

Enrollment No: \_\_\_\_\_

Exam Seat No: \_\_\_\_\_

# C. U. SHAH UNIVERSITY

## Summer Examination-2020

Subject Name : Analog Electronics Circuits

Subject Code : 4TE03AEC1

Branch: B.Tech (Electrical)

Semester : 3

Date : 27/02/2020

Time : 02:30 To 05:30

Marks : 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
  - (2) Instructions written on main answer book are strictly to be obeyed.
  - (3) Draw neat diagrams and figures (if necessary) at right places.
  - (4) Assume suitable data if needed.
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Q-1 Attempt the following questions: (14)

- a) The rectifier converts \_\_\_\_ supply into \_\_\_\_ supply . (a.c., d.c.)
- b) The transistor can work as an \_\_\_\_ of electrical signal. (Rectifier, Amplifier, Converter)
- c) State the name of various types of rectifier circuits.
- d) The transistor can work in common base , common emitter and common collector configuration for the amplification of signal. (True/False)
- e) The output voltage of a 7805 regulator IC is 5 Volt. (True/False)
- f) Draw the symbol of transistor and Zener diode.
- g) The oscillator circuits can be formed with the help of \_\_\_\_\_. (Diode, Transistor, None, All)
- h) The operational amplifier has two configuration : Inverting and Non Inverting . (True/False)
- i) The operation of transistor in push pull configuration is continuous for the \_\_\_\_ cycle. (Half, Full, Quarter, Can't Say)
- j) The ratio of current  $I_c/I_b$  is called the current gain  $\alpha$ . (True/False)
- k) The 7905 is a 3 pin IC with negative output voltage. (True/False)
- l) Transistor is a \_\_\_\_ control device. (Current, Voltage, Both, None)
- m) State the full form of FET.
- n) The feedback in the oscillator circuit must be \_\_\_\_ (Positive, Negative, Neutral, Not required)

Attempt any four questions from Q-2 to Q-8

Q-2 Attempt all questions (14)

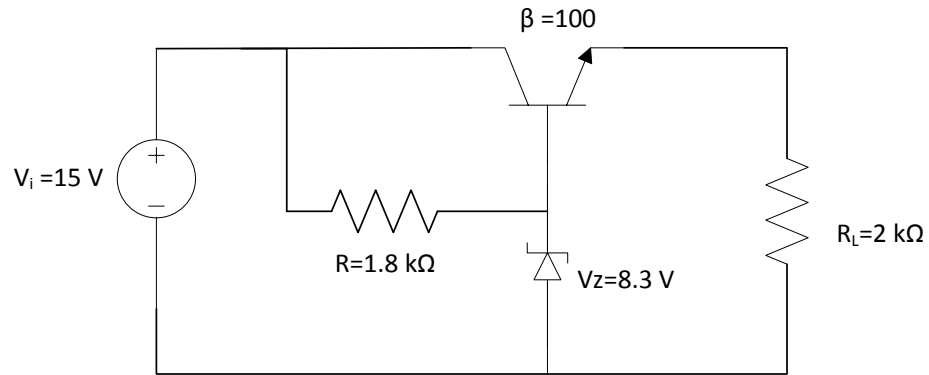
- (a) Draw the circuit diagram and input output voltage of a half wave rectifier with resistive load. Explain its operation in brief. (7)
- (b) Draw the circuit diagram for suitable configuration of full wave rectifier (7)



circuits. Explain its operation.

- Q-3 Attempt all questions (14)
- (a) Draw the symbol of NPN and PNP transistor. Derive the expression of its current gain with usual notations. (7)
- (b) Draw common emitter, common base and common collector configuration of a transistor. For high current which configuration is used ? Why ? (7)
- Q-4 Attempt all questions (14)
- (a) What is filter? State the name of various type of filter. Explain any of it. (7)
- (b) State the name of various classes of amplifier configuration. Explain any one of it. (7)
- Q-5 Attempt all questions (14)
- (a) State the name of various type of oscillator circuits. Explain any one of it. (7)
- (b) Why voltage regulation is required for electronics circuits? What kind of devices can be used for voltage regulation. Explain any one of it. (7)
- Q-6 Attempt all questions (14)
- (a) What is bias? Why is it necessary for diode, transistor and FET circuit? State the name of various type of biasing circuit used for transistors. (7)
- (b) What is cascading amplifiers? Why is it required? Draw circuit diagram of two stage cascading amplifiers and explain its operation. (7)
- Q-7 Attempt all questions (14)
- (a) State the name of various pin of 741 Opamp IC . Draw the IC with Pin Numbers. (7)
- (b) Explain the current mirror bias circuit arrangement for a transistor. (7)
- Q-8 Attempt all questions (14)
- (a) Calculate the regulated output voltage across the load resistance and zener current. What will be the value of output voltage if gain is changed to 150 and load resistance is doubled? (7)





(b) A half wave rectifier circuit is supplied from a  $100\text{ V}$ ,  $50\text{ Hz}$  supply with a step down ratio of  $2:1$  to a resistive load of a  $14.1\text{ k}\Omega$ . The diode forward resistance and transformer secondary resistance is *negligible*. (7)

Calculate

- i) Maximum value of load current
- ii) Average value of load current
- iii) RMS value of load current
- iv) D. C. value of output voltage

