Roll No.

Total No. of Pages: 3

BT-2/JX

8279

Elements of Electronics Engg. (2008 onwards)

Paper: EL-101E

Time: Three Hours]

[Maximum Marks: 75

Note: - Attempt FIVE questions in all. Question No.1 is compulsory; attempt FOUR questions by selecting ONE from each Unit.

1. Compulsory Question.

Attempt the following:

- (i) What are intrinsic and extrinsic semi-conductors? Why semiconductors are said to be materials of negative temperature coefficient of Resistance?
- (ii) What are advantages of negative feedback in CE-Amplifier?
- (iii) Why Q-point is chosen at the mid of load line in CE-transistor amplifier?
- (iv) Why MOSFET have much higher input resistance compared to JFET? Justify your answer.
- (v) Why a non-invert Op-Amp circuit has very high input resistance compared to inverting Op-Amp circuit?

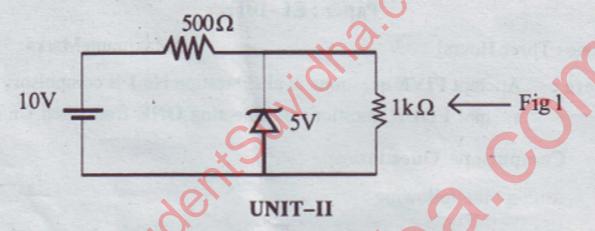
UNIT-I

- (a) Discuss the working of capacitance filter connected at the output of a full wave rectifier.
 - (b) Discuss the advantages of Bridge rectifier over the center tapped full wave rectifier.

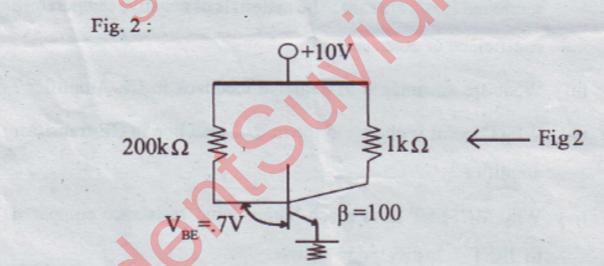
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- (a) Discuss the working of series and shunt clipping circuit using diodes.
 - (b) Calculate the power dissipation across the Zener diode in the circuit given below (Fig. 1)



4. (a) Calculate the Q-point of the transistor circuit given below in



- (b) Draw a voltage divider biasing based transistor amplifier circuit and explain its superiority over emitter feedback transistor bias circuit.
- 5. (a) Draw a RC coupled osillator circuit and explain its working. 7
 - (b) Compare the three configurations of BJT Amplifier in terms of R, R, A, and A. 8

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UNIT-III

6. (a)	Draw a OPAMP based inverting amplifier circuit and exp	plain
	how would you obtain its Input resistance and voltage gain.	How
	would you obtain unity gain inverter circuit?	8

(b) Explain the working of OPAMP based differentiator circuit and outline its applications.

7. (a) Outline the characteristics of an Ideal OPAMP. What do you understand about CMRR and Slew rate of OPAMP? 8

(b) What are the limitations of open loop configuration of an OPAMP? Justify the statement that in a feedback based OPAMP circuit, the inverting and noninverting terminals track each other.

UNIT-IV

- 8. (a) Discuss the advantages of FET over BJT.
 - (b) Discuss the static and transfer characteristics of enhance cum depletion MOSFET.
- (a) Outline the applications of SCR and discuss its applications with respect to TRIAC.
 - (b) When a sensor output is connected to a multistage cascade amplifier, explain why the first stage is preferred with JFET?
 - (c) What is difference between Sensor and a Transducer? 5