

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019

Course Code: EE203

Course Name: ANALOG ELECTRONICS CIRCUITS

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks.

Marks

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| 1 | Design a clamper circuit to create a dc offset of -3V to a sine wave input of amplitude 5V also draw the output waveform | (5) |
| 2 | Draw the frequency response of CE amplifier and explain why gain falls at very high frequencies & very low frequencies. | (5) |
| 3 | What is the concept of negative feedback in amplifiers? List out the advantages of negative feedback in amplifiers. | (5) |
| 4 | Show that the closed loop gain of opamp amplifier can be made independent of its open loop gain. | (5) |
| 5 | Draw the circuit diagram of a Schmitt trigger. Why it is called as a regenerative comparator? | (5) |
| 6 | Explain with neat circuit diagram, the operation of Logarithmic amplifier | (5) |
| 7 | How triangular wave can be generated using opamps? | (5) |
| 8 | Determine the output frequency of the 555 astable multivibrator for $C=0.01\mu\text{F}$, $R_A=2\text{k}\Omega$ & $R_B=200\text{k}\Omega$. | (5) |

PART B

Answer any two full questions, each carries 10 marks.

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| 9 | Design a Voltage divider circuit for a silicon transistor with $h_{fe}=100$ and $S \leq 8$. The desired Q-point is $V_{CE}=5\text{V}$, $I_C=1\text{mA}$. Assume $V_{CC}=10\text{V}$ and $R_E=1\text{k}\Omega$ | (10) |
| 10 | Explain using neat sketches, the operation & characteristics of a n-channel JFET. | (10) |
| 11 | a) Illustrate with neat circuit diagram how the change in base emitter voltage is compensated in transistor amplifiers | (5) |
| | b) Draw the Hybrid- π model of BJT and explain significance of each parameters. | (5) |

PART C

Answer any two full questions, each carries 10 marks.

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| 12 | Show that the maximum conversion efficiency of class A power amplifier can be increased using transformer coupling. | (10) |
| 13 | Draw the neat circuit diagram of RC phase shift oscillator and derive its | (10) |

frequency of oscillations

- 14 a) List out the advantages and disadvantages of a transformer coupled multistage amplifier. (5)
- b) How CMRR and Slew rate influence the performance of an opamp? (5)

PART D

Answer any twofull questions, each carries 10 marks.

- 15 With neat circuit diagram, explain the operation of an Instrumentation amplifier and derive an expression for its voltage gain. What are its advantages? (10)
- 16 Draw the internal circuit diagram of 555 IC and explain its operation as astable multivibrator. (10)
- 17 a) Explain the working of half wave precision rectifier using neat circuit diagram (5)
- b) With neat circuit diagram explain the operation of Wien bridge oscillator using opamp. (5)
