

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-IV(OLD) – EXAMINATION – SUMMER 2019****Subject Code:141101****Date:17/05/2019****Subject Name: Advance Electronics****Time:02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Draw the circuit of two stage RC coupled amplifier and explain it in detail. Also explain the significance of coupling and bypass capacitor. **07**
- (b) Draw the hybrid  $\pi$  equivalent circuit of CE amplifier with resistive load and derive the equation of short circuit Current Gain. **07**
- Q.2** (a) What do you mean by negative feedback? Enlist the advantages of negative feedback. Also derive equation of close loop gain in terms of open loop gain. **07**
- (b) Explain the concept of cascaded amplifier and derive the equation of overall Gain. Also compare Frequency response of single stage amplifier and cascaded multistage amplifier. **07**
- OR**
- (b) With respect to transistor hybrid  $\pi$  model, **07**
- (i) Derive equation of Base Spreading resistor  $r_{b'b}$  in terms of  $h_{ie}$ .
- (ii) Explain the validity of hybrid  $\pi$  model.
- Q.3** (a) Draw the Block diagram of various Feedback topology and explain the significance of each topology. **07**
- (b) Draw the circuit of Wien Bridge Oscillator and explain it in detail. **07**
- OR**
- Q.3** (a) Explain Crystal Oscillator in detail **07**
- (b) What is difference between amplifier and Oscillator? Explain the concept of oscillation with Barkhausen criteria. **07**
- Q.4** (a) Draw the circuit of Inverting configuration of Op. Amp. and derive the equation of Close loop gain.. **07**
- (b) Enlist at least six characteristics of Ideal Op. Amp. Also draw Ideal voltage transfer curve of Op. Amp. and explain it. **07**
- OR**
- Q.4** (a) With respect to 741 Op. Amp. **07**
- (i) Draw equivalent circuit of Op. Amp. and explain significance of each component.
- (ii) Draw the pin configuration of Op. Amp. IC 741 and explain significance of each pin.
- (b) Explain practical way of measuring Slew Rate of Op. Amp. with necessary Circuit & Waveform. **07**
- Q.5** (a) Explain Dual slop A/D converter in detail. **07**
- (b) Explain DTL in detail. Also draw two input DTL NOR gate. **07**
- OR**
- Q.5** (a) Explain TTL in detail. Also draw two input TTL NAND gate. **07**
- (b) Explain weighted resistor type DAC in detail. **07**

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