

**B. TECH. VIEP ELECTRONICS AND
COMMUNICATION ENGINEERING
(BTECVI)**

**Term-End Examination
June, 2019**

BIEL-011 : LINEAR INTEGRATED CIRCUITS

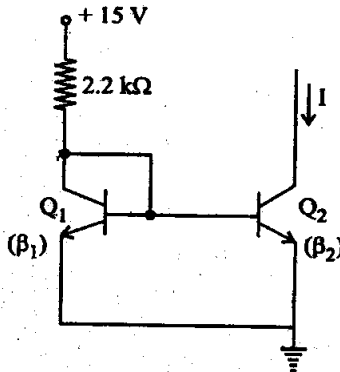
Time : 3 Hours

Maximum Marks : 70

Note : Attempt any seven questions. All questions carry equal marks. Use of scientific calculator is permitted. Missing data, if any, may be suitably assumed.

1. (a) With a neat circuit diagram, explain the operation of emitter coupled differential amplifier. 5
- (b) Calculate the current I in the given circuit : 5

Given $\beta_1 = 220 = \beta_2$



2. Draw the block diagram representation of op-amp. and explain the function of block. 4 + 6
3. (a) Explain the effect of variation in power supply voltage on offset voltage. 5
- (b) What is thermal drift ? How does it affect the performance of an op-amp. circuit ? 5
4. (a) Realize op-amp. as inverting adder and averaging amplifier. 5
- (b) Draw the circuit diagram of an op-amp. adder circuit to provide $V_{out} = -V_1 + 3V_2 - 5V_3$, where V_1 , V_2 and V_3 are the three inputs. 5
5. (a) Why are integrators preferred over differentiators ? Write down the various applications of integrators. 5
- (b) Draw and explain the working of anti-logarithmic amplifier using op-amp. 5

6. (a) What is the difference between compensated and non-compensated op-amp. ? 5
- (b) What is a slew rate ? List causes of the slew rate and explain its significance in applications. 5
7. Draw a block schematic of voltage controlled oscillator (VCO). Explain its working and derive an expression for its frequency. 3+4+3
8. (a) What is meant by a filter ? What are the advantages of an active filter over a passive filter ? 5
- (b) Draw the circuit diagram of square wave generator using op-amp. and explain its operation. 5
9. Draw a neat circuit diagram of a RC-phase shift oscillator and derive the expression for its condition of sustain oscillation and frequency of oscillation. 10

10. Write short notes on any *two* of the following :

5 each

- (a) Level translator
- (b) Evolution of Op-amp.
- (c) Zero crossing detector
- (d) Wien bridge oscillator