

Seat No. : \_\_\_\_\_

**NH-102**  
**November-2013**  
**B.Sc. (Sem.-III)**  
**201 : Electronics**

**Time : 3 Hours]**

**[Max. Marks : 70**

- Instruction :**
- (1) All questions carry equal marks.
  - (2) Figures at right hand side denote marks.
  - (3) Symbols have their usual meaning.

1. (a) Draw CE transistor amplifier circuit and discuss the effect of emitter bypass capacitor on low frequency response. 7
- (b) Draw CE hybrid –  $\pi$  model and briefly explain all components. 7

**OR**

Describe what you understand by the term ‘sag’ drawing a diagram if necessary. How does the lower 3-dB frequency of an amplifier determine the amount of sag in the output when handling a square wave ? 14

2. What is feed back ? Give the general theory of feed back. Why we use negative feed back in amplifier ? Explain in detail. 14

**OR**

Define types of negative feed back. Draw neat and clean diagram of current – series feed back and explain. Derive the formulas for voltage gain  $AV_f$  and feed back factor  $k$ .

3. Explain construction of JFET and draw characteristics curve of JFET. Also explain channel ohmic region and pinch off region of JFET. Give the equation of parameters of JFET. 14

**OR**

Explain enhancement type and depletion type MOSFET with characteristics and transfer curve. Also give symbols of both types of MOSFET.

4. Why filter circuit is necessary ? Draw neat and clean diagram and wave form for full wave rectifier with capacitor filter. Derive the formula for ripple factor. 14

**OR**

Draw the circuit diagram of Zener diode shunt regulation and explain. Also explain variation in regulation with varying input voltage and load resistance.

5. Give the answer : 14

- (1) Draw frequency response curve of an CE amplifier.
  - (2) What is Sag ?
  - (3) What is base spreading resistance ?
  - (4) Write full form of MOSFET.
  - (5) Is FET current controlled device or not ?
  - (6) What is  $I_{GSS}$  ?
  - (7) Give the full form of VVR.
  - (8) Define Voltage Regulation.
  - (9) What is feed back factor ?
  - (10) Write formula for load resistance.
  - (11) Why bleeder resistance used in L-C filter ?
  - (12) Give the equation of ripple in inductor filter.
  - (13) Why voltage shunt feed back not appreciable ?
  - (14) State any two disadvantages of zener diode shunt regulator.
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