

**DIPLOMA - VIEP - ELECTRONICS AND  
COMMUNICATION ENGINEERING (DECVI)**

**Term-End Examination**

00139

**December, 2017**

**BIEL-038 : LINEAR INTEGRATED CIRCUITS**

*Time : 2 hours*

*Maximum Marks : 70*

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*Note : Attempt any five questions. Question no. 1 is compulsory. All questions carry equal marks. Missing data may be assumed suitably.*

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1. Choose the correct answer for the following :  $7 \times 2 = 14$

- (a) The CMRR of an ideal Op-Amp must be
- (i) Zero
  - (ii) Infinite
  - (iii) Finite
  - (iv) None of the above

(b) The output voltage for an open loop non-inverting amplifier is

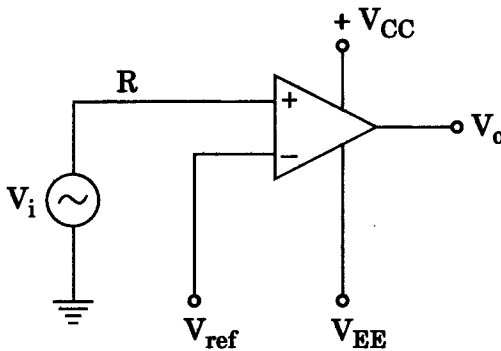
(i)  $-\frac{A}{V_i}$

(ii)  $AV_i$

(iii)  $\frac{A}{V_i}$

(iv)  $\frac{V_i}{A}$

(c) The circuit shown in Figure 1 is named as



*Figure 1*

(i) Differentiator

(ii) Integrator

(iii) Subtractor

(iv) Comparator

- (d) Which of the following applications best describes 555 timer IC ?
- (i) Monostable multivibrator
  - (ii) Astable multivibrator
  - (iii) Bistable multivibrator
  - (iv) Free running multivibrator
- (e) Operational amplifier can be used as a
- (i) Differentiator
  - (ii) Divider
  - (iii) Multiplier
  - (iv) All of the above
- (f) Which of the following applications include a Phase-Locked Loop (PLL) circuit ?
- (i) Modems
  - (ii) AM decoders
  - (iii) Tracking filters
  - (iv) All of the above
- (g) An IC has \_\_\_\_\_ size.
- (i) very large
  - (ii) large
  - (iii) extremely small
  - (iv) None of the above

2. Explain the closed loop configuration of the Op-Amp as an inverting, non-inverting and voltage follower. 14
3. (a) Write the concept of passive and active filters. 7
- (b) Calculate the gain of an inverting and non-inverting amplifier for values of  $R_f = 200 \text{ k}\Omega$  and  $R_i = 100 \text{ k}\Omega$ . 7
4. (a) Draw the block and pin diagram of IC 555. 7
- (b) Write the function of each pin of IC 555. 7
5. Explain the working of Phase Lock Loop (PLL) as frequency multiplier. 14
6. Draw the circuit diagram using Op-Amp and derive an expression for the output voltage of the following :  $2 \times 7 = 14$
- (a) Non-inverting adder and amplifier
- (b) Difference amplifier
7. Write short notes on any *two* of the following :  $2 \times 7 = 14$
- (a) Logarithmic and Antilogarithmic Amplifiers
- (b) Band Reject Filter
- (c) Schmitt Trigger