

SARDAR PATEL UNIVERSITY
T. Y. B. Sc. - V Semester Examination
Monday, 26 November 2012
2.30 - 5.30 pm

US05CELE01 : Discrete and Linear Circuits - I

Total Marks : 70

(10)

Q.1 Multiple Choice Questions:

- (1) In negative feedback amplifier. The current sampling_____
 - (a) Does not alter the output resistance
 - (b) Increases the output resistance
 - (c) Decreases the output resistance
- (2) An amplifier with negative feedback
 - (a) Controls the gain
 - (b) Reduces the noise
 - (c) Both the above
- (3) The phase shift oscillator is operated in _____ to keep distortion minimum.
 - (a) Class C
 - (b) Class A
 - (c) Class B
- (4) The Operational amplifier has _____ output resistance and _____ input resistance.
 - (a) High, High
 - (b) High, Low
 - (c) Low, High
- (5) In every practical oscillator the loop gain is _____ unity
 - (a) smaller than
 - (b) Larger than
 - (c) Equal to
- (6) To minimize the cross over distortion the transistor may be operated in _____ mode
 - (a) Class AB
 - (b) Class A
 - (c) Class B
- (7) The conversion efficiency of Class B amplifier is less than _____ amplifier.
 - (a) Class C
 - (b) Class A
 - (c) Class AB
- (8) In Zener shunt regulator , if unregulated input voltage is increases then the voltage across RL becomes _____ tp cause the Zener breakdown
 - (a) Greater
 - (b) Smaller
 - (c) Constant
- (9) In the full wave rectifier using centre tap transformer , the rms voltage across the load is $V_{rms} =$ _____
 - (a) $2V_m$
 - (b) $V_m/2$
 - (c) $\frac{V_m}{\sqrt{2}}$
- (10) _____ is used to increase the current sourcing capability of IC 723.
 - (a) Current booster
 - (b) Current amplifier
 - (c) Current limiter

- Q.2 Answer any ten questions in brief. (20)
- (1) Define De sensitivity of transfer gain.
 - (2) Compare and contrast the positive and negative feedback.
 - (3) What is the relationship between transfer gain with feedback (A_f) and that without feedback (A)?
 - (4) Define the Rise time and Delay time
 - (5) Draw the circuit diagram of the wein bridge oscillator
 - (6) What determines the frequency of Oscillation in wein Bridge Oscillator
 - (7) Define Conversion Efficiency.
 - (8) Discuss how rectification takes place in the power amplifier ?
 - (9) State the advantage of push pull Amplifier.
 - (10) Draw the block diagram of regulated power supply.
 - (11) Define the input regulation factor, output Resistance and Temperature co-effcient for voltage Regulator.
 - (12) Explain in brief the three terminal IC regulator.

- Q.3
- (a) Draw the ac equivalent circuit of voltage and current amplifier and explain it. (05)
 - (b) State the general characteristics of negative feedback. (05)

OR

- Q.3
- (a) Write a note on input resistance of feedback amplifier. (05)
 - (b) Write a note on (05)
 - (i) Voltage series feedback.
 - (ii) Current shant feedback.

- Q.4 Explain the working of a wein bridge Oscillator with the help of necessary circuit diagram. (10)

OR

- Q.4 Explain the working of a phase shift Oscillator with the help of necessary circuit diagram. (10)

- Q.5
- (a) Draw the circuit diagram of class A large signal amplifier and explain its working. (06)
 - (b) What is cross over distortion and how it is removed. (04)

OR

- Q.5
- (a) Write a note on Higher Harmonics distortion. (06)
 - (b) Explain briefly second Harmonics distortion. (04)

- Q.6
- (a) What is SMPS ? Explain its working with the help of necessary diagram. (05)
 - (b) Write a note on series voltage regulator circuit. (05)

OR

- Q.6
- (a) Explain the working of high voltage regulator using IC 723 (05)
 - (b) Explain the working of low voltage regulator using IC 723. (05)

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