

Seat No	
---------	--

S.Y.B.Tech. (Semester - III) (CBCS)

Examination, May- 2025

Electronics and Telecommunication Engineering

Electronic Circuit Design - I

Sub. Code : 73247/77809

Day and Date : Wednesday, 07/05/2025

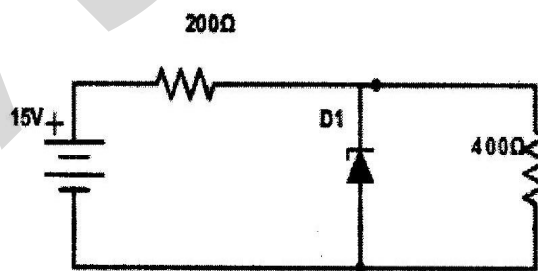
Total Marks :70

Time : 10.30 a.m. to 1.00 p.m.

- Instructions :
- 1) All Questions are Compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Assume suitable data.

Q. 1 Choose the correct option and rewrite the statement . (14)

1. In a shunt capacitor filter, the mechanism that helps the removal of ripples is...
 - A) The current passing through the capacitor
 - B) The property of capacitor to store electrical energy
 - C) The voltage variations produced by shunting the capacitor
 - D) Uniform charge flow through the rectifier
2. Find the power rating of the diode in the given circuit. The breakdown voltage of the diode is 5V.



- A) 200 mW
- B) 125 mW
- C) 250 mW
- D) 300 mW

3. A clamper circuit.....
 1. Adds or subtracts a dc voltage to or from a waveform.
 2. Does not change the shape of the waveform.

Q.3) Solve any two. (14)

- Derive gain equation for High pass filter. Also design high pass filter with cut-off frequency 5 kHz and draw the frequency response.
- Explain with diagram working of emitter follower.
- Describe Clamping circuit theorem, Voltage Doubler circuit.

Q.4) Solve any two. (14)

- Derive A_v , A_i , R_i , R_o , A_{v_s} , A_{i_s} for general amplifier configuration using h-parameter model.
- Derive expression for lower 3dB frequency of CE amplifier by considering coupling capacitor $[C_c]$. Calculate C_c for $R_1 = 12 \text{ k}\Omega$, $R_2 = 6.8 \text{ k}\Omega$, $h_{ie} = 4.5 \text{ k}\Omega$, $h_{fe} = 320$, $R_s = 400 \Omega$.
- Draw and explain high frequency model for transistor. Derive expression for f_B and f_T . Consider RL.

Q.5) Solve any two. (14)

- Design collector to base bias circuit $V_{cc} = 12\text{V}$, $h_{fe} = 100$, $I_c = 50 \text{ mA}$, $V_{ce} = 6\text{V}$, $V_{be} = 0.7\text{V}$.
- Design single stage R-C coupled CE amplifier $V_{cc} = 12 \text{ V}$, $h_{fe} = 150$, $A_V = 60$, $h_{ie} = 2.2 \text{ k}\Omega$, frequency range 20Hz to 20kHz, $S = 10$.
- Derive the expression for lower cut off frequency of R-C coupled amplifier considering square wave.