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

No. of Printed Pages : 2

**SARDAR PATEL UNIVERSITY**

**T.Y.B.Sc. (Electronics & Communication) (Sem. - VI) Examination**

**Day & Date: Friday; 29/03/2019**

**Time: 10:00 am TO 1:00 pm**

**Subject Code: US06CELC03**

**Subject: Operational Amplifier & its Applications**

**Instructions:**

(a) Figure to the right indicates full marks.

(b) All questions are compulsory.

**Total Marks: 70**

**Q-1**

**Choose the correct answer.**

**(10)**

1. The input applied to an inverting amplifier is \_\_\_\_\_.  
(a) Equal to inverted output (b) Equal to output  
(c) Not Equal to output (d) none
2. In a non-inverting IC 741 op amp \_\_\_\_\_ and \_\_\_\_\_ are input and output pins.  
(a) Pin6 and pin3 (b) Pin3 and pin6  
(c) Pin2 and pin6 (d) Pin5 and pin2
3. The voltage gain ( $AV_0$ ) for second order Butterworth High pass filter is \_\_\_\_\_.  
(a) 0.3 (b) 0.707  
(c) 1.56 (d) 0.56
4. The voltage on the output is proportional to the frequency at the input is called as \_\_\_\_\_.  
(a) V to F converter (b) D to A converter  
(c) A to D converter (d) F to V converter
5. The maximum rate of change of output voltage under large signal condition is called as \_\_\_\_\_.  
(a) Slew rate (b) I/P bias current  
(c) O/P offset current (d) I/P offset voltage
6. \_\_\_\_\_ is a system that converts a digital signal into an analog signal.  
(a) F to V converter (b) D to A converter  
(c) A to D converter (d) Sample and hold circuit
7. \_\_\_\_\_ filters reject signals in a specific frequency band called the stop band frequency range and pass the signals above and below this band  
(a) High pass (b) Low pass  
(c) Notch (d) None of above
8. In Non-Inverting amplifier the input is given to inverting terminal so that the output is \_\_\_\_\_ with respect to input.  
(a)  $90^\circ$  out of phase (b)  $180^\circ$  out of phase  
(c)  $270^\circ$  out of phase (d) same
9. Among these which is the fastest type of the ADC?  
(a) Flash type (b) Counter type  
(c) Dual Slope type (d) Tracking type
10. The main drawback of counter type A/D converter is \_\_\_\_\_.  
(a) More complex (b) Low speed  
(c) High conversion time (d) Counter clears automatically

(1)

(P.T.O)

- Q-2 Answer the following questions. (Any Ten) (20)
1. Why does OP-AMP have a high CMRR?
  2. Draw the pin out diagram of IC741.
  3. What is the function of offset null pin of 741 IC?
  4. What do u meant by Log amplifier?
  5. Draw the circuit diagram summing amplifier.
  6. What is the difference between band stop filter and band pass filter?
  7. Draw the circuit diagram of Active band pass filter.
  8. What is meant by resolution in ADC?
  9. Draw the circuit diagram of binary weighted DAC.
  10. What are the advantages and disadvantages of successive approximation type ADC?
  11. Draw block diagram of dual slop ADC.
  12. What are the advantages and disadvantages of flash type ADC?
- Q-3 Explain AC parameter of OP-AMP 741 IC. (10)
- OR**
- Q-3 Explain DC parameter of OP-AMP 741 IC. (10)
- Q-4 (a) Explain the Differentiator Amplifier in detail. (05)
- (b) Explain Non-linear Op-Amp in detail. (05)
- OR**
- Q-4 (a) Discuss the basic operation of chopper stabilized Amplifier. (05)
- (b) Explain integrator Amplifier in detail. (05)
- Q-5 Explain notch filter using gyrator. (10)
- OR**
- Q-5 What is Filter? Differentiate between Active and Passive filters. Draw the ideal filter characteristics of all filters. (10)
- Q-6 (a) Explain R – 2R Ladder type D/A Converter and also calculate the output voltage for input 1000 & 0010. (05)
- (b) Explain in detail successive approximation type ADC. (05)
- OR**
- Q-6 (a) Explain voltage to frequency conversion. (05)
- (b) With necessary circuit diagram explain counter type ADC. (05)