



SF-6467

B. E. - II (Sem. IV) (Comp.) Examination

May / June - 2011

Linear Electronics - II

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृष्टावेक निशानीवाणी विगतो उत्तरवही पर अवश्य कभवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. E. - 2 (SEM. 4) (COMP.)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="LINEAR ELECTRONICS - 2"/>	<input type="text"/>
Subject Code No. : <input type="text" value="6"/> <input type="text" value="4"/> <input type="text" value="6"/> <input type="text" value="7"/>	<input type="text"/>
Section No. (1, 2,.....) : <input type="text" value="NIL"/>	
	Student's Signature

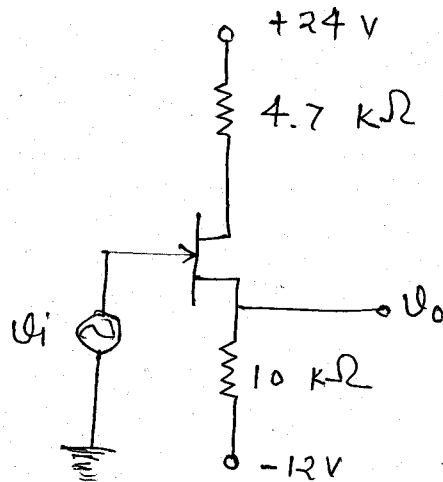
- (2) Attempt all the questions.
- (3) Assume suitable data whenever necessary.
- (4) Use of scientific calculator casio fx 82, 83, 100 or equivalent of any compulsory.
- (5) Figures to right indicate full marks.

- 1 (a) Attempt all questions : 10
 - (i) What do you mean nu diffusion capacitance ?
 - (ii) FET devices have very high _____ impedance.
 - (iii) The threshold voltage of n-channel MOSFET is _____.
 - (iv) In negative feedback amplifier, current sampling tends to
 - (a) increase the output resistance
 - (b) decrease the output resistance
 - (c) None
 - (v) Draw only the block diagram of negative feedback amplifier. 2
 - (vi) Write the four important properties of FET. 4
- (b) Write down the procedure for analysis of negative feedback amplifier. 5
- (c) Define desensitivity D for large values of D what is Af ? 5
What is significance of this result ?

- 2 (a) Explain the working of class B push-pull amplifier with necessary diagram. Also find its efficiency and figure of merit. 8
- (b) Derive the equation of current shunt feedback input and output resistance. 7

OR

- 2 (a) The JFET shown in fig. has 7
 $I_{PO} = 5.6 \text{ mA}$, $V_{po} = -4\text{V}$
 (i) Find V_o if $V_i = 0\text{V}$
 (ii) Find V_i if $V_o = 0\text{V}$



- (b) Define and plot output waveform of class A, B and C amplifier and give your comments regarding to the results. 8
- 3 Attempt any three : 15
- (i) How FET works as voltage variable resistor (VVR) ?
- (ii) Explain reflection in FET.
- (iii) Explain working of class C amplifier in brief.
- (iv) What is effect of collector coupling capacitor in the low frequency response of the transistor amplifier.
- (v) Draw the equivalent circuit for a voltage amplifier. What are the values of R_i and R_o ?

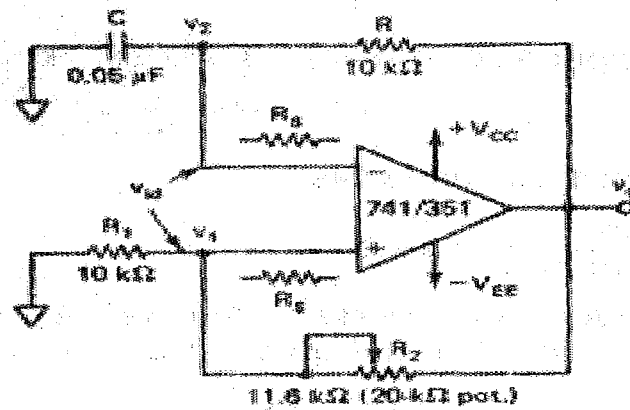
- 4 Attempt the following : 18
- (i) List the positive and negative voltage regulator series for 5V, 6V, 8V and 12V.
 - (ii) Using 7805C design a voltage regulator, design a current source that will deliver a current 0.25-A current to the 48- Ω 10-W load.
 - (iii) Write down application of NE-555 timer IC.
 - (iv) Define the following term
 - (a) Input impedance of op-amp
 - (b) Output impedance of op-amp
 - (v) Define the following term :
 - (a) Input bias current
 - (b) CMRR
 - (vi) Determine maximum output offset voltage caused by the input offset current i_{io} .
(assume $R_F = 100\text{ K}\Omega$, $i_{io} = 200\text{ nA}$)
 - (vii) State the requirement for the oscillation.
 - (viii) In the first order low pass filter for $f > f_H$ the gain decreases at rate of _____ up till $f = f_L$ similarly in the second order filter change in rate of the gain is _____.
 - (ix) Draw block diagram of oscillator also give the example of oscillator.

- 5 Attempt the following :
- (a) Explain phase shift oscillator. 5
 - (b) Design phase shift oscillator so that $f_o = 200\text{ Hz}$. 3
 - (c) Explain 555 as a mono stable multivibrator. 5
 - (d) For particular phase shift oscillator the following specification given 3
 $C = 0.1\ \mu\text{F}$, $R = 3.9\ \text{K}\Omega$ and $|R_f/R_1| = 29$. Determine frequency of oscillation.

OR

- 5 Attempt the following :
- (a) Design an adjustable voltage regulator to satisfy the following specifications. 8
 Output voltage $V_o = 5$ to 12 Volt, Output current $I_o = 1\text{A}$. Voltage regulator is LM 317.

- (b) Design a square wave oscillator of the fig 5(b) so, 5
 that $f_0 = 1\text{KHz}$. The op-amp is 741 with dc supply voltage $\pm 15\text{ Volt}$.



- (c) Write down characteristics of ideal op-amp. 3

6 Attempt the followings (any four) 16

- Explain second order high-pass filter.
- Write short note on summing and averaging amp. in inverting configuration mode.
- Explain a stable multi vibrator by the use of Timer IC.
- Write short note on Triangular wave generator.
- Write short note on Peak detector.