

**Faculty of Science**  
**B.Sc (Electronics) II-Year, CBCS –III Semester**  
**Backlog Examinations –June/July, 2022**  
**PAPER: Analog Circuits**

Time: 3 Hours

Max Marks: 80

**Section-A**

I. Answer any eight of the following questions (8x4=32 Marks)

1. Explain the working of a half wave rectifier.
2. Explain the working of shunt capacitive filter.
3. Output load of a half wave rectifier is 1Kohm and its input voltage is 50Vrms. Calculate  $V_{ac}$ ,  $V_{dc}$  and ripple factor.
4. Draw the block diagram of UPS and explain each block briefly.
5. Explain the working of a Series Voltage Regulator using circuit diagram.
6. A Zener regulator has input voltage 10V and load current 4mA. If Zener voltage is 7.8V then find potential difference across load resistor.
7. Explain the concept of emitter follower.
8. Describe the amplifiers based on frequency range
9. An amplifier has a voltage gain of 50. If gain is reduced to 10 by negative feedback, then the value of  $\beta$
10. What is Barkhausen criterion and explain it.
11. Draw the circuit diagram of Wein's bridge oscillator.
12. A Colpitt's oscillator  $C_1=C_2=0.1$ micro farad,  $L=2$ mH. Find the frequency of oscillations.

**Section-B**

II. Answer the following questions (4x12=48 Marks)

- 13.(a) Explain the working of a Full wave rectifier and evaluate the ripple factor and rectifier efficiency.

(OR)

- (b) Draw the circuit of L-section filter and explain its working.

14. (a) Explain the working of a Regulated power supply with the help of neat diagram.

(OR)

- (b) Explain the working of a Switch Mode Power Supply with the help of block diagram.

- 15.( a) Explain the frequency response of RC coupled amplifier. Derive the equation of voltage gain in low frequency range.

(OR)

- (b) Explain the advantages of negative feedback amplifier. Derive an expression for

input impedance, gain, output impedance, voltage gain and bandwidth.

16.(a) Draw a circuit diagram of Astable Multivibrator and derive an expression for frequency of oscillations.

(OR)

(b) Draw the circuit diagram of RC Phase shift oscillator. Derive equation for frequency of oscillation.

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**Paper-III: Analog Circuits**

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Max Marks: 80

**Section-A**

- I. Answer any *five* of the following (5x4=20 Marks)
1. What is peak inverse voltage in rectifiers?
  2. An ac power of 100W is applied to half wave rectifier. Find the rectification efficiency if the dc power obtained is 40W.
  3. The dc output voltage is 40V at full load and 41 V without any load current. Calculate the load regulation factor in percentage.
  4. Explain the working of a transistor series voltage regulator.
  5. What is the effect of negative feedback on band width?
  6. Darlington pair achieves larger input impedance. Explain.
  7. Explain Barkhausen criteria.
  8. Why a free running multivibrator is very important?

**Section-B**

- II. Answer the following questions (4x15=60 Marks)
9. (a) What are the advantages of bridge rectifier over full wave rectifier?  
(OR)  
(b) Explain the term ripple factor and obtain an expression for the ripple factor in a full wave rectifier.
  10. (a) Describe the principle and working of Uninterrupted Power Supply(UPS)  
(OR)  
(b) Mention the types of voltage regulators. Describe the working of 78XX IC.
  11. (a) Sketch the circuit of CE amplifier circuit of a transistor and discuss its action.  
(OR)  
(b) Define h-parameters. Obtain the expressions for current gain, voltage gain, input impedance and output impedance of a transistor amplifier using h-parameters.
  12. (a) Draw the circuit diagram of a Hartley oscillator. Derive an expression for the frequency of oscillations.  
(OR)  
(b) Draw the circuit diagram of RC Oscillator. Derive compression for the frequency of Oscillations.

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