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SEAT No. \_\_\_\_\_

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Sardar Patel University

T.Y.B.Sc Examination - Semester-5

Electronics and Communication

US05CELC01 : Analog Circuit Design and its Applications

22/10/2018, Monday

10:00 AM To 1:00 PM

Total Marks - 70  
(10)

Q-1 Multiple Choice Question

- 1 Which oscillator is most suitable for audio frequency oscillator?  
(a) Crystal oscillator (b) LC oscillator (c) RC oscillator (d) None of above
- 2 The Barkhausen criterion for sustained oscillator is \_\_\_\_\_  
(a)  $A\beta = 1$  (b)  $|A\beta| < 1$  (c)  $|A\beta| \geq 1$  (d) None of above
- 3 \_\_\_\_\_ is a very popular circuit & is commonly used in a local oscillator in the radio receiver.  
(a) Phase shift oscillator (b) Hartley oscillator (c) Crystal oscillator (d) Collpitt's oscillator
- 4 In a \_\_\_\_\_ amplifier, the current flows only during positive half cycle.  
(a) Class A (b) Class B (c) Class AB (d) Class C
- 5 \_\_\_\_\_ Oscillator employs two capacitor in series & inductor in parallel.  
(a) Collpitt's (b) Hartley (c) Phase shift (d) Crystal
- 6 Hartley oscillator is a type \_\_\_\_\_ oscillator.  
(a) RC (b) LC (c) RLC (d) None
- 7 The 555 timer Ic can be operated at supply voltage \_\_\_\_\_  
(a) 5-18 v (b) 1-18 v (c) 5-15 v (d) None
- 8 The 555 timer Ic is used to provide \_\_\_\_\_  
(a) Time delay (b) Rectification (c) Amplification (d) Oscillation
- 9 The efficiency of a Class A amplifier is \_\_\_\_\_%.  
(a) 78.5 (b) 50 (c) 68.5 (d) 70
- 10 Negative feedback in an amplifier \_\_\_\_\_  
(a) Reduces bandwidth (b) Increases noise (c) Reduces gain (d) Increases frequency

Q-2 Answer the following (any ten)

(20)

1. Define: Negative Feedback.
2. List out the applications of astable multivibrator.
3. Define : Oscillator
4. What do you mean by cross over distortion?
5. Why feedback is necessary in amplifier?
6. Draw the block diagram of voltage series feedback
7. Explain the Bi-stable multivibrator as a RS flip-flop.
8. Draw the labeled circuit of a Hartly oscillator.
9. List out the salient features of 555 timer Ic.
10. Define: Positive Feedback.
11. List out the different types of feedback in amplifier.
12. Differentiate between monostable and bi-stable multivibrator.

(1)

(P.T.O.)

Q-3 List out the different types of amplifier. Describe the push pull amplifier in detail. (10)

OR

Q-3 (a) What is power amplifier? Explain in detail about class A amplifier. (07)  
(b) Give the difference between class A and class B amplifier. (03)

Q-4 (a) With the help of necessary diagram explain the concept of feedback of an amplifier. (05)  
(b) Calculate the gain of a negative feedback amplifier with an internal gain  $A=100$  and feedback factor  $\beta=1/10$ . (05)

OR

Q-4 Derive the expression for negative feedback of an amplifier with necessary circuit and block diagram. (10)

Q-5 (a) Give the meaning of terms: (a) damping oscillation (b) growing oscillation and (c) Sustained oscillation. Explain positive feedback works as an oscillator. (06)  
(b) Write a short note on collpitt's oscillator (04)

OR

Q-5 What is the need of oscillator? State the principle of RC phase shift oscillator. Explain in detail the RC phase shift oscillator. (10)

Q-6 Draw the pin out diagram of 555 timer IC and explain it. (10)

OR

Q-6 Explain the circuit diagram of astable multivibrator and derive an expression frequency of oscillation. (10)

