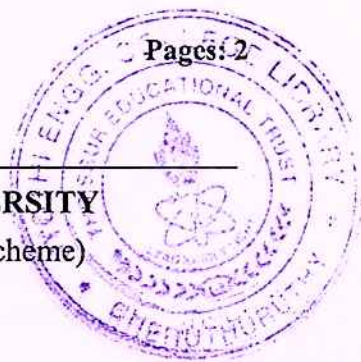


Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S3 (S,FE) Examinations June 2026 (2019 Scheme)



Course Code: RAT203

Course Name: ELECTRONIC DEVICES AND CIRCUITS

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions. Each question carries 3 marks

Marks

- 1 Design a circuit to clip an input sinusoidal waveform of $10V_{PP}$ at $-3V$ level. (3)
- 2 Explain how bias compensation is done using diode. (3)
- 3 Derive the relationship between amplification factor, a.c. drain resistance and trans conductance of JFET. (3)
- 4 Compare JFET and MOSFET. (3)
- 5 How cross over distortion can be avoided using class AB amplifier. (3)
- 6 Differentiate between positive and negative feedbacks. (3)
- 7 Draw the electrical equivalent circuit of a crystal. (3)
- 8 List the properties of ideal op-amps. (3)
- 9 Illustrate an integrator circuit using op-amp. (3)
- 10 Explain the effect of slew rate on waveform generation. (3)

PART B

Answer any one full question from each module. Each question carries 14 marks

Module 1

- 11 Define the operating point and identify the factors affecting the operating point stability. Also derive the general expression for stability factor. (14)
- 12 With a neat diagram, explain the working of a CE amplifier. Also explain the role of coupling and bypass capacitors in a common emitter amplifier. (14)

Module 2

- 13 Analyse the working of an FET as a Voltage Controlled Resistor and also as a switch. (14)
- 14 How an N-channel JFET is constructed. Explain how pinch off occurs in JFET. Sketch its characteristics. (14)

Module 3

- 15 Show that the efficiency of a class B power amplifier is higher than that of a Class A amplifier. (14)
- 16 Draw a negative voltage shunt feedback topology. Derive the Gain, input impedance and output impedance. (14)

Module 4

- 17 Draw the circuit of a Wien bridge oscillator and derive the expression for the frequency of oscillation. (14)
- 18 Draw the block diagram of an op-amp and explain each block with relevant circuit diagrams in detail. (14)

Module 5

- 19 Examine the working of an astable multivibrator using IC 555 with the help of an internal functional diagram. (14)
- 20 Draw and explain the operation of a triangular waveform generator using op-amp. Derive the expression for frequency. (14)
