Seat No.

Total No. of Pages : 3

MAR_APR 2026 SUMMER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Electroic Circuit Design - I

Sub. Code: 73247/77809

Day and Date: Saturday ,16-05-2026 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions:
1. **All questions are compulsory**
2. **Assume suitable data wherever necessary and mention it boldly**
3. **Draw neat labelled diagrams wherever necessary**
4. **Figures to the right indicate full marks**
5. **Use of Scientific calculator is allowed**

Special Inst.: **Asssume Suitable data if necessary**

Q1) Solve following MCQ. **[14]**

i. A silicon diode measures a low value of resistance with the meter leads in both positions. The trouble, if any, is
- A. the diode is open.
- B. the diode is shorted to ground.
- C. the diode is internally shorted.
- D. the diode is working correctly.

ii. Rectification Efficiency of HWR is____%
- A. 40
- B. 25
- C. 100
- D. None of Above

iii. The wave shaping elements are _____
- A. Resistor
- B. Capacitor
- C. Diode
- D. All of the above

iv. In simple transistor shunt regulator if Zener voltage is 7Volt, VBE=0.7Volt then output voltage (Vo) is_____Volt
- A. 7.7
- B. 8
- C. 8.3
- D. 7

v. In short circuit protection circuit for Voltage regulator the additional transistor Q2 is connected to_____
- A. Divert the base current of series pass transistor

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B. Increase the base current of series pass transistor
C. Improve the Regulation
D. None of Above

vi. An ideal power supply should have voltage regulation ……

A. More than 50%
B. Between 10 to 15%
C. Less than 1 %
D. Almost 100%

vii. Fill in the blanks:A common-emitter amplifier has _____ voltage gain, _____ current gain, _____ power gain, and _____ input impedance

A. high, high, high, low
B. high, low, high, low
C. high, high, high, high
D. low, low, low, high

Q2) Solve any TWO of The fololowing **[14]**

a. Explain In detail Voltage Doubler. **[7]**

b. Design Transistorized shunt Voltage Regulator for following specifications. Vo=5.8V, Io= 500mA, Vin= 20V, hfe= 40. (Assume Suitable data if necessary) **[7]**

c. Draw & Explain Biased Negative Clippers along with Waveform & circuit diagram. **[7]**

Q3) Solve any TWO of the following **[14]**

a. Explain Full wave rectifier (Centre Tap) with neat diagram and waveform. Derive expression for dc output current, dc output voltage, rms current, rms voltage. **[7]**

b. Write Short note on significance of Pre-regulator circuit along with circuit diagram. **[7]**

c. Design an unregulated power supply using C filter to give output 10V at load current 60 mA. Assume ripple factor r= 4% **[7]**

Q4) Solve any TWO of the following **[14]**

a. Design Fixed biased circuit Assume VCE = 12V, RB = 300 kW and RC = 5kW. gain=80. **[7]**

b. Find Av, Ai, Ri, Ro, Avg, Aig for following parameters. Rg=1000Ω, RL= 2KΩ, **[7]**

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hie=1000 Ω, hre=5x10-4, hoe=4X10-6 ʊ, hfe=200.

c. Design single stage R-C coupled CE amplifier Vcc = 15V, hfe = 180, AV = 90, hie = 3.3K Ω, frequency range 20Hz to 20 kHz, S = 10. **[7]**

Q5) Solve any TWO of the following **[14]**

a. Design collector to base bias circuit for following specifications Vcc = 15V, hfe = 120, Ic=80mA , Vce=6V, Vbe=0.7V. **[7]**

b. Derive Av, Ai, Ri, Ro, Avg, Aig for general amplifier configuration using h-parameter model.. **[7]**

c. Derive expression for lower 3dB frequency of CE amplifier by considering coupling capacitor [Cc]. Calculate Cc for R1 = 15K Ω, R2 = 7.8 K Ω, hie = 5.6K Ω, hfe = 380, Rs = 460 Ω. **[7]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (101) Bachelor of Engineering (77809) Electroic Circuit Design - I Part 2 SEM 3
2] (1154) B.Tech. CBCS (73247) Electroic Circuit Design - I Part 2 SEM 3

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