

**M SC DEGREE END SEMESTER EXAMINATION 2014 -15****SEMESTER -1: PHYSICS****COURSE: P1PHYT04: ELECTRONICS**

Time: 3 Hours

Max. Marks: 75

**PART A (Objective)**Answer **all** questions.

1. Advantage of FET is its
  - a) Low noise
  - b) high input impedance
  - c) both a and b
  - d) none of these
2. CMRR is a measure of
  - a) Power
  - b) gain
  - c) Slew rate
  - d) frequency
3. Virtual ground is due to
  - a) High input resistance
  - b) low output resistance
  - c) low drift
  - d) infinite gain
4. A constant current source
  - a) Reduces gain
  - b) increases gain
  - c) increases CMRR
  - d) all of these
5. In FM frequency of carrier wave is modified in accordance with....of the signal.
  - a) Amplitude
  - b) frequency
  - c) phase
  - d) current

(5 x 1 = 5)

**PART B (Short Answer)**Answer any **five** questions.

6. What is an IGFET?
7. Comment on biasing technique used in op amp.
8. Define roll off.
9. Define phase modulation.
10. What is a voltage to current converter?
11. Define slew rate.
12. What is a voltage controlled oscillator?
13. What is quantisation error?

(5 x 2 = 10)

**PART C (Problem/Short Essay)**Answer any **three** questions.

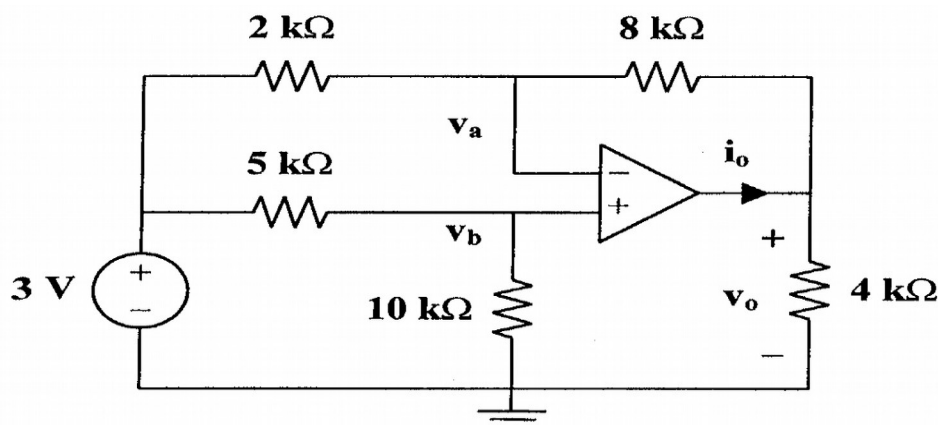
14. Explain the a stable mode of operation of 555.
15. The device parameters for an n-Channel JFET are: Maximum current  $I_{DSS} = 10\text{mA}$ , Pinch off voltage,  $V_p = -4\text{V}$ . Calculate the drain current for (a)  $V_{GS} = 0$  (b)  $V_{GS} = -1.0\text{v}$

16. What is a ratio detector?
17. Compare the properties of AM and FM techniques.
18. Draw the circuit of a band pass filter.  
(3 x 4 = 12)

**PART D** (Problem/Short Essay)

Answer any **four** questions.

19. (a) Explain the theory and working of depletion mode and enhancement mode FET.  
OR  
(b) Explain how an op amp can be used as a summing and difference amplifier?
20. (a) Discuss the theory and working of first order and second order high pass Butterworth filter.  
OR  
(b) Discuss the theory of a phase shift oscillator. What is the advantage of using op amp?
21. (a) Discuss the theory and working of super heterodyne receiver.  
OR  
(b) Give the practical circuits of AM and FM.
22. (a) In the circuit given below calculate output voltage and current.



OR

- (b) What is the need for fixed type voltage regulators? Give practical circuits of positive and negative regulators.

$$(4 \times 12 = 48)$$

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