

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2017

ANALOG DEVICES AND CIRCUITS

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks

1. List three examples of passive components.
2. Outline the concept of feedback.
3. Discuss upper triggering point in a schmitt trigger.
4. List the conditions for sustained oscillation.
5. Identify inverting amplifier.

(5 × 2 = 10)

PART — B

(Maximum marks : 30)

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

1. Explain the operation of a shunt biased negative clipper.
2. Outline the necessity of filtering a rectifier output. Give examples of filters.
3. Define lower cut-off frequency, upper cut-off and bandwidth of an amplifier.
4. Illustrate negative feedback.
5. Draw an astable multivibrator using 555 IC.
6. Demonstrate the operation of an op-amp as a differentiator.
7. Mention the electrical parameters of an 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) Draw a centre-tap fullwave rectifier circuit and explain. 8  
 (b) Describe the use of voltage regulator IC 7805. 7

OR

- IV (a) Explain positive clamping and negative clamping. 8  
 (b) Compare the different types of rectifiers based on ripple factor, rectification efficiency and no. of diodes needed. 7

## UNIT — II

- V (a) Draw and explain the frequency response of  
 (a) transformer coupled amplifier (b) direct coupled amplifier. 8  
 (b) Explain : (a) class B amplifier (b) class C amplifier. 7

OR

- VI (a) Explain the operation of a single stage common emitter amplifier with diagrams. 8  
 (b) Explain the operation of class B push-pull power amplifier. 7

## UNIT — III

- VII (a) Explain the operation of an RC phase shift oscillator. 8  
 (b) Draw a schmitt trigger circuit and explain. 7

OR

- VIII (a) Explain the operation of a monostable multivibrator using BJT with circuit diagram and waveforms. 8  
 (b) Draw and explain the working of a Colpitt's oscillator. 7

## UNIT — IV

- IX (a) Describe zero crossing detector and level detector using op-amp. 8  
 (b) Explain a halfwave precision rectifier circuit. 7

OR

- X (a) Explain a typical op-amp stages with the help of its block diagram. 8  
 (b) Explain op-amp as a comparator. 7