H 1236

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2006.

Fourth Semester

Computer Science and Engineering

EC 250 — ELECTRONIC CIRCUITS

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. How JFET can be used as an analog switch?

2. What do you mean by intrinsic and extrinsic semiconductor?

3. Justify that negative feedback stabilizes the gain.

4. Compare the frequency response of CE amplifier with and without feedback.

5. Define slew rate of an op–amp.

6. Find R and C values to generate 5 kHz in a Weinbridge oscillator.

7. Define the function of monostable multivibrator and Bistable multivibrator.

8. Draw the circuit diagram of series voltage regulator with short circuit protection.

9. Design a second order active low pass filter for a cut–off frequency of 5 kHz.

10. Explain sample and hold circuit.

PART B — (5 × 16 = 80 marks)

11. (i) Explain with neat diagram the working of Schmitt trigger with hysterisis characteristics. (10)

(ii) Design a Astable multivibrator using 555 IC to produce a pulse waveform at 8 kHz with 60% duty cycle. Draw the designed circuit. (6)

12. (a) Describe the characteristics of

(i) PN junction diode. (8)

(ii) Suggest two application diode. (8)

Or

(b) With structural diagram explain input and output characteristics of a BJT. Mark three regions of operation on the output characteristics and explain how will you measure h – parameters using the characteristics.

13. (a) (i) How op–amp can be used as integrator and differentiator. (8)

(ii) Draw a BIMOS amplifier circuit and explain its features. (8)

Or

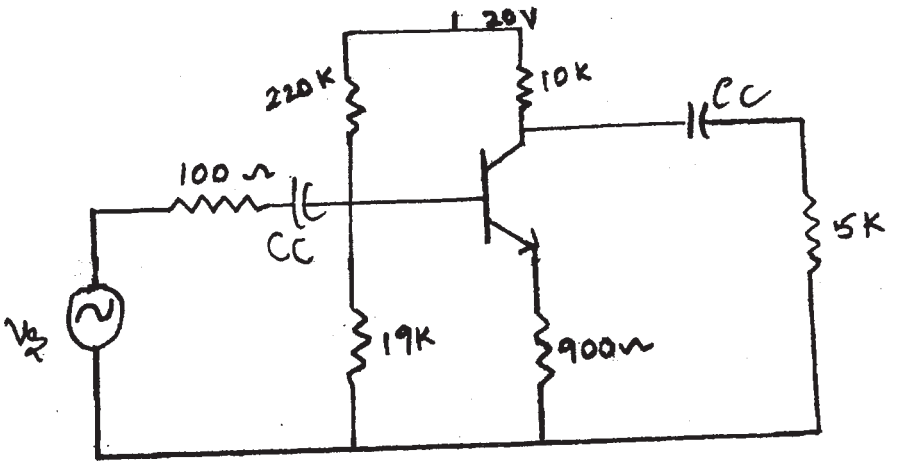
(b) With neat diagram explain the working of LC oscillator. Derive the frequency of oscillator.

14. (a) (i) Give example of amplifier circuits for every type of feedback. (8)

(ii) Draw the block diagram of voltage series feedback and derive A_{vf}, R_{if} and R_{of}. (8)

Or

(b) Obtain the voltage gain, current gain, input and output resistance of the circuit shown. Draw AC and DC load line and determine the maximum peak to peak voltage swing. Assume $h_{fe} = 100$, $h_{ie} = 2.2$ k.



15. (a) (i) With a neat diagram explain dual slope A/D converter. (8)

(ii) Explain transconductance Analog Multiplier with neat circuit diagram. (8)

Or

(b) (i) Describe the function of analog multiplexer and demultiplexer. (6)

(ii) Draw the low pass filter frequency response of Butterworth filter and chebyshev filter of same order. Briefly explain the pass band and stop band characteristics of both the above filters. (10)
