Sr. No. 6380

(0905)

BE(Common) 1st SEMESTER July 2018

SUBJECT: Basic electronics

PAPER: EC-101

Maximum marks:50

Time allowed: 3 hours

Note: Students are required to attempt five questions in all attempting atleast two questions from each section.

PART-A

1. a) How are semiconductor diodes used for rectification purpose?
   b) Draw the V-I characteristics of a zener diode and explain briefly how reverse current increases suddenly at the breakdown voltage. 2 X 5 =10

2. a) Describe the operation of a forward-biased junction of a pnp transistor. Explain the flow of majority and minority carriers.
   b) Describe the behaviour of a common base silicon transistor amplifier. Draw its input and output characteristics. 2 X 5 =10

3. a) Explain the basic construction of a p-channel JFET.
   b) What is the difference between JFET and MOSFET? Explain MOSFET in detail. 2 X 5 =10

4. Describe the application of an op-amp as a: 1 X 10
   i) Scale changer
   ii) integrator

PART – B

5. a) Explain the Barkhausen criteria.
   b) Convert the following logic equation into canonical POS form and realise using a convenient universal gate. $Y = (A + BC)(B + C'A)$ 2 X 5 = 10

6. a) Draw the circuit of an S-R flip flop. Explain its working and give its truth table.
   b) How does a parallel-in, serial-out shift register work? Explain with a suitable example.

7. a) Differentiate between encoders and multiplexers.
   b) What are signal generators? Explain any one type. 2 X 5 = 10

8. a) What are transducers? Give their classification? Give the working principle of a temperature transducer.
   b) What are the different frequency bands used for communication? Why are signals modulated before transmission? 2 X 5 =10