

B.E. DEGREE EXAMINATIONS: NOV / DEC 2010

Third Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

U07EI303: Electronic Circuits

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. Class B amplifier has less efficiency compared to
A) Class A B) class AB C) Class C D) class A, A B, C
2. Super – β transistor is a
A) Cascade configuration B) cascode configuration
C) Darlington configuration D) Matched pair
3. A differential amplifier has a differential gain of 20,000, CMRR = 80 dB. The common mode gain is given by
A) 2 B) 1 C) 1/2 D) 0
4. Two main parts of a tank circuit are
A) R and C B) L and C C) R and L D) R and a NPN transistor
5. The power gain of an emitter follower usually is
A) < 1 B. = 1 C. > 1 D. Independent of component values
6. For oscillators to start, the loop gain $A\beta$ of the oscillator must be
A) Infinitely high B) more than 1 C) Exactly 1 D) < 1
7. In a free running multivibrator, each stage is cut off for $1\mu s$. What is the oscillator frequency?
A) 10 MHz B) 5 MHz C) 1 MHz D) 0.5 MHz
8. Which of the following is a poorest insulator?
A) Bakelite B) rubber C) Lucite D) polyethylene
9. In a regulated power supply, the unregulated input voltage as compared to the regulated output voltage must be
A) same B) smaller C) larger D) larger with opposite polarity
10. The quality of power supply is judged by
A) Its size B) voltage C) regulation D) efficiency

PART B (10 x 2 = 20 Marks)

11. How the operating – point of FET is made independent of device parameters?
12. How amplifiers are classified based on operating condition?
13. Define CMRR of a differential amplifier.
14. What is the effect of cascading double tuned amplifiers on bandwidth?
15. What are the advantages of negative feedback?
16. A tank circuit contains an inductance of 1 mH. Find out the range of tuning capacitor value if the resonant frequency ranges from 540 – 1650 KHz.
17. What is a clipper?
18. List the applications of Schmitt trigger.
19. Define a voltage regulator.
20. What are the different types of filters?

PART C (5 x 14 = 70 Marks)

21. a) In a CE transistor amplifier circuit, the bias is provided by self-bias. The various parameters are $V_{cc} = 16 \text{ V}$, $R_c = 3 \text{ k}\Omega$, $R_E = 2 \text{ k}\Omega$, $R_1 = 56 \text{ k}\Omega$, $R_2 = 20 \text{ k}\Omega$ and $\alpha = 0.985$. Determine the co-ordinates of the operating – point.
(OR)
 - b) (i) Briefly explain about Darlington connection. (6)
 - (ii) With a neat circuit diagram explain the operation of a class B push – pull amplifier. (8)
22. a) Explain with a circuit diagram , the common mode and differential mode operation of a differential amplifier.
(OR)
 - b) With a neat diagram explain the working of a RC - coupled single – tuned amplifier and derive the voltage gain equation.
23. a) (i) Explain with circuit diagram a –ve feedback amplifier and obtain expression for its closed loop gain. (10)
 - (ii) An amplifier has voltage gain without feedback of 1000. If $\beta = 0.009$ find the gain with feedback. (4)
(OR)
 - b) Draw the circuit diagram of a wein-bridge oscillator and explain its operation.
24. a) Describe the operation of the following
 - (i) Biased clipper (7)
 - (ii) Combination clipper (Dual level clipper) (7)
(OR)
 - b) With a neat sketch, explain the working of an astable multivibrator. On what factors does the frequency of the output waves depend?
25. a) Explain the action of a full wave rectifier and give waveforms of input and output voltages.
(OR)
 - b) Explain the operation of switched mode power supply in detail with a block diagram. List its merits.
