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Total Number of Pages: 02

**B.Tech**  
**BE2101**

**2<sup>nd</sup> Semester Back Examination 2016-17**

**BASIC ELECTRONICS**

**BRANCH(S): ALL**

**Time: 3 Hours**

**Max Marks: 70**

**Q.CODE: Z1040**

**Answer Question No.1 which is compulsory and any five from the rest.  
The figures in the right hand margin indicate marks.**

- Q1 Answer the following questions: (2 x 10)**
- a) Define Slew rate of Op-Amp.
  - b) Construct a full adder circuit by using half adder circuits.
  - c) Define thermal runaway for transistor.
  - d) Write down the collector current expression in common emitter configuration.
  - e) What is the significance of virtual ground of an op-amp?
  - f) A Zener diode is always used in reverse bias. Why?
  - g) What is a Fermi level? Where the Fermi levels exist for Intrinsic & Extrinsic Semiconductor?
  - h) State and differences between a static RAM and dynamic RAM.
  - i) State and prove De-Morgan's law.
  - j) What do you mean by mobility of electrons & holes?
- Q2**
- a) Explain the operation of a Wein bridge oscillator. (5)
  - b) Which are the gates known as universal gate and why? Also verify the universal properties of NAND gate. (5)
- Q3**
- a) Derive the output expression of integrator circuit using op-amp with necessary circuit diagram & waveforms. (5)
  - b) Explain the operation of a Full wave rectifier. (5)
- Q4**
- a) Write down the seven characteristics of Ideal op-amp. (5)
  - b) What is a Signal generator? Explain the operation of a Signal generator with necessary block diagram. (5)

**Q5**

- a) Explain with proper diagram how a transistor can be used as an amplifier in CE configuration. (5)
- b) Explain a voltage divider biasing and also derive the expressions for dc values of  $I_B$  &  $I_C$ . (5)

**Q6**

- a) Explain the measurement of unknown frequency, phase and voltage by using CRO. (5)
- b) What are the advantages of Negative feedback? Derive the expressions of gain with feedback. (5)

**Q7**

- a) Explain how a diode can be used as a clamper & clipper circuit. (5)
- b) Draw a simplified hybrid model of CE transistor and find the expression for voltage gain, input impedance & output impedance. (5)

**Q8**

**Answer the following questions (Any Two) (5 x 2)**

- a) Q-point analysis.
- b) Standard forms of Boolean expressions.
- c) Summing amplifier.