

# Online Examinations (Even Sem/Part-I/Part-II Examinations 2020 - 2021)

Course Name - --Analog Circuits

Course Code -PCC-EC402

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Answer all the questions. Each question carry one mark.

9. 1.Which of the following is not true in the circuit for digital-to- analog voltage converter?

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- Some logic circuitry
- A resistor network
- A reference voltage
- A resonant circuit

10. 2. What is the value of LSB of an 8-bit DAC for 0-12.8 V range?

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- 1.6 V
- 50mV
- 0.625
- 1.28V

11. 3. Stability can be improved in an op-amp by

*Mark only one oval.*

- Pole zero compensation
- Dominant pole compensatio
- Leads compensation
- All of these

12. 4. For an active integrator , the overall gain

*Mark only one oval.*

- Increase with frequency of input
- Decrease with input frequency
- Constant with frequency
- None of these

13. 5.The resonant frequency of a Wien-bridge oscillator is around

*Mark only one oval.*

- 10 Hz
- 10 KHz
- 100 KHz
- 10MHz

14. 6.Voltage regulator normally uses.....

*Mark only one oval.*

- Positive feedback
- Negative feedback
- No feedback
- Phase limiting

15. 7.R-C coupling is proper in low-level AF amplifier because it

*Mark only one oval.*

- Is inexpensive and needs no adjustment
- Has better low frequency response
- Needs low voltage battery
- Provides an output signal in phase with input signal

16. 8.An OPAMP has

*Mark only one oval.*

- Equal input and output resistance
- Low input resistance and a large output resistance
- Large input resistance and low output resistance
- None of these

17. 9.The cut-in point of a capacitor filter is\_\_\_\_\_

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- The instant at which the conduction starts
- The instant at which the conduction stops
- The time after which the output is not filtered
- The time during which the output is perfectly filtered

18. 10.The inductor is placed in the L section filter because\_\_\_\_\_

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- It offers zero resistance to DC component
- It offers infinite resistance to DC component
- It bypasses the DC component
- It bypasses the AC component

19. 11. The output waveform of CLC filter is superimposed by a waveform referred to as \_\_\_\_\_

*Mark only one oval.*

- Square wave
- Triangular wave
- Saw tooth wave
- Sine wave

20. 12. A common mode signal is applied to

*Mark only one oval.*

- The non-inverting input
- The inverting input
- Top of tail resistor
- Both inputs

21. 13. Wein bridge oscillator has the following disadvantage

*Mark only one oval.*

- It can generate frequency up to 1 MHz only
- It requires large number of components
- Output is constant
- There is a loading effect



22. 14. An Wein bridge oscillator uses

*Mark only one oval.*

- Positive feedback
- Negative feedback
- Both types of feedback
- An LC tank circuit

23. 15. We use crystal oscillator because

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- It gives high output voltage
- It works at high frequency
- Frequency of oscillation remains substantially constant
- It requires very low dc supply voltage

24. 16. Which topology of feedback amplifier has very high input and output impedances?

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- Voltage series feedback
- Voltage shunt feedback
- Current series feedback
- Current shunt feedback

25. 17. Voltage shunt feedback amplifier is a

*Mark only one oval.*

- Transconductance amplifier
- Transresistive amplifier
- Voltage amplifier
- Current amplifier

26. 18. How many h-parameters are there for a transistor?

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- Four
- Two
- Five
- Three

27. 19. The parameter  $h_{ie}$  stands for input impedance in

*Mark only one oval.*

- CB arrangement with output shorted
- CC arrangement with output shorted
- CE arrangement with output shorted
- None of these

28. 20.The magnitude of voltage output of Schmitt trigger

*Mark only one oval.*

- Always low
- Always high
- Either a low or a high
- A sine wave

29. 21. The voltage gain of single-stage CE amplifier increases with

*Mark only one oval.*

- Increase in ac load resistance
- Decrease in ac load resistance
- Increase in source resistance
- Increase  $r_e$

30. 22. an integrator circuit value of  $RC=1$ , the output voltage  $t=4$  sec for  $V_i= 2v$  is

*Mark only one oval.*

- 8 V
- 2 V
- 4 V
- 6 V

31. 23. The input resistance of 741 OPAMP is

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- 100  $\Omega$
- Approx. 20 k $\Omega$
- Approx. 2 M $\Omega$
- 20 M $\Omega$

32. 24. An ideal OP-AMP has bandwidth

*Mark only one oval.*

- Zero
- Small
- Large
- Infinite

33. 25. Voltage controlled oscillators are used commonly in

*Mark only one oval.*

- Pulse Modulators
- Frequency Modulators
- Phase Clocked loops
- All of the above

34. 26. The resolution of a DAC depends on which of the following?

