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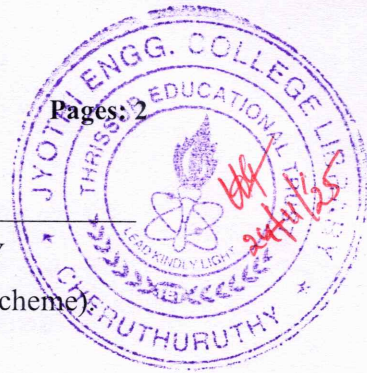
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Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

B.Tech Degree S3 (R) (FT/WP) Examination November 2025 (2024 Scheme)



**Course Code: PBEET304**

**Course Name: ANALOG ELECTRONICS**

Max. Marks: 40

Duration: 2 hours 30 minutes

**PART A**

*(Answer all questions. Each question carries 2 marks)*

		CO	Marks
1	With neat diagrams explain DC load lines in transistor. What is the significance of Q point?	1	(2)
2	Explain the role of coupling capacitors and bypass capacitor in CE amplifier.	1	(2)
3	Write short notes on Complementary MOSFET.	1	(2)
4	Explain the Barkhausen Criteria of oscillations.	2	(2)
5	Draw the circuit diagram of a differential amplifier using Op-Amp and write the expression for output voltage.	3	(2)
6	Draw the circuit diagram and waveform of a voltage level detector.	3	(2)
7	What is Butterworth filter? Mention its special characteristics.	4	(2)
8	Explain the effect of slew rate on waveform generation.	3	(2)

**PART B**

*(Answer any one full question from each module, each question carries 6 marks)*

**Module -1**



- 9 A CE amplifier has the h-parameters given by  $h_{ie} = 1000\Omega$ ,  $h_{re} = 2 \times 10^{-4}$ ,  $h_{fe} = 50$ ,  $h_{oe} = 25 \mu\text{S}$ . If both the load and source resistances are  $1\text{k}\Omega$ , determine the (a) Input impedance, (b) current gain and (c) voltage gain 1 (6)
- 10 Explain the operation of class B power amplifier. Draw the load line and derive the expression for maximum efficiency. 1 (6)

#### Module -2

- 11 Draw the frequency response characteristics of RC coupled amplifier and explain why gain falls at very high frequencies & very low frequencies. 1 (6)
- 12 Draw and explain a series operated crystal oscillator and shunt excited crystal oscillator. 2 (6)

#### Module -3

- 13 With neat circuit diagram, explain the operation of an Instrumentation amplifier and derive an expression for its voltage gain. 3 (6)
- 14 Explain the practical integrator circuit with relevant diagrams. 3 (6)

#### Module -4

- 15 Draw and explain three-pole Butterworth lowpass filter and write the expression for cutoff frequency. 3 (6)
- 16 With the help of internal functional diagram, explain the working of astable multivibrator using 555 timer. 3 (6)

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