Roll No……..….. **Total No. of Printed Pages: 1**

Total No. of Questions: [09]

B. Tech. (ECE) (Semester – 3rd)
ELECTRONIC DEVICES & CIRCUITS
Subject Code: BECES1301
Paper ID: [18111310]

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(2 marks each)**

Q1. Attempt the following:

a) Differentiate between intrinsic and extrinsic semiconductors.
b) What are the key properties of a diode?
c) How do you distinguish between emitter, collector, and base in BJTs.
d) Draw constructional diagram of JFET.
e) What is the effect of minority careers in characteristic curves of a diode?
f) What is photolithography?
g) What is Ebers-Moll Model?
h) What is Schottky diode? List its applications.
i) Differentiate avalanche and zener breakdowns.
j) How can we use BJT as a switch?

Section – B **(5 marks each)**

Q2. Compare BJT and FET in terms of construction, properties and working.

Q3. Draw constructional diagram of enhancement mode n-MOSFET. Discuss its working with suitable characteristic curves.

Q4. Discuss small signal low frequency analysis of CE BJT amplifier using h-parameters.

Q5. Draw CMOS inverter circuit and explain its working.

Q6. What are various biasing techniques used for BJTs? Compare their stabilities.

Section – C **(10 marks each)**

Q7. What are high-frequency equivalent models of BJT? Discuss in terms of h-parameters.

Q8. Discuss various processes involved in integrated circuits fabrication with suitable diagrams.

Q9. Write short notes on:

(a) C-V characteristics of n-MOSFET
(b) Twin-tun CMOS process