

**POKHARA UNIVERSITY**

Level: Bachelor  
Programme: BE

Semester – Spring

Year : 2010

Full Marks : 100

Pass Mark : 45

Course: Electronic Circuit I

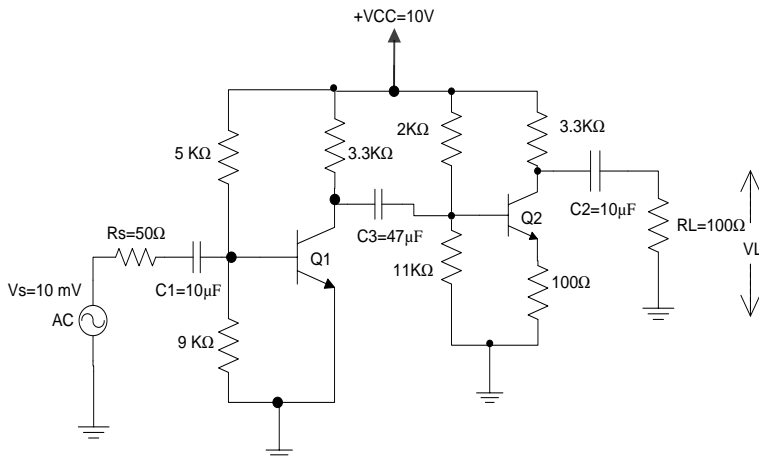
Time : 3 hrs

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

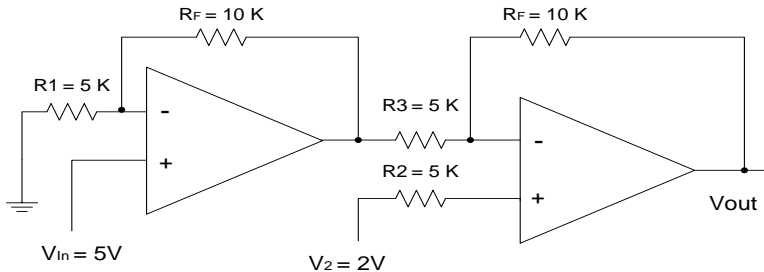
**Attempt all the questions.**

- 1. a. Darlington pair is also called as super beta transistors. Explain. 2+5  
Calculate the gain of  $n^{\text{th}}$  stage multistage amplifier in dB
- b. Find  $V_L/V_S$  in the circuit below: ( $\beta=100$ ,  $r_e=25 \Omega$ ,  $r_c=1M\Omega$ ) 8



- 2. a. What are the methods of coupling? Describe about R-C coupling 2+5  
method.
- b. What do you mean by inter-electrode capacitance? Derive the 2+6  
expressions for Miller effect capacitance.
- 3. a. Draw class-AB amplifier and explain, how does it help to 5+2  
remove crossover distortion.

- b. Derive the efficiency of a class A amplifier. Draw the circuit of transformer coupled push pull amplifier. 8
4. a. What is voltage regulation? Describe how shunt regulator circuit helps in voltage regulation. 8
- b. Describe the effect of negative feedback in gain and bandwidth. An amplifier with voltage gain of 50 dB uses 1/10 of its output in negative feedback. Calculate the gain with feedback in dB. 7
5. a. What do you mean by differential amplifier? Design an Operational Amplifier circuit that produces an output equal to  $(0.1v_1 - 0.33v_2)$  7
- b. Draw a neat circuit of a Wien-Bridge oscillator circuit and obtain the expression for frequency of oscillation. 8
6. a. State the ideal characteristics of an Ideal Op-Amp. Calculate the output voltage from the circuit below. 8



- b. What do you mean by logarithmic amplifier? An oscillator is designed with  $L_1 = 3\text{mH}$  and  $L_2 = 25\text{mH}$ . Determine the range of capacitance, if the frequency of oscillation is to vary between 950 KHz to 1050 KHz. 7
7. Write short notes on **any two**: 2×5
- a. Weighted resistor D/A
- b. Basic log amplifier
- c. iii. Flash A/D convert