

# Analog Electronics [AE]

S.E. Sem. III [INST]

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## EVALUATION SYSTEM

	Time	Marks
<b>Theory Exam</b>	3 Hrs.	100
<b>Practical Exam</b>	2 Hrs.	50
<b>Oral Exam</b>	–	–
<b>Term Work</b>	–	25

## SYLLABUS

- 1. Diode**  
Clipper and clamper circuit using diode.
- 2. Bipolar Junction Transistor**  
Transistor biasing, different types of biasing circuit and their analysis, bias stability, stability factor, comparison of biasing circuits, thermister compensation, thermal runaway.
- 3. Transistor Amplifier Analysis and Circuits**  
RC coupled amplifier, H– parameters, necessity of hybrid model and h – parameters, determination of h–parameter from transistor characteristics. Approximate conversion formulae for h– parameter for CE, CB, CC configurations, A.C. equivalent circuits of transistor amplifier using h–parameter. CE, CB, CC transistor amplifier circuits, DC and AC analysis.
- 4. Feedback Amplifier**  
General theory of feedback, types of feedbacks, effect of negative feedback on stability, band width, noise, input resistance, output resistance. Detailed analysis of voltage series, voltage series amplifier, current series amplifier, emitter follower.
- 5. Oscillators**  
RC phase shift, Weinbridge, Hartley Colpitts and Crystal oscillator.
- 6. Field Effect Transistor**  
Junction field effect transistor, V–I characteristics, different configuration of JFET, different parameter of JFET, common source configuration as an amplifier, MOSFET and its classification.
- 7. Low and High Frequency Response of Common Source Amplifier**  
Low and high frequency FET model.

### Reference :

1. Electronics devices & Circuits (*Bell David A.*) Oxford University Press – New Delhi, 2008 (5<sup>th</sup> Edition).
2. Electronics Devices & Circuits (*Boylested Robert L., Nashelsky Louis*) Pearson Education.
3. Electronics Devices & Circuits (*Millman, Halkias*) Tata McGraw Hill, New Delhi.
4. Electronics Devices & Circuits (*Boghart*) PHI, 1995.
5. Electronics Circuits Analyzer & Design (*Neamen Donald A.*) Tata McGraw Hill (2<sup>nd</sup> Edition).
6. Semiconductor Data Manual, BPB Publications.

