



R18 Regulation

Subject code: 2E2AG

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech II Semester Supplementary Examinations, October 2022

Electronic Devices & Circuits

(Common to EEE & IT)

Maximum Marks: 70

Date: 18.10.2022

Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Define static and dynamic resistance of P-N diode.
- 2 Draw the Diode Equivalent Circuit.
- 3 Define the Zener break down.
- 4 Write down the Zener Diode applications.
- 5 Compare the rectifier and regulator.
- 6 What is the need for a filter in rectifier?
- 7 What is the need of biasing?
- 8 What do you mean by early effect?
- 9 Mention small signal parameters of JFET.
- 10 Draw the static characteristics curves of an n-channel JFET.

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 a) Explain the drift and diffusion current in a semiconductor.
b) Derive an expression for transition capacitance of a diode. [5+5]

OR

- 12 a) Distinguish between Static and dynamic resistances of a P-N diode.
b) Derive an expression for total diode current starting from Boltzmann relationship in terms of the applied voltage? [5+5]

- 13 Define varactor diode? Explain the operation of varactor diode with its equivalent circuit and mention its applications. [10]

OR

- 14 What is tunneling phenomena? Explain the principle of operation of tunnel diode with its characteristics. [10]

- 15 a) Explain the operation of Full Wave Rectifier with Induction filter with necessary diagrams.
b) A diode whose internal resistance is 20Ω is to supply power to a 100Ω load from 110V (R.M.S) source of supply. Calculate: i) Peak Load Current ii) DC Load Current iii) AC Load Current iv) % Regulation from No load to given load. [5+5]

OR
16 Derive the expression for the ripple factor of π -Section filter when used with a Full-wave-rectifier. Make necessary approximations? [10]

- 17 a) Explain how transistor works as an amplifier?
b) Explain about Punch through and Base width modulation. [5+5]

OR
18 Explain the operation of CC Configuration of BJT and its input and output characteristics briefly. [10]

- 19 a) Write down the difference between BJT & FET.
b) Explain static and drain characteristics of a JFET. [5+5]

OR
20 a) Sketch the drain characteristics of MOSFET for different values of V_{GS} & mark different regions of operation.
b) Derive the expression for trans-conductance of MOSFET? [5+5]