



R20 Regulation

Subject code:3P3BC

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, December 2025

ANALOG ELECTRONICS (EEE)

Maximum Marks: 70

Date: 19.12.2025

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.
 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)		Marks	CO	BTL
1	What are the different configurations of BJT?	2M	1	L1
2	Give some characteristics of CE amplifier?	2M	1	L1
3	Why non-linear distortion is called harmonic distortion?	2M	2	L1
4	State the Barkhausen criterion for oscillations.	2M	2	L1
5	Classify power amplifiers.	2M	3	L1
6	The thermal resistance of a transistor is 100C/W. It is operated at $T_A=250C$ and dissipates 3W of power. Calculate the junction temperature	2M	3	L1
7	Explain condition of RC circuit to work as Integrator.	2M	4	L1
8	What is the function of a comparator circuit?	2M	4	L1
9	Write the applications of Bi-stable multi-vibrator.	2M	5	L1
10	List the Transistor Switching Times.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Derive the equations for voltage gain, current gain, input impedance and output admittance for a BJT using low frequency h-parameter model for CE configuration.	10M	1	L2
OR				
12	Derive the expression for CE amplifier on low frequency response.	10M	1	L2
13	What are the different types of negative feedback? Explain how the input and output impedances of an amplifier are affected by the different types of negative feedback?	10M	2	L2
OR				
14	a) Describe the construction of phase shift oscillator and explain its working. b) In an RC phase shift oscillator, if its frequency of oscillation is 955 Hz and $R_1 = R_2 = R_3 = 680 K \text{ ohm}$, find the value of capacitors.	5M 5M	2	L2

15	a) Derive the expression for Max. Theoretical efficiency in the case of class B push pull amplifier. b) What are its advantages and disadvantages?	6M 4M	3	L2
OR				
16	a) Show that the transformer coupled class A amplifier maximum efficiency is 50%. b) Write short notes on Heat sink.	5M 5M	3	L2
17	Derive the expression for rise time of integrating circuit and prove that it is proportional to time constant and inversely proportional to upper 3 dB frequency.	10M	4	L2
OR				
18	a) With the help of neat circuit diagram and waveforms explain the working of positive & negative clipping circuit. b) State and prove clamping circuit theorem.	6M 4M	4	L2
19	a) Draw and Explain the piece-wise linear characteristics of a diode. b) Explain the Diode switching times.	3M 7M	5	L2
OR				
20	Draw and explain the circuit of mono stable multi vibrator with necessary wave forms and also derive the expression of pulse width.	10M	5	L2