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M – 5664

Reg. No. ....

Name : .....

**Third Semester B.Tech. Degree Examination, October 2021**

**(2013 Scheme)**

**13.305 — ELECTRONIC CIRCUITS (T)**

Time : 3 Hours

Max. Marks : 100

**PART – A**

Answer all questions. Each question carries 2 marks.

1. Derive the condition for RC integrator circuit.
2. Draw the circuit of a bilevel clipper. Sketch the output waveform for sine wave input.
3. Draw the frequency response curve of an RC Coupled amplifier.
4. What is body effect?
5. Draw the small signal equivalent circuit model of a MOSFET.
6. Mention the advantages of Wien Bridge Oscillator
7. Explain Barkhausen criterion.
8. Draw the frequency response curve of a tuned amplifier.
9. Define ripple factor and compare the values for three rectifiers.
10. Explain the principle of Zener diode as regulator.

**(10 × 2 = 20 Marks)**



P.T.O.

PART – B

Answer **any one** questions from each module. Each full question carries **20** marks.

**Module – I**

11. (a) Explain with circuit diagram, transfer characteristics and output waveforms working of
- (i) top clipper
  - (ii) top and bottom clipper. 15
- (b) Explain with figure how BJT can act as a switch. 5

OR

12. (a) Draw the small signal equivalent circuit of a CE amplifier and derive the expression for input resistance, output resistance, voltage gain and current gain. 12
- (b) Explain the basic principle of clamping circuits. 8

**Module – II**

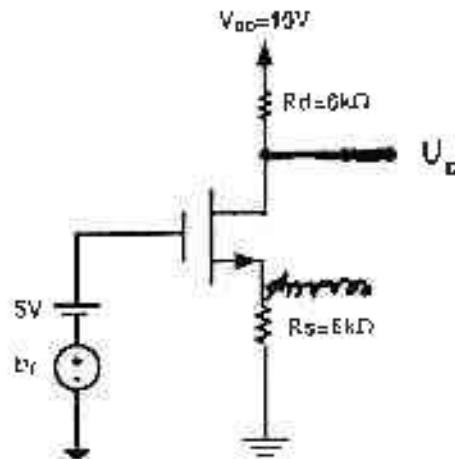
13. (a) Draw the small signal equivalent circuit of a CS amplifier and derive the expression for input resistance, output resistance and voltage gain. 12
- (b) Explain the dc transfer characteristics MOS differential amplifiers. 8



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14. (a) Explain different biasing of MOSFETs amplifiers. 10  
 (b) The MOSFET in the given circuit has  $V_T = 1V$   $K_n'(W/L) = 1 \text{ mA/V}^2$ . Determine  $I_D$ ,  $V_D$ ,  $g_m$  and voltage gain. 10



**Module – III**

15. (a) Explain with neat circuit diagram a single stage tuned amplifier. 10  
 (b) Explain the four negative feedback technologies with suitable figures. Compare input resistance and output resistance of them. 10

OR

16. (a) Draw and explain a two-stage cascaded MOSFET amplifiers. 8  
 (b) Explain with neat circuit diagram the working of a Wien Bridge oscillator. Derive expression for its frequency of oscillation. 12

**Module – IV**

17. (a) With relevant sketches explain the working of bootstrap sweep Circuit. 10  
 (b) Explain shunt capacitor filter and derive the expression of ripple factor. 10

OR

18. (a) Explain with circuit diagram a series voltage regulator using transistors. 10  
 (b) How power amplifiers are classified. Compare their performances. 10

(4 × 20 = 80 Marks)

