

Roll No

EI - 404

B.E. IV Semester

Examination, December 2015

Electronic Circuits

Time : Three Hours

Maximum Marks : 70

- Note:** i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
- ii) All parts of each question are to be attempted at one place.
- iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
- iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

1. a) Differentiate between positive and negative feedback.
- b) Define feedback factor (β) and current gain for a feedback amplifier.
- c) Discuss the stability criterion for feedback amplifier.
- d) Write a short note on :
Voltage feedback and current feedback

[2]

OR

When negative voltage feedback is applied to an amplifier of gain 100, the overall gain falls to 50.

- i) Calculate the fraction of the output voltage feedback.
- ii) If this fraction is maintained, calculate the value of the amplifier gain required if the overall stage gain is to be 75.

Unit - II

- a) What do you understand by negative resistance oscillators?
- b) Discuss the application of Wein bridge oscillator.
- c) Explain the condition of sustained oscillation.
- d) Write a detail note on R-C phase shift oscillators.

OR

With the help of diagram, Explain the operation of a crystal oscillator. Why do these oscillators give highly stable oscillations?

Unit - III

- a) Explain transfer characteristics of differential amplifier.
- b) What will be the effect on bandwidth, if the amplifier are arranged in cascade. Justify your answer.
- c) Write a short note on Chopper amplifier.
- d) Explain principle and working of constant current source circuit.

OR

Explain cascade amplifier with circuit diagram and advantages.

[3]

Unit - IV

4. a) An amplifier is used in inverting feedback configuration with closed loop signal gain of 100 and an input resistor of $10\text{k}\Omega$, What value of feedback resistor should be used?
- b) Define input offset voltage, Bias and Offset currents.
- c) Discuss universal Balancing technique for OP-amplifier with the help of diagram.
- d) Draw a labeled diagram of instrumentation amplifier and drive the expression for voltage gain.

OR

Explain the working of log and antilog amplifier designed using OP-amplifier with the help of diagram.

Unit - V

5. a) What do you mean by active Resonant band pass filter?
- b) For a first order butterworth low pass filter calculate the cut-off frequency if $R = 10\text{k}\Omega$ and $C = 0.001\ \mu\text{f}$.
- c) What is active filter? What are the advantages of it over passive filters.
- d) Draw a prototype for a low pass active filter section of
 - i) First order
 - ii) Second order
 - iii) Third order

OR

Design a second order Butter worth high pass filter with a cut-off frequency of 1 kHz.
