c) Explain current limiting circuits.

d) Describe SMPS in detail. How it is different from linear power supply?

OR

Describe voltage regulators. What are the various types of voltage regulators?

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Roll No .....

CS/IT - 304

B.E. III Semester

Examination, December 2015

Electronics Devices and Circuits

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) What is Zener diode?

b) Why CE configuration is generally used?

c) Explain FET.

d) The following test results were obtained in a CE amplifier circuit while measuring h-parameters experimentally :

i) With ac output shorted I_b=25μA, I_c=1.2mA, V_{be}=30mV and V_{ce} = 0.

ii) With ac input open circuited I_b= 0, I_c=32μA, V_{be}=0.3mV and V_{ce} = 1.2V

Determine hybrid parameters of the transistor.

OR

The collector and bare current of an N-P-N transistor are measured as $I_C = 5mA$, $I_B = 50\mu A$ and $I_{CBO} = 1\mu A$

i) Determine α, β and I_E.

ii) Determine new level of I_B required to produce $I_C = 10mA$.

2. a) Write down the advantages of negative feedback.

b) What is power amplifier?

c) Compare class A, B and C amplifier.

d) In a transistor Colpitt's oscillator L = 100μH, L_{RFC} = 0.6mH, C_1 = 0.001μF, C_2 = 0.01μF and C_c = 10μF. Determine :

i) Operating frequency

ii) Feedback fraction

iii) Minimum gain to sustain oscillations and emitter resistance if $R_C = 2.5\ k\Omega$.

OR

Derive an expression for frequency of oscillation for Wien Bridge Oscillator.

3. a) What is Cascode amplifier?

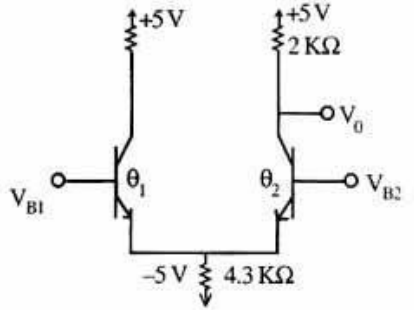
b) What is multivibrator? What are their various types?

c) Explain Clipper and Clamper.

d) Describe darlington amplifier and bootstrapping technique in detail with suitable diagram.

OR

In the following circuit, $V_{B1} = \frac{V_{id}}{2}$, and $V_{B2} = \frac{V_{id}}{2}$ where V_{id} is small signal with zero voltage find the magnitude of differential gain.



4. a) What is instrumentation amplifier?

b) Define Slew rate and Offset voltage.

c) Explain OP-amp as differentiator, summer and integrator with suitable diagram.

d) Describe Schmitt trigger.

OR

Describe 555 timer as astable multivibrator.

5. a) What do you understand by regulated power supply?

b) Explain about UPS.