KADI SERVA VISWAVIDYALAYA

LDRP INSTITUTE OF TECHNOLOGY AND RESEARCH GANDHINAGAR

B.E. (ELECTRICAL) MID SEMESTER EXAM MARCH 2015

ANALOG ELECTRONICS

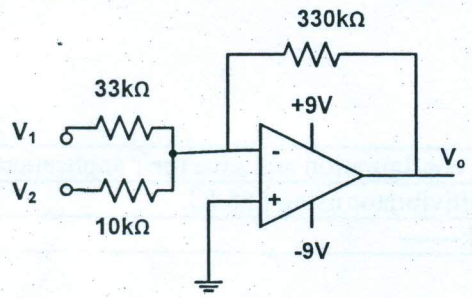
Time: 12:00 to 1:30 pm **Date: 5th March 2015**

Semester: IV (EE) **Maximum Marks: 30**

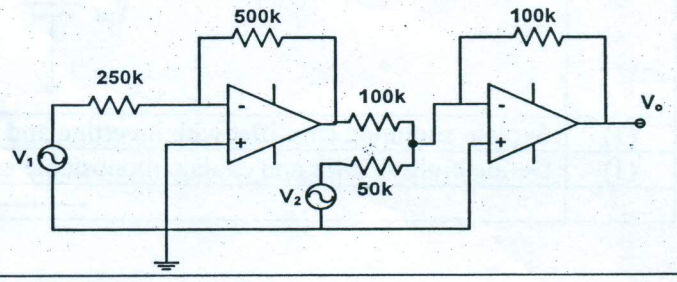
Instructions: (i) Attempt all questions.
(ii) Electronics gadgets are strictly prohibited except calculator.
(iii) Explanation is compulsory for answer (5) and (6) of Q-I.

(I) Attempt any five: **(10)**

(1) Calculate output voltage if $V_1 = 0$ V and $V_2 = 0.2$ V



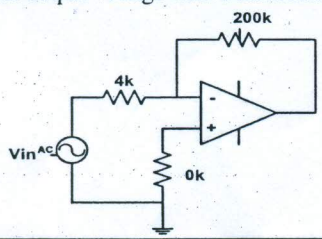
(2) Determine the output voltage V_o in terms of V_1 and V_2 and Calculate V_o if $V_1 = -V_2 = 300$ mV.



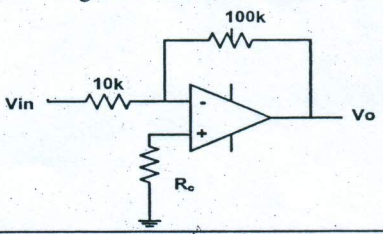
(3) Fill in the blanks related to operational amplifier (any **Four**)

i. Full form of PSS is _____ and it is generally expressed in _____.
ii. For the ideal Op-amp, the value of common mode rejection ratio is _____
iii. The output stage of Op-amp is generally a _____.
iv. For the ideal Op-amp, the value of slew rate is _____
v. For the practical differentiator, output waveform is _____, when input is of square waveform.

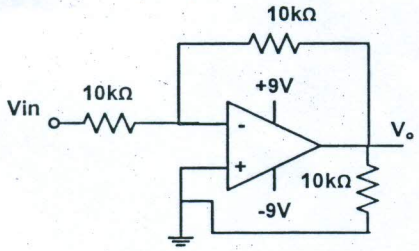
(4) (i) Determine the output voltage with a sinusoidal input of 2.5 mV



(ii) Calculate the input voltage for this circuit if Vo = –11 V

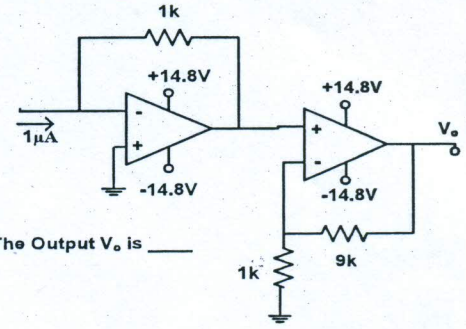


(5) The input impedance of op-amp of figure is



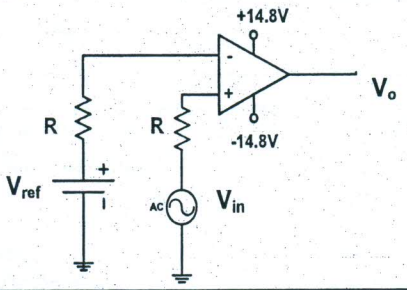
(a) 120k (b) 110k (c) infinity (d) 10k

(6) Calculate output voltage V_o



(a) -14.8V (b) -100mV (c) 10V (d) 10mV

II(A)	Explain Non-inverting Amplifier with circuit and derive expression of closed loop gain, Input resistance and output resistance with feedback.	**(5)**
II(B)	Derive the equation of voltage gain for closed loop differential amplifiers with one and two op-amps	**(5)**

	OR	
II(A)	Explain necessity of Integrator. Derive its output equation and also draw output waveform when input signal is square and sinusoidal waveform with unity peak-peak value.	**(5)**
II(B)	Design a Zener diode tester circuit to test IN3826 zeners to block 5.1V and also design LED tester using Op-amp.	**(5)**
III	**Attempt any two:**	**(10)**
(1)	Define any five terms: (i) PSS (ii) CMRR (iii) Output Voltage Swing (iv) Slew Rate (v) Voltage Follower (vi) Input offset voltage (vii) Ideal Voltage Transfer Curve (viii) SSI, MSI, LSI and VLSI	
(2)	Draw the output voltage waveform with scale for the following circuit diagram if $V_{in} = 2 \sin \omega t$ and (i) $V_{ref} = -1V$, (ii) $V_{ref} = 0V$, (iii) $V_{ref} = 1V$ 	
(3)	Explain summing amplifier with inverting and non inverting configuration and give their applications.	
(4)	Define multivibrator and explain monostable and astable multivibrator using 555 IC.	
	----------Best of Luck------	