Register Number: ………………

B.E. DEGREE EXAMINATIONS: NOV/DEC 2010

Third Semester

ELECTRONICS AND INSTRUMENTATION

EIE102: Electronic Circuits

Time: Three Hours   **Maximum Marks: 100**

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. The main use emitter follower is as

   a)Power amplifier   b)Impedance matching device

   c) Follower of base signal   d) low-input impedance circuit

2. For small values of drain to source voltage JFET behaves like a

   a) Resistor   b) constant current source

   c) Constant voltage source   d) negative resistance

3. The out of a class-B amplifier

   a) is distortion-free   b)consists of positive half-cycle only

   c) is like the output of a full-wave rectifier   d)comprises short duration current pulses

4. In multistage amplifier direct coupling is especially suited for amplifying

   a) High frequency ac signals   b) changes in DC voltages

   c) High level voltages   d) sinusoidal signal

5. The advantages of using negative feedback in an amplifier is that its gain can be made practically independent of

   a) temperature changes   b) age of components   c) frequency   d) all of the above.

6. The frequency of oscillation of an elementary LC oscillatory circuit depends on

   a) Coil resistance   b) Coin inductance   c) Capacitance   d) both b and c

7. Without a dc source, a clipper act like a

   a) Rectifier   b) clamper   c) Demodulator   d) chopper

8. A UJT has

   a) anode, cathode and a gate   b) two bases and one emitter

   c) two anode and one gate   d) anode, cathode and two gates.

9. the basic reason why a FW rectifier has twice the efficiency of a HW rectifier is that

   a) it makes use of a transformer

   b) its ripple factor is much less

   c) it utilizes both half cycles of the input

   d) its output frequency is doubled the line frequency.

10. The output voltage of a step-down type switching voltage regulator depends on

   a) input voltage   b) duty cycle   c) transistor Off time   d) all of the above.

PART B (10 x 2 = 20 Marks)

11. What is meant by biasing?

12. What is meant by Darlington connection?

13. Define CMRR.

14. Define differential Amplifier.

15. Explain the characteristics of negative feedback Amplifier.

16. State bark hausan criterion

17. List the type of clippers.

18. What is meant by Inter Base Resistance in UJT?

19. What is meant by Ripple factor?

20. Mention the types of Regaulator.

PART C (5 x 14 = 70 Marks)

21. a) (i) Draw the circuit of self biasing of BJT. Obtain the stability factor.   (8)

      (ii) Discuss the advantages and disadvantages of self biasing in a CE amplifier.   (6)

(OR)

   b) (i) Draw the circuit of Darlington pair connection and discuss the merits.   (7)

      (ii) Draw the circuit of pushpull amplifier using only transistors.   (7)

22. a) (i) Obtain the expression for common mode and differential gain of a BJT differential amplifier.   (8)

      (ii) Why the common mode gain should be very low in a differential amplifier.   (6)

(OR)

b) (i) Explain the frequency response characteristics of a single tuned amplifier with a neat circuit diagram. (8)

(ii) Discuss the advantages and disadvantages of double tuned amplifier. (6)

23. a) (i) Discuss the effect of negative feedback and voltage gain, bandwidth, distortion, stability with appropriate derivation. (8)

(ii) An RC coupled current amplifier employing emitter based without bypass capacitor is provided to you. Identify the types of feedback present in the circuit and discuss its effects on impendence of the amplifier. (6)

(OR)

b) (i) State Barhausan criteria for oscillation obtain the frequency of oscillation for an RC phase shift oscillator. (10)

(ii) Discuss the operation of a crystal oscillator and its main advantages. (4)

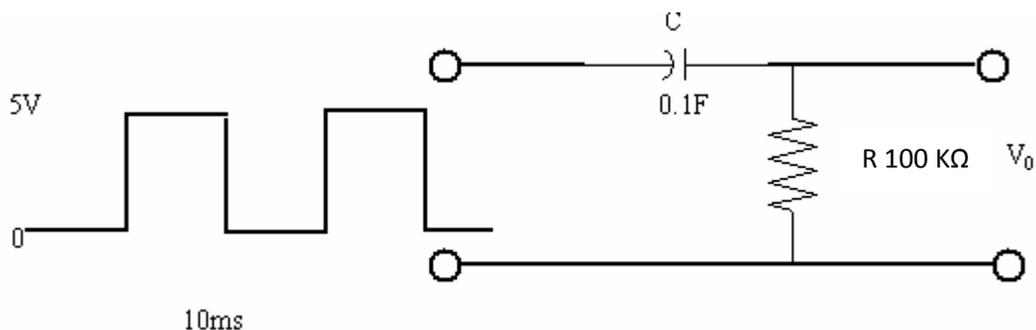24. a) (i) For the RC wave shaping circuit shown in figure 24(A) (6)

Fig. 24(a)

Draw the V_0 waveform with time and voltage magnitude details.
What operation is performed by this circuit?

(ii) Discuss the operation and the application of diode clipper circuits with neat circuit diagram and waveform. (8)

(OR)

b) (i) What do you meant by monostable multivibrator? Explain the operation of a BJT based monostable multivibrator with a neat circuit and waveform. (8)

(ii) Explain how a sawtooth waveform can be generated using UJT (6)

25. a) (i) Define rectification . Draw the circuit diagram of full wave bridge rectifier and

Estimate the following if $R_L=100\Omega$, and secondary voltage is $24V_{rms}$ (Vrms)   (10)

        (i) average load voltage.

        (ii) average load current.

        (iii) ripple factor

        (iv) peak inverse voltage.

        (v) rectification (η).

(ii) If you implement a forward rectifier with center tapped transformer.

    Mention its advantages and disadvantages.   (4)

(OR)

b) Explain switch mode power supply in detail with neat sketch.

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