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| ADAMAS UNIVERSITY<br>PURSUE EXCELLENCE | **ADAMAS UNIVERSITY**<br>**END-SEMESTER EXAMINATION: JANUARY 2021**<br>(Academic Session: 2020 – 21) | | |
| **Name of the Program:**<br>(Example: B. Sc./BBA/MA/B.Tech.) | B. Tech ECE | **Semester:**<br>(I/III/ V/ VII/IX) | III |
| **Paper Title :** | Analog Electronic Circuits | **Paper Code:** | EEC42103 |
| **Maximum Marks:** | 40 | **Time duration:** | 3 hours |
| **Total No of questions:** | **08** | **Total No of Pages:** | 02 |
| *(Any other information for the student may be mentioned here)* | | | |

***Answer all the Groups***

**Group A**

Answer all the questions of the following $5 \times 1 = 5$

1.

**a)** What is piezoelectric crystal?

b) What is operating point?

c) What is TUF of a rectifier?

d) Draw the small signal model of a FET.

**e)** A transistor having $\alpha$ =0.98 and $V_{BE}$ = 0.7V, is shown in the figure 1. Find out the value of the collector current.

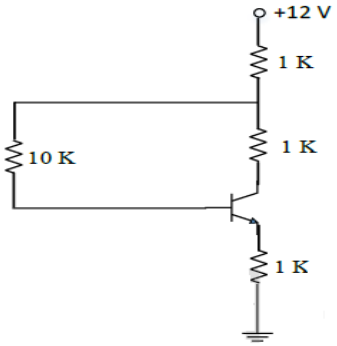


Figure 1

**GROUP –B**

Answer *any three* of the following $3 \times 5 = 15$

**2.** What is negative feedback? Write the effects of negative feedback on an amplifier. [1+4=5]

**3.** What is output offset voltage? Draw the Astable multivibrator circuit using 555 timer and explain it. [1+4=5]

**4.** What is peak inverse voltage (PIV)? Draw the full wave bridge rectifier circuit and explain it with input and output wave form. [1+4=5]

**5.** Draw small signal equivalent circuit of a FET and define transconductance, drain resistance and amplification factor. [1+4=5]

## GROUP –C

Answer *any two* of the following $2 \times 10 = 20$

**6.** What is thermal runway? A Ge transistor with β=49 has the self-biasing arrangements. If $V_{cc}$=12V, $R_1$=2KΩ, $R_2$=500Ω, $R_L$=2KΩ and $V_{BE}$=0.2V, find the stability factors S, $S'$. What is Zener breakdown? Explain clipper circuit with diagram. [2+4+2+2=10]

**7.** What is positive feedback? Explain effect of negative feedback on bandwidth of an amplifier in details. Explain Hartley oscillator with proper circuit diagram. [1+5+4=10]

**8.** What is virtual ground? Draw the circuit diagram of differential amplifier and find out the input output relation. Calculate the value of output volage for a non-inverting amplifier if Rf=10K, R=1.5K and amplitude of input signal is 5 mv (p-p). [2+5+3=10]

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