Government College of Engineering, Amravati

(An Autonomous Institute of Government of Maharashtra)

Third Semester B. Tech. (Instrumentation Engineering)

Winter – 2016

Course Code: INU302

Course Name: Electronics Devices and Circuits

Time: 2 hr.30min. **Max. Marks: 60**

Instructions to Candidate

1) All questions are compulsory.
2) Assume suitable data wherever necessary and clearly state the assumptions made.
3) Diagrams/sketches should be given wherever necessary.
4) Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5) Figures to the right indicate full marks.

1 **Solve ANY TWO from following questions.**

(a) Derive an expression for ripple factor of a full wave rectifier with LC filter. **6m**

(b) Explain the working of positive and negative clipper. What are the applications of clipper? **6m**

(c) Explain working principle of (i) Zener diode (ii)Tunnel diode .Give their characteristics and typical applications. **6m**

2 **Solve ANY TWO from the following questions.**

(a) Draw the various operating regions of a common emitter transistor on its output characteristics and explain it. **6m**

(b) Define the three different stability factors and give an expression that determines the variation of collector current in terms of stability factor? **6m**

(c) Discuss analysis of transistor amplifier using h-parameter in CE configuration. **6m**

3 **Solve the following questions.**

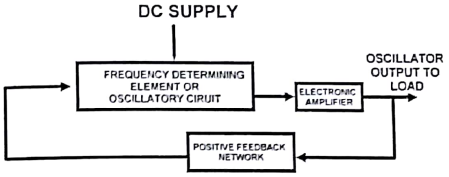
(a) For a series fed class A large signal amplifiers draw the output characteristics and current and voltage waveforms. Derive expression for output power. **6m**

(b) Discuss the general characteristics of feedback amplifier in detail. **6m**

4 **Solve ANY TWO from following questions.**

(a) Draw the circuit diagram of an astable multivibrator .Justify that it is a two stage RC coupled amplifier using feedback. How does it generate a square wave? **6m**

(b) A block diagram of an oscillator is shown in figure; discuss the use of each block. Design one of the oscillators and explain it. **6m**



(c) What are the two basic conditions for oscillation? Design colpitt's oscillator and also give its frequency of oscillation? **6m**

5 **Solve the following questions.**

(a) Distinguish between BJT and FET in detail. What is the difference between FET and MOSFET? **6m**

(b) Draw the characteristics of FET and derive an expression for pinch-off voltage and saturation drain current. **6m**