SARDAR PATEL UNIVERSITY
BSc V Semester Examination
2013
Tuesday, 12th November
10.30 am to 1.30 pm
US05CELE01 - Discrete and Linear Circuits I

Total Marks : 70

Q.1   Multiple choice questions :   [10]
1.   The negative feedback in an amplifier improves _____ .
     (a)   Signal to noise ration at the output.
     (b)   Both (a) and (c)
     (c)   Reduces distortion
2.   The input resistance _____ in current shunt feedback amplifier.
     (a)   remain constant   (b)   decreases   (c)   increases
3.   In transresistance amplifier _____ is sample from the output.
     (a)   current   (b)   resistance   (c)   voltage
4.   In phase shift oscillator one RC network gives phase shift of _____ .
     (a) 60^0 (b) 30^0 (c) 90^0
5.   The ratio frequency oscillator generates _____ range frequencies.
     (a)   30 MHz to 300 MHz   (b)   20KHz to 30 MHz
     (c)   20 Hz to 20 KHz
6.   Maximum conversion efficiency of Class-B Push-Pull amplifier is __ .
     (a)   25 %   (b)   50 %   (c)   78.5 %
7.   The power amplifier is _____ power converter.
     (a)   ac to dc   (b)   dc to ac   (c)   dc to dc
8.   In Class B Push Pull amplifier _____ distortion is originated.
     (a)   frequency   (b)   non-linear   (c)   cross over
9.   _____ rectifier circuit gives minimum ripple factor.
     (a)   Bridge   (b)   Half wave   (c)   Full wave
10. _____ is used to increase the current souring capability of IC 723.
     (a)   Current booster   (b)   Current amplifier   (c)   Current limiter

Q.2   Answer **Any Ten** in brief :   [20]
1.   Compare and contrast the positive and negative feedback.
2.   State the general characteristics of negative feedback amplifier.
3.   Draw the block diagram and equivalent circuit of a transresistance amplifier.
4.   Define the rise time and delay time.
5.   What determines the frequency of oscillation in Wein bridge oscillator ?
6.   State Barkhausen Criteria.
7.   Derive the expression for conversion efficiency of Class A series fed amplifier.
8.   Define conversion efficiency.
9.   How does rectification takes place in the power amplifier ?

10. Draw the circuit diagram of low voltage regulator using IC 723 regulator.

11. List the three reasons why unregulated power supply is not good enough for some applications.

12. What is Peak Inverse Voltage ?

Q.3 What is feedback ? Draw the block diagram of feedback amplifier and explain the function of each block. [10]

OR

Q.3 Classify the amplifier as (1) Voltage amplifier (2) Current amplifier (3) Trans conductance amplifier (4) Trans resistance amplifier [10]

Q.4 Discuss in detail the Wein bridge oscillator with the help of its circuit diagram. [10]

OR

Q.4 Discuss in detail the crystal oscillator with the help of its circuit diagram. [10]

Q.5 Classify the various categories of power amplifier and define each with the help of characteristic curves. [10]

OR

Q.5 What is cross-over distortion ? How does it originate ? Explain the method to reduce it. [10]

Q.6 Draw the functional block diagram of IC 723 voltage regulator and explain the functions of each block. [10]

OR

Q.6 Discuss in detail the discrete voltage regulator circuit. [10]

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