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B.TECH. DEGREE EXAMINATION, MAY 2016

Fourth Semester

Branch : Electrical and Electronics Engineering

ELECTRONIC CIRCUITS (E)
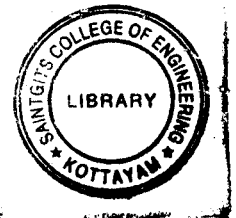
(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.
Each question carries 4 marks.

1. What is pinch-off voltage ? Why FET is called a voltage controlled device ?

2. Draw the circuit of an amplifier with stability against variation in I_{CO}.

3. Show how h_{fe} and h_{oe} are estimated from the transistor characteristics.

4. The voltage gain of an RC coupled amplifier decreases as the frequency is increased in the high frequency region. Explain the reason.

5. Derive equations to show that sensitivity of an amplifier decreases when negative feedback is applied.

6. Draw the circuit diagram of a crystal oscillator.

7. Draw a circuit to have the following voltage transfer characteristics :
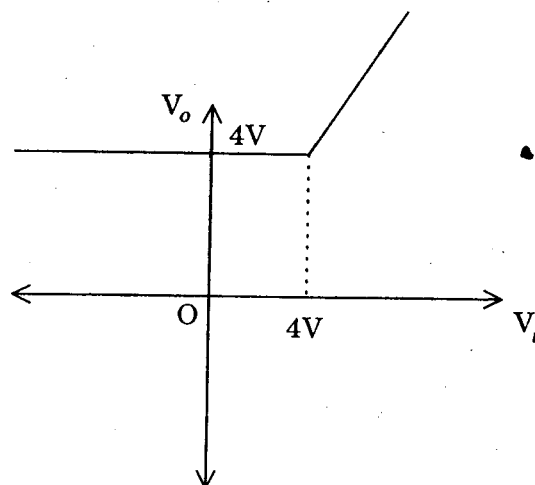
Turn over

8. Draw the circuit of a UJT relaxation sweep oscillator.

9. What are the advantages of transformer coupled push-pull circuits used for power amplifie

10. What is cross-over distortion ? How it can be eliminated ?

Part B

Answer **all** *questions.*
Each question carries 12 marks.

$(10 \times 4 = 40$ n

11. Draw the complete circuit diagrams of (i) CE ; (ii) CB and (iii) CC amplifiers and list their prope
(R_i, R_o, A_i and A_v).

Or

12. Draw the constructional details of UJT. Explain its working with the help of its emitter characteri

13. Draw an Emitter follower circuit diagram. Using h-parameters, draw its equivalent circuit. De
expressions for its R_i, A_v, R_o and A_i.

Or

14. Derive expression for the current gain bandwidth product of a CE amplifier circuit.

15. Draw the circuit of a current series feedback amplifier and establish how the type of feedbac
current series ? Deduce expressions for its input resistance and transconductance gain with feedb

Or

16. Draw and explain the circuit of a Hartley oscillator. Calculate all the component values of yo
circuit to obtain 72 kHz sinusoidal oscillations.

17. Draw the circuit of a transistorised Bistable multivibrator and explain the working. Use ba
triggering. Discuss its applications.

Or

18. (a) Draw and design a circuit to obtain the following voltage transfer characteristics :—
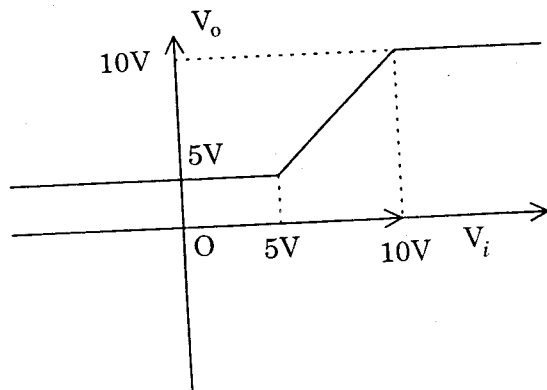
(6 marks)

(b) Explain, with necessary equations and waveforms, the circuit of RC differentiator.

(6 marks)

19. With a circuit diagram, explain the working of a class A transformer coupled power amplifier. Derive expression for its power conversion efficiency.

Or

20. Explain the working of a transformer coupled class AB push pull power amplifier circuit. Derive expression for its efficiency and compare its performance with respect to class A and class B power amplifiers.

(5 × 12 = 60 marks)