

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**THIRD SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018**

**Course Code: CS207**

**Course Name: ELECTRONIC DEVICES AND CIRCUITS**

Max. Marks: 100

Duration: 3 Hours

**PART A**

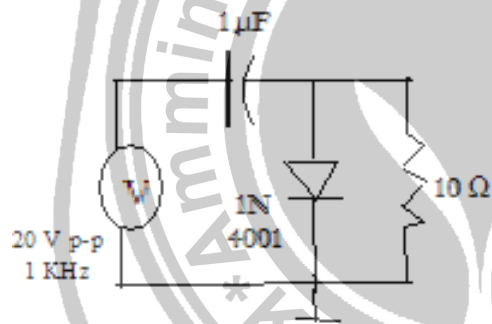
*Answer all questions, each carries 3 marks.*

- |   |  | Marks |
|---|--|-------|
| 1 | Draw the circuit of a RC differentiator and write its design equation. Also draw its output waveform for a 1KHz square wave input. | (3)   |
| 2 | Compare the features of BJT with FET.  | (3)   |
| 3 | What is line regulation and load regulation? Explain with equation for percentage of regulation                                    | (3)   |
| 4 | Draw a sweep circuit with transistor acting as a switch.   | (3)   |

**PART B**

*Answer any two full questions, each carries 9 marks.*

- a) (6)



What is the function of above circuit? ,

What will happen:

- (i) if polarity of diode is changed.
  - (ii) if a reference voltage of (-3 volts) is connected in series with the diode.
  - (iii) Plot output wave forms in all cases.
- b) Explain working of a voltage Tripler with the help of relevant circuit (3)
- 6 a) Give the necessity of Current fold back and current limit protection. Explain with circuit and graphs. (9)
- 7 a) Draw the structure of depletion mode MOSFET and explain its operation with characteristics. (7)
- b) Distinguish between enhancement and depletion mode MOSFETs (2)

**PART C**

*Answer all questions, each carries 3 marks.*

- 8 Give the importance of biasing in transistors? Mention significance of (3)

- operating point.
- 9 What is the effect of cascading in gain and bandwidth of Amplifier? (3)
- 10 What are the conditions for getting sustained oscillations? (3)
- 11 Mention the difference between positive and negative feedback? Give one application of each. (3)

#### PART D

*Answer any two full questions, each carries 9 marks.*

- 12 Voltage divider biasing is most widely used one in amplifiers. Why? Explain with the help of required equations and circuit. (9)
- 13 a) Design a Hartley oscillator to generate a frequency of 150KHz. (5)
- b) Draw the circuit of RC coupled amplifier and explain the function of each component. (4)
- 14 With circuit diagram and design equations explain the working of a monostable multivibrator (9)

#### PART E

*Answer any four full questions, each carries 10 marks.*

- 15 a) What are the features of ideal op-amp? (2)
- b) With circuits and equations show that an op-amp can act as integrator, differentiator, adder, subtractor. (8)
- 16 a) Define: (1) Slew rate, (2) CMRR, (3) offset voltage (4) Offset current (4\*2=8)
- b) What are their practical values for parameters of op-amp IC 741 (2)
- 17 With circuit, relevant equations and waveforms explain the working of a Schmit trigger (10)
- 18 a) Describe the working of a binary weighted D/A Converter, with example.. (3)
- b) Draw the circuit and frequency response of active lowpass and high pass filters. Also draw the circuit of a second order active low pass filter (7)
- 19 a) Explain the working of any one type of ADC. (8)
- b) What are their important specifications? (2)
- 20 a) With functional block diagram, explain the working of 555 Timer IC. (4)
- b) Write design equations and pin out of 555 TIMER IC working as astable multivibrator to generate a wave form of 1KHz., with 50% duty cycle. (6)

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