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Question Paper Code: **11286**

**B.E./B.Tech.Degree Examinations, April/May 2011
Regulations 2008**

Fourth Semester

Electronics and Communication Engineering

EC 2254 Linear Integrated Circuits

(Common to PTEC 2254 Linear Integrated Circuits for B.E.(Part -Time) Third Semester ECE - Regulations 2009)

Time: Three Hours

Maximum: 100 marks

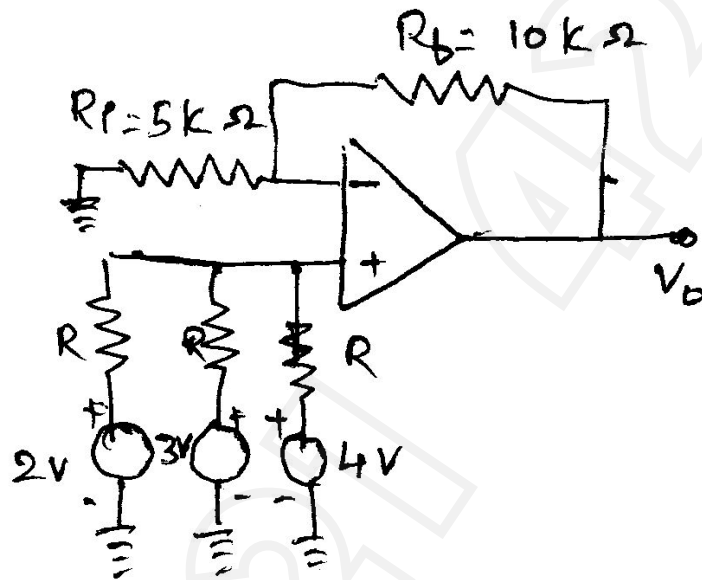
Answer ALL Questions

Part A - (10 x 2 = 20 marks)

1. Name the different methods used in fabrication of integrated resistors.
2. Define CMRR of an OP-AMP.
3. Mention two important features of an instrumentation amplifier.
4. How does precision rectifier differ from the conventional rectifier?
5. What are the advantages of emitter coupled transistor pair?
6. With reference to a VCO, define voltage to frequency conversion factor K_v .
7. Define accuracy of a D/A converter
8. Which is the fastest ADC? State the reason.
9. Define the duty cycle in astable multivibrator using IC 555.
10. What is an optocoupler? Mention its applications.

Part B - (5 x 16 = 80 marks)

11. (a) (i) With a neat circuit diagram and with necessary equations, explain the concept of Widlar current source used in op-amp circuit. (10)
- (ii) For the non-inverting op-amp shown in figure below, find the output voltage V_0 . (6)



OR

11. (b) (i) Define and explain slew rate. What is 'full-power bandwidth'? Also explain the methods adopted to improve slew rate. (10)
- (ii) Define output off-set voltage. Explain methods to nullify off-set voltage? (6)
12. (a) With neat circuit diagrams and mathematical expressions, explain the operation of the following op-amp applications: (4)
- (i) Scale changer (4)
 - (ii) Voltage follower (4)
 - (iii) Non-Inverting adder (4)
 - (iv) Integrator. (4)

OR

12. (b) With the help of circuits and necessary equations, explain how log and antilog computations are performed using IC 741. (16)

13. (a) Sketch and explain the following applications of multipliers:

- (1) Squaring (4)
- (2) finding square root (4)
- (3) frequency doubler (4)
- (4) phase angle detector. (4)

OR

13. (b) (i) Draw the block diagram of VCO and explain its operation. Also derive the frequency of oscillator. (10)

(ii) Draw the circuit of a PLL used as AM detector and explain its operation. (6)

14. (a) (i) Explain the operation of a weighted resistor type D/A converter. (8)

(ii) What are the limitations in weighted resistor type D/A converters and explain how this problem can be solved in R-2R ladder type D/A converters. (8)

OR

14. (b) (i) With the neat block diagram, explain, in detail, the successive approximation type A/D converter. (8)

(ii) Explain the over sampling A/D converter with functional block diagram. (8)

15. (a) (i) Draw the circuit using op-amp to generate triangular wave. Explain its operation. (8)

(ii) With a neat diagram, explain the working of step down switching regulator. (8)

OR

15. (b) (i) With suitable diagram, explain the working of a switched capacitor filter. Also explain how resistor can be realized using switched capacitor filter. (8)

(ii) With necessary diagrams, explain the operation of frequency to voltage converters. (8)
