Paper Code – U117–104A(T1)

Total No. of Questions – [4] Total No. of Printed Pages 02

G.R. No.	

SEPTEMBER 2017 / IN - SEM (T1)

F. Y. B.TECH. (COMMON) (SEMESTER - I)

COURSE NAME: Basic Electronics Engineering

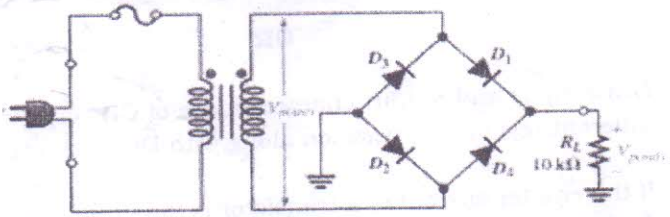
(2017 PATTERN)

Time : [1 Hour] **[Max. Marks : 30]**

(*) Instructions to candidates:
1) **Answer Q.1 OR Q.2, Q.3 OR Q.4**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q1 **a)** Compare performance of half wave rectifier, full wave center tap rectifier and Full wave bridge rectifier w.r.t to their circuit diagram, waveforms, Vdc, ripple frequency, PIV. **[6]**

b) Determine peak output voltage for the bridge rectifier in Figure below. Consider the forward voltage drop across each diode as 0.7V, what PIV rating is required for the diodes? The transformer is specified to have a 12 V rms secondary voltage. Draw output voltage and output current waveforms w.r.t to input voltage. **[6]**

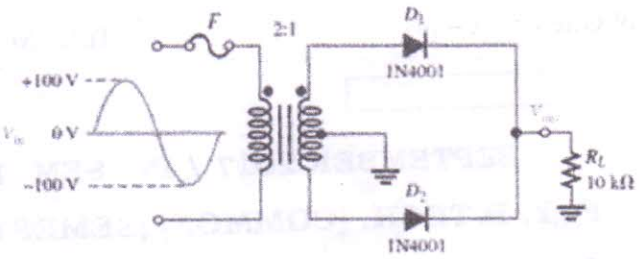


c) Draw and explain V-I characteristics of Zener diode. **[4]**

OR

Q2 **a)** Draw and explain working of full-wave bridge rectifier with capacitor filter along with waveforms. State the equation for DC output voltage and PIV without filter. **[6]**

b) Show the voltage waveforms across each half of the secondary winding and across R_L when a 100 V peak sine wave is applied to the primary winding in Figure below. Consider the forward voltage drop across diode as 0.7V. What minimum PIV rating must the diodes have? **[6]**

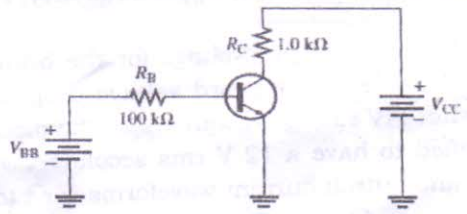


c) Describe the working principle of light emitting diode. List the materials used in LED for any two colors. **[4]**

Q3 a) Draw the circuit diagram and explain working of CE amplifier along with waveforms. **[6]**

b) In a certain transistor circuit, the base current is 2 percent of the 30mA emitter current. Determine the collector current and βdc. **[4]**

c) Assume that the transistor in the circuit of Figure is replaced with one having a βdc of 200. Determine I_B, I_C given that V_{CC}=10 V and V_{BB} = 3 V. Assume V_{BE} = 0.7v. **[4]**



OR

Q4 a) Draw Input and output characteristics of CE configuration, show different regions of operation along with DC load-line. **[6]**

b) If the emitter current of a transistor is 8mA and I_B is 1/100 of I_C, determine I_C and α_{dc}. **[4]**

c) Determine I_C(sat) for the transistor in Figure. What is the value of I_B necessary to produce saturation? Assume V_{CE}(sat) = 0 V. **[4]**