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**Question Paper Code : X 10363**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020/  
APRIL/MAY 2021

Fourth Semester

Electronics and Communication Engineering

EC8453 – LINEAR INTEGRATED CIRCUITS

(Common to Biomedical Engineering/Medical Electronics/B.E. Robotics and  
Automation)

(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. What causes slew rate ?
2. What are the assumptions made from ideal op-amp characteristics ?
3. Define voltage follower.
4. What is the need for an integrator ?
5. List the features of 566 VCO.
6. Define lock range.
7. What is integrating type converter ?
8. What are the advantages and disadvantages of R-2R ladder DAC ?
9. What is the necessity of having input and output capacitors in three terminal IC regulators ?
10. Mention the advantages of opto-couplers.



PART – B

(5×13=65 Marks)

11. a) For the circuit shown in figure 11. a), find out  $v_0$  as function of  $v_1$  and  $v_2$ . (13)

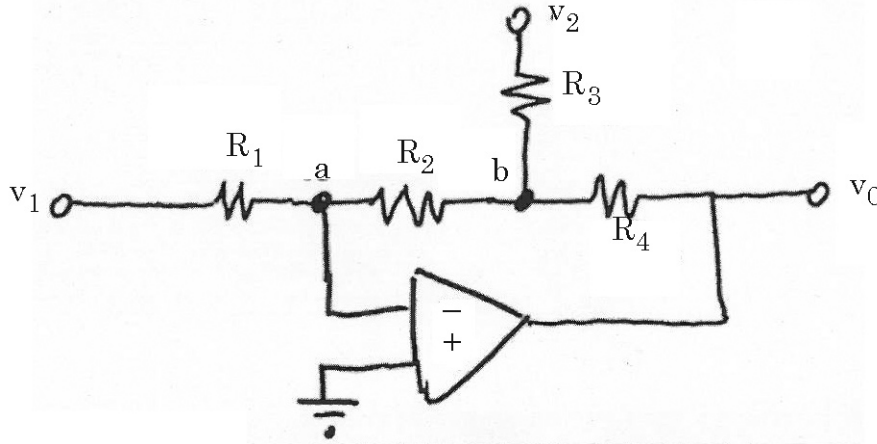


Figure 11. a)

(OR)

- b) With neat sketches, explain in detail the working of Widlar and Wilson current sources. (13)
12. a) With neat circuit diagram explain the working principle of instrumentation amplifier and derive its differential gain. (13)
- (OR)
- b) Design a second order Butterworth low pass filter having upper cut-off frequency 1 kHz. (13)
13. a) Draw the FSK modulator and demodulator circuits implemented using IC565 and explain its operation. (13)
- (OR)
- b) Mention the important building blocks of Phase Locked Loop (PLL) explain its working. (13)
14. a) Draw the dual slope ADC and explain its working. (13)
- (OR)
- b) Describe in detail about binary weighted resistor type digital to analog converter with necessary circuit diagram. (13)



15. a) What are the modes of operation of a timer ? Draw the functional diagram of a square wave generator using timer and derive its duty cycle. **(13)**

(OR)

b) Draw the functional diagram of 723 regulator. And explain how it can be used as a high voltage regulator. **(13)**

PART – C

**(1×15=15 Marks)**

16. a) Find out the input impedance ( $Z_{in} = V_{in}/I_{in}$ ) of the circuit shown in figure 16 a). **(15)**

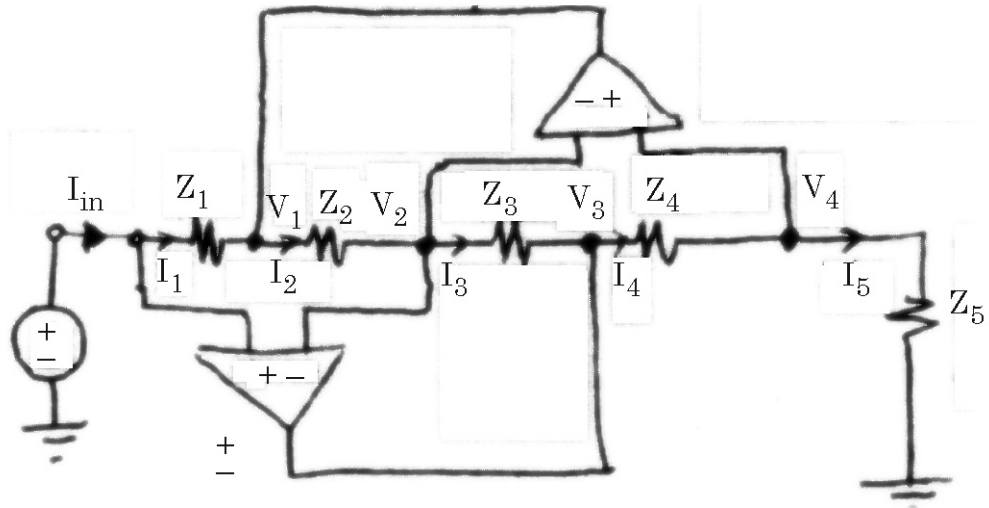


Figure 16. a)

(OR)

b) i) Explain how resistors can be realized using switched capacitor filter. **(8)**

ii) Describe about the Gilbert multiplier cell with relevant sketch. **(7)**

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