*Mark only one oval.*

- The number of bits
- Monotonicity
- Reference voltage
- The values of resistances

35. 27. How many bits will a D/A converter use so that its full-scale output voltage is 5 V and its resolution is at the most 10mV?

*Mark only one oval.*

- 5
- 7
- 9
- 11

36. 28. An 8-bit D/A converter has a full scale output voltage of 20V. The output voltage when the input is 11011011, is

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- 160 V
- 78 V
- 20 V
- 17 V

37. 29.If the input to the ideal comparator is a sinusoidal signal of 8 V (peak to peak) without any DC component, then the output of the comparator has a duty cycle of

*Mark only one oval.*

- 1/2
- 1/3
- 1/6
- 1/12

38. 30.A 12 bit A/D converter has range of 0-10 V. What is the approximate resolution of the converter

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- 1 mV
- 2.4mV
- 2.5 $\mu$ V
- 12mV

39. 31.The equivalent resistance provided by the switched capacitor circuit is

*Mark only one oval.*

- 1/(Cf)
- Cf
- f/C
- None of these

40. 32. For a CE amplifier, dc load line is which one of the following plots?

*Mark only one oval.*

- IC versus VCE for a given value of RC and VCC
- IB versus VBE for a given value of RC and VCC
- IB versus VCE for a given value of IB
- IC versus VCB for a given value of IE for a given value VCC and RC

41. 33. The point of intersection of the dc load with VCE active

*Mark only one oval.*

- VCE=VCC, IC = 0
- VBE= VCC, IC=0
- VCE=0, IC= 0
- VBE=0, IB=0

42. 34. An operational amplifier possesses

*Mark only one oval.*

- Very large input resistance and very large output resistance
- Very large input resistance and very small output resistance
- Very small input resistance and very small output resistance
- Very small input resistance and very large output resistance.

43. 35. The common mode rejection ratio (CMRR) of a differential amplifier (where  $A_d$  = differential gain ,  $A_c$  = common mode gain) is defined as

*Mark only one oval.*

- $A_d/A_c$
- $(A_d - A_c)/A_d$
- $2 \log_{10} A_d/A_c$
- $2 \log_e A_d/A_c$

44. 36. For a given op-amp ,  $CMRR = 10^5$  and differential gain =  $10^5$  . What is the common mode gain of the op-amp ?

*Mark only one oval.*

- $10^{10}$
- $2 * 10^5$
- $10^5$
- 1

45. 37. An op-amp IC should have

*Mark only one oval.*

- 741
- 742
- 743
- 740



46. 38.The output voltage of an op-amp is  $V \sin \omega t$ . Slew rate is

*Mark only one oval.*

$V \cos \omega t$

$\omega$

$V\omega$

$V/\omega$

47. 39. The voltage gain of an ideal voltage follower is

*Mark only one oval.*

$<1$

1

Zero

Infinity

48. 40.Instrumentation amplifiers are used primarily in

*Mark only one oval.*

High noise environment

Medical equipment

Test instruments

Filter circuits.

49. 41. In case of active integrator if the output voltage is larger than VCC, overall gain

*Mark only one oval.*

- Increase
- Decrease
- Remains constant
- None of the above

50. 42. Common-emitter amplifier circuit with emitter feedback, the input impedance is equal to

*Mark only one oval.*

- $h_{fe}$
- $R_E$
- $h_{fe}/R_E$
- $h_{fe}R_E$

51. 43. The main application of a common-collector or emitter follower circuit is

*Mark only one oval.*

- Impedance matching
- Low impedance circuit
- Power amplifier
- None of these

52. 44.If the emitter bypass capacitor is removed from a CE amplifier circuit ,.....  
is decreased significantly.

*Mark only one oval.*

- Current gain  
 Voltage gain  
 Input impedance  
 Output impedance

53. 45.A quartz crystal oscillator consists of

*Mark only one oval.*

- Only series resonant frequency  
 Only parallel resonant frequency  
 Both series and parallel frequencies  
 Neither series nor parallel frequency.

54. 46. Which of the following oscillators is used for generating low frequencies?

*Mark only one oval.*

- RC phase shift oscillator  
 LC oscillato  
 Wien-bridge oscillator  
 Blocking oscillator

55. 47. Which of the following is not an essential element of d.c. power supply

*Mark only one oval.*

- Rectifier
- Filter
- Voltage Regulator
- Voltage Amplifier

56. 48. A voltage regulator is a circuit which

*Mark only one oval.*

- Converts the dc voltage into ac voltage.
- Smoothens the ac variations in dc output voltage
- Maintains a constant dc output voltage in spite of the fluctuations in ac input voltage or load current
- None of the above.

