Marks Distribution (for PSPICE)

For Question Nos. 1 to 10 :

		Marks
Theory	:	07
Circuit Design	:	10
Simulation	:	10
Verification & Accuracy	:	05
Discussion	:	03
Viva-Voce	:	10
Laboratory Note Book	:	05
Total	**:**	**50 Marks**

Marks distribution (for digital)

For Question Nos. 11 & 12 :

		Marks
Theory	:	05
Circuit Design	:	15
Implementation	:	07
Experimental Result	:	05
Discussion	:	03
Viva-Voce	:	10
Laboratory Note Book	:	05
Total	**:**	**50 Marks**

7. Design a second order active low pass Butterworth filter with cut-off frequency 5 KHz. Simulate the circuit using PSPICE and plot the gain *vs.* frequency curve. Also verify the cut-off frequency with the given value.

8. Design a astable multivibrator circuit with frequency 2 KHz and duty cycle 75% using IC – 555. Simulate the circuit using PSPICE and plot the output voltage *vs.* time curve. Also verify the output frequency and duty cycle of the plot with their given values.

9. Design an integrator circuit using OP-APM taking input resistor R_1 = 1 KΩ feedback resistor R_2 = 6.8 KΩ, feedback capacitor C_2 = 0·1 μF and load resistor R_3 = 16 KΩ. Stimulate the circuit using PSPICE and plot the transient response of the output voltage for a suitable input voltage.

10. Design a differentiator circuit using OP-AMP taking input resistor R_1 = 1 KΩ , input capacitor C_1 = 0·4 μF, feedback resistor R_2 = 6·8 KΩ. and load resistor R_3 = 10 KΩ. Stimulate the circuit using PSPICE and plot the transitent response of the output voltage for a suitable input voltage.

11. Construct AND or and NOT gates using MOSFETs. Also verify their truth tables.

12. Design a 3-bit synchronous even counter using J–K flip-flop. Verify the count sequence by LED display.

– sine wave as an input signal with suitable amplitude and frequency of your choice. Simulate the circuit using PSPICE and plot the input voltage V_{in} *vs.* time and output voltage V_0 *vs.* time in same graph. Also verify the gain of the amplifier with given value.

3. Design a second order active high pass Butterworth filter with cut-off frequency 3 KHz. Simulate the circuit using PSPICE and plot the gain *vs.* frequency curve. Also verify the cut-off frequency with the given value.

4. Design a astable multivibrator circuit with frequency 3 KHz and duty cycle 66·67% using IC 555. Simulate the circuit using PSPICE and plot the output voltage *vs.* time curve. Also verify the output frequency and duty cycle of the plot with their given values.

5. Design a first order low pass active filter with cut-off frequency 1 KHz in PSPICE. Simulate the circuit and plot the gain *vs.* frequency curve. Also verify the cut-off frequency from the plot with its given value.

6. Design an inverting amplifier circuit using OP-AMP taking input resistor R_1 = 1 KΩ, feedback resistor R_2 = 10 KΩ and load resistor R_3 = 10 KΩ. Apply sine wave as an input signal with suitable amplitude and frequency of your choice. Simulate the circuit using PSPICE and plot the input voltage (V_{in}) *vs.* time and output voltage (V_0) *vs.* time in same graph. Also verify the gain of the amplifier with given value.

2015

M.Sc.

4th Semester Examination

ELECTRONICS

PAPER—ELC-405

(PRACTICAL)

Full Marks : 50

Time : 3 hours

The figures in the right-hand margin indicate full marks.

(Advanced Electronics Lab)

Answer any *one* question selecting it by a lucky draw.

In each of the following questions, you have to save the design file by "your roll no., — design" and then save the plot in a file "your roll no., — plot".

1. Design a first order high pass active filter with cut off frequency 5 KHz in PSPICE. Stimulate the circuit and plot the gain *Vs.* frequency curve. Also verify the cut off frequency of the plot with given value.

2. Design a non-inverting amplifier circuit using OP–AMP taking input resistor R_1 = 1KΩ, feedback resistor R_2 = 8·2 KΩ and load resistor R_3 = 10 KΩ. Apply

(Turn Over)