

- 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?

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 $I_b=25\mu A$, $I_c=1.2mA$, $V_{be}=30mV$ and $V_{ce}=0$.
 - ii) With ac input open circuited $I_b=0$, $I_c=32\mu A$, $V_{be}=0.3mV$ and $V_{ce}=1.2V$

Determine hybrid parameters of the transistor.

OR

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

- Determine α , β and I_E .
- Determine new level of I_B required to produce $I_C = 10\text{mA}$.

- Write down the advantages of negative feedback.
 - What is power amplifier?
 - Compare class A, B and C amplifier.
 - In a transistor Colpitt's oscillator $L = 100\mu\text{H}$, $L_{RFC} = 0.6\text{mH}$, $C_1 = 0.001\mu\text{F}$, $C_2 = 0.01\mu\text{F}$ and $C_C = 10\mu\text{F}$. Determine :
 - Operating frequency
 - Feedback fraction
 - Minimum gain to sustain oscillations and emitter resistance if $R_C = 2.5\text{ k}\Omega$.

OR

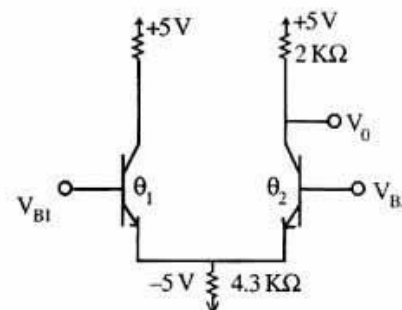
Derive an expression for frequency of oscillation for Wien Bridge Oscillator.

- What is Cascode amplifier?
 - What is multivibrator? What are their various types?
 - Explain Clipper and Clamper.

- 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.



- What is instrumentation amplifier?
 - Define Slew rate and Offset voltage.
 - Explain OP-amp as differentiator, summer and integrator with suitable diagram.
 - Describe Schmitt trigger.

OR

Describe 555 timer as astable multivibrator.

- What do you understand by regulated power supply?
 - Explain about UPS.