices and Circuits. Allan Mottershead
4. Electronic Commutations. Jacob Millan
5. Communication Systems Hayken – 4th Edition
6. Modern digital and analog communication systems . B.P. Lathi

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RAYALASEEMA UNIVERSITY, KURNOOL
B.SC., SECOND YEAR DEGREE, SEMESTER – III
ELECTRONICS PRACTICAL – III
Analog circuits and Communication Lab
LIST OF EXPERIMENTS
(With effect from 2020-21)

Work Load : 30 Hrs.

2 Hrs. /Week

1. OP-Amp Parameters. (Input Offset Voltage /Bias currents)
2. OP-Amp Inverting amplifier & Non-inverting amplifier
3. Op-Amp Voltage follower and Current follower
4. OP-Amp Integrator & Differentiator
5. OP-Amp Adder and Subtractor
6. OP-Amp Wien bridge oscillator.
7. OP-Amp Astable Multivibrator.
8. IC 555 Astable multivibrator.
9. AM Transmitter and Receiver
10. Amplitude modulation and demodulation.
11. AM Transmitter and Receiver.
12. FM Transmitter and Receiver.

Note: Minimum of 6 experiments to be done and recorded.

Lab experiments are to be done on breadboard and simulation software and output values are to be compared and justified for variation.

Scheme of valuation for Practical Examination

External Practical Examination	50 Marks
• Formula and explanation of symbols, Tabular forms With circuit diagram (wherever necessary)	10 Marks
• Observations	10 Marks
• Calculation and graph	10 Marks
• Result	05 Marks
• Viva-voce	05 Marks
• Practical Record	10 Marks
