

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER - 2022**

ANALOG CIRCUITS FOR INSTRUMENTATION

[Maximum marks: 75]

(Time: 3 Hours)

PART A

I. Answer all questions in one word or one sentence. Each question carries one mark.

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	Draw the symbol of PNP transistor.	M1.01	U
2	Voltage gain of emitter follower configuration is	M1.07	R
3	List the name of two sinusoidal oscillators.	M2.03	R
4	The output of astable multivibrator iswave.	M2.04	R
5	Open loop voltage gain of an ideal op amp is	M3.02	R
6	Draw an op-amp voltage follower circuit.	M3.04	U
7	The output wave form of Schmitt trigger is	M4.02	U
8	Draw zero crossing detector circuit.	M4.02	U
9	Define input bias current in op-amp	M3.03	U

PART B

II. Answer any eight questions from the following. Each question carries three marks

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	Draw the circuit of Common base configuration.	M1.02	U
2	Illustrate DC load line	M1.05	U
3	Discuss the essential components required for an oscillator.	M2.02	U
4	Draw the circuit of transistor crystal oscillator.	M2.03	U
5	Draw the circuit of current to voltage converter.	M3.04	U
6	Derive the expression for gain of inverting amplifier	M3.05	A
7	Draw and explain op-amp clipper circuit	M4.03	U
8	Draw the circuit of half wave precision rectifier.	M4.05	U

9	Explain Base current amplification factor β .	M1.02	U
10	Describe Barkhausen criteria for oscillators	M2.02	U

PART C

Answer all questions. Each question carries seven marks

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	Explain the working of single stage C.E amplifier circuit with potential divider biasing.	M1.04	U
OR			
IV	Explain frequency response and bandwidth of RC coupled amplifier	M1.03	U
V	Derive an expression for the gain of positive voltage feedback amplifier.	M2.01	U
OR			
VI	With a neat diagram, explain the action of Hartley oscillators.	M2.03	U
VII	Draw a three input summing amplifier circuit and also obtain the expression for its output voltage.	M3.04	A
OR			
VIII	With a neat diagram, explain op-amp integrator and differentiator circuits.	M3.05	A
IX	With neat diagram explain the working of Schmitt trigger circuit.	M4.02	U
OR			
X	Explain the operation of peak detector with circuit diagram	M4.01	U
XI	With a neat sketch explain about instrumentation amplifier. List its two applications.	M3.04	U
OR			
XII	Explain the followings: (1) Common mode rejection ratio (2) Slew rate (3) Gain bandwidth product	M3.03	U
XIII	Explain the working of RC phase shift oscillator with neat circuit diagram	M2.03	U
OR			
XIV	Discuss the working of astable multivibrator with neat diagram	M2.04	U
