

**C. U. SHAH UNIVERSITY**  
**Winter Examination-2020**

Subject Name : Analog Electronics Circuits

Subject Code : 4TE03AEC1

Branch: B.Tech (Electrical)

Semester: 3

Date: 09/03/2021

Time: 11:00 To 02:00

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 doping technique and semiconductor material is responsible for successful development of transistors and diodes.  
The above statement is (a) True (b) False
- b) The diode is \_\_\_\_\_ terminal device where as transistor is \_\_\_\_\_ terminal device. (One , two , three , four)
- c) The transistor is operated by \_\_\_\_\_ bias .  
(a) a.c. (b) d.c. (c) both (d) none
- d) Select the appropriate application of transistor from the following  
(a) Amplification (b) Rectification (c) Voltage regulation (d) All of the above
- e) The best biasing method for a transistor is  
(a) Self bias (b) diode bias (c) Voltage divider bias (d) None
- f) The two diode connected back to back can work as an amplifier.  
The above statement is (a) True (b) False
- g) Select the best configuration of rectification from the given choice  
(a) Half wave (b) Centre tapped full wave (c) Bridge Rectifier (d) Any of the above
- h) The channel formation of FET is \_\_\_\_\_ as the gate bias is increased.  
(a) Increase (b) Decrease (c) Remains unaffected (d) Can't Say
- i) The class B amplifier output waveform is having \_\_\_\_\_ cycle in one time period.  
(a) Full (b) Half (c) Quarter (d) Less than a quarter
- j) The bypass capacitor is useful for \_\_\_\_\_ purpose in transistor.  
(a) For blocking of d.c.signal (b) For passing of d.c. signal  
(c) For blocking of a.c. signal (d) For passing of a.c.signal.
- k) The value of  $V_{be}$  voltage for a silicon type transistor is \_\_\_\_\_.  
(a) 0.7 Volt (b) 0.3 V (c) 1 V (d) 0 V
- l) The output voltage for a 7805 IC shall be  
(a) +5 V (b) -5V (c) Depends upon input Voltage (d) Variable as per



the load condition.

- m) The small ring on a diode cap represents \_\_\_\_\_.  
(a) Anode (b) Cathode (c) Gate (d) Drain
- n) The waveform of diode/ transistor operated device can be observed on \_\_\_\_\_.  
(a) CRO (b) Function meter (c) Multimeter (d) Any of above

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

- Q-2 Attempt all questions (14)**
- (A) Draw and explain the output characteristics for a CE configuration of transistors. (7)
- (B) Derive the relation between the gain  $\alpha$  and  $\beta$  for transistor configuration. (7)
- Q-3 Attempt all questions (14)**
- (A) Draw the symbol of the following devices : (7)
- (a) Diode (b) Zener Diode (c) Transistor (4) FET (5) MOSFET
- (B) Draw the I-V Characteristics of ordinary diode and zener diode. State what is the difference between two characteristics? (7)
- Q-4 Attempt all questions (14)**
- (A) Draw the half wave rectifier circuit with resistor as load . Draw also the input , output wave form of voltage and current. (7)
- (B) Draw the full wave rectifier with centre tapped transformer and resistive load. Draw also the input , output wave form of voltage and current. (7)
- Q-5 Attempt all questions (14)**
- (A) Explain how the polarity and forward , reverse resistance of diode and zener diode is measured. Is it possible to identify anode and kethod of LED with observation only? (7)
- (B) Explain how the Emmiter , base and collector terminals can be identified with the help of a multimeter. (7)
- Q-6 Attempt all questions (14)**
- (A) What is the function of a rectifier and what is the function of an amplifier? Is it possible that same device can be useful for both the function ? Justify. (7)
- (B) What is the importance of ripple factor and transformer utilization factor for a rectifier circuit. State the value of ripple factor and TUF for different arrangements of single phase rectifier circuits. (7)
- Q-7 Attempt all questions (14)**
- (A) What is the meaning of biasing a transistor ? What is the meaning of biasing a diode? (7)



(B) Classify different types of biasing circuit for transistors. Explain any one of them. (7)

**Q-8** **Attempt all questions** (14)

(A) What is the function of coupling capacitor in multi stage amplifiers. (7)

(B) Explain the channel formation phenomena for Field effect transistors. (7)

