

THIRD SEMESTER DIPLOMA EXAMINATION IN ELECTRICAL
AND ELECTRONICS ENGINEERING — OCTOBER, 2016

ANALOG DEVICES AND CIRCUITS

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. Define peak inverse voltage of a diode.
2. Define bandwidth of an amplifier.
3. State Barkhausen criteria for oscillation.
4. Discuss virtual ground in an op-amp.
5. Identify precision rectification.

(5×2=10)

PART — B

(Maximum marks : 30)

II Answer *any five* of the following questions. Each question carries 6 marks.

1. Draw a fullwave bridge rectifier circuit and its output waveform.
2. Explain a positive clamping circuit with the help of its circuit diagram.
3. Draw, showing details, the frequency response of a single stage common emitter amplifier.
4. Differentiate negative feedback and positive feedback.
5. Draw a tuned collector oscillation. Mention the equation to find its frequency of oscillation.
6. List out a few applications of schmitt trigger.
7. Summarize the characteristics of an ideal op-amp.

(5×6=30)

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

- III (a) Describe a halfwave rectifier with its circuit diagram and necessary wave forms. 8
 (b) Explain the operation of a zener diode voltage regulator. 7

OR

- IV (a) Explain with necessary diagrams the operation of shunt clippers. 8
 (b) Summarize the filtering of rectified signal in a series inductor filter. 7

UNIT — II

- V (a) Explain the operation of a class A power amplifier. 8
 (b) Generalize the need for coupling in an amplifier. List various coupling schemes. 7

OR

- VI (a) Explain the operation of a common base amplifier with diagram. 8
 (b) Explain the operation of a complementary symmetry power amplifier. 7

UNIT — III

- VII (a) Explain the operation of an astable multivibrator using BJT with circuit diagram and waveforms. 8
 (b) Describe the working of a crystal oscillator. 7

OR

- VIII (a) Explain a monostable multivibrator using 555 IC. 8
 (b) Draw and explain the working of a Hartely oscillator. 7

UNIT — IV

- IX (a) Describe adder and subtractor circuits using op-amp. 8
 (b) Demonstrate the operation of an op-amp as an integrator. 7

OR

- X (a) Explain inverting and non inverting operation in op-amp amplifier circuits. 8
 (b) Explain schmitt trigger circuit using op-amp. 7