57. 49. The main function of a voltage regulator is to provide a nearly..... output voltage.

*Mark only one oval.*

- Sinusoidal
- Constant
- Smooth
- Fluctuating

58. 50.Voltage regulator normally use.....

*Mark only one oval.*

- Positive feedback
- Negative feedback
- No feedback
- Phase limiting

59. 51.If the output of voltage regulator varies from 15 to 14.7V between the minimum & maximum load current, the load regulation is .....

*Mark only one oval.*

- 0
- 1%
- 2%
- 5%

60. 52. A 78XX series of voltage regulator produces an output voltage that is

*Mark only one oval.*

- Positive
- Negative
- Unregulated
- Either positive or negative

61. 53. A series regulator is more efficient than a shunt regulator because

*Mark only one oval.*

- It has series resistor
- It can boost the voltage
- The pass transistor replaces the series resistor
- It switches the pass transistor on & off

62. 54. The voltage gain of an OP AMP non-inverting amplifier is

*Mark only one oval.*

- Less than unity
- Greater than unity
- Equal to unity
- None of these

63. 55. An ideal OP AMP has

*Mark only one oval.*

- Infinite input impedance
- Zero output impedance
- Infinite voltage gain
- All of the these

64. 56. Which of the following electrical characteristics is not exhibited by an ideal op-amp?

*Mark only one oval.*

- Infinite voltage gain
- Infinite bandwidth
- Infinite output resistance
- Infinite slew rate

65. 57. In a shunt capacitor filter, the mechanism that helps the removal of ripples is

*Mark only one oval.*

- The current passing through the capacitor
- The property of capacitor to store electrical energy
- The voltage variations produced by shunting the capacitor
- Uniform charge flow through the rectifier

66. 58. Consider the non-inverting OP-AMP with  $R_1$  (input resistance) =  $1\text{k}\Omega$ ,  $R_2$  (feedback resistance) =  $10\text{k}\Omega$  and power supply voltages  $\pm 12\text{V}$ . Find the output voltage for an input voltage  $0.05\text{V}$

*Mark only one oval.*

- 0.50V
- +0.50V
- +0.55V
- 0.55V

67. 59. The Op-amp can amplify \_\_\_\_\_.

*Mark only one oval.*

- A.C. signals only
- D.C. signals only
- both A.C. and D.C. signals
- neither D.C. nor A.C. signals

68. 60. Major part of the filtering is done by the first capacitor in a CLC filter because \_\_\_\_\_

*Mark only one oval.*

- The capacitor offers a very low reactance to the ripple frequency
- The capacitor offers a very high reactance to the ripple frequency
- The inductor offers a very low reactance to the ripple frequency
- The inductor offers a very high reactance to the ripple frequency

69. 61. The phase shift oscillator requires an external phase shift of \_\_\_\_\_

*Mark only one oval.*

- 90°
- 180°
- 270°
- 360°



70. 62. 1 MHz sinusoidal signal can be obtained from

*Mark only one oval.*

- Hartley oscillator
- RC phase shift oscillator
- Wein bridge oscillator
- All of these

71. 63. An electronic oscillator is

*Mark only one oval.*

- An amplifier
- An amplifier with feedback
- Conversion of ac to dc
- Just like an alternator

72. 64. When a large sine wave drives a Schmitt trigger, the output is a

*Mark only one oval.*

- Rectangular wave
- Triangular wave
- Rectified sine wave
- Series of ramps

73. 65. An oscillator of LC type that has a split capacitor in the circuit is

*Mark only one oval.*

- Hartley oscillator
- Colpitts oscillator
- Wein-bridge oscillator
- RC phase shift oscillator

74. 66. The advantages of negative feedback amplifier are

*Mark only one oval.*

- High input impedance
- Increase in gain stability
- Low output impedance
- All of these

75. 67. A certain OP-amp has input bias currents of  $50 \mu\text{A}$  and  $49.3 \mu\text{A}$ . The input offset current is

*Mark only one oval.*

- $700\text{nA}$
- $99.3\mu\text{A}$
- $49.3\mu\text{A}$
- None of these

76. 68. Negative feedback involves

*Mark only one oval.*

- Less phase distortion
- Less noise
- Less non linear distortion
- All of these

77. 69. When temperature changes h parameters of a transistor

*Mark only one oval.*

- Also change
- Do not change
- May or may not change
- None of these

78. 70. An emitter follower has ..... input impedance

*Mark only one oval.*

- Low
- High
- Zero
- None of these

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