

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**THIRD SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019**

**Course Code: EC209**

**Course Name: ANALOG ELECTRONICS (MC)**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 5marks.*

- |   |   | Marks |
|---|---|-------|
| 1 | Derive an expression to obtain the rectification efficiency of half wave rectifier. | (5)   |
| 2 | What is meant by thermal runaway?   | (5)   |
| 3 | List the properties of negative feedback.   | (5)   |
| 4 | Write a short note on Darlington pair.  | (5)   |
| 5 | (a) Classify different types of oscillators?  | (5)   |
|   | (b) Differentiate between amplifiers and oscillators.                               |       |
| 6 | Elucidate the working of bistable multivibrator using BJT.                          | (5)   |
| 7 | Give a brief idea about the role of voltage controlled oscillators in PLL.          | (5)   |
| 8 | With a neat circuit diagram explain the working of UJT oscillator.                  | (5)   |

**PART B**

*Answer any three questions, each carries 10 marks.*

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|----|--|------|
| 9  | a) With a neat sketch explain the working of positive unbiased slicer.   | (5)  |
|    | b) Derive the ripple factor of half wave rectifier.  | (5)  |
| 10 | Draw the h-parameter model of a CE amplifier and derive the expression for voltage gain, current gain, input and output impedance. | (10) |
| 11 | a) What are the different techniques used for biasing JFET?  | (2)  |
|    | b) Why FET is called voltage controlled device?  | (4)  |
|    | c) Draw & explain the drain and transfer characteristics of JFET.  | (4)  |
| 12 | Explain the working of class B push pull power amplifier with a neat circuit diagram.  | (10) |
| 13 | a) Derive an expression to obtain the stability factor of BJT.   | (7)  |
|    | b) Explain the piecewise linear model of diode.  | (3)  |

**PART C**

*Answer any two questions, each carries 15 marks.*

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|----|---|------|
| 14 | a) With relevant circuit diagram and wave form explain the working of monostable multivibrator using IC555 timer. | (10) |
|    | b) How can we obtain a frequency multiplier using PLL?  | (5)  |

- 15 a) Draw the functional diagram of 555 timers IC. Explain astable mode of operation. (10)
- b) Give a brief idea about SMPS. (5)
- 16 a) Derive the frequency oscillation of RC phase shift oscillator. (10)
- b) How can we generate an oscillation using RC phase shift oscillator? (5)
- 17 a) With circuit diagram and wave form explain the working of an astable multivibrator using BJT. (8)
- b) Draw the circuit diagram and explain working of Hartley oscillator. (7)

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