

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E. DEGREE END SEMESTER THEORY EXAMINATIONS, APR/MAY 2026****Third Semester****Electronics and Communication Engineering****EC3353 – ELECTRONIC DEVICES AND CIRCUITS****Regulations - 2021****Duration : 3 Hrs****Maximum : 100 Marks****PART – A(ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BTL	CO	Marks
1.	Define diffusion capacitance of a PN junction diode.	L1	1	2
2.	Differentiate between Half-wave and Full-wave rectifiers.	L2	1	2
3.	State the need for biasing in BJT amplifiers.	L1	2	2
4.	Write the expression for voltage gain of a Common Source (CS) MOSFET amplifier.	L2	2	2
5.	List two applications of cascode amplifier.	L1	3	2
6.	Define common mode gain in differential amplifiers.	L1	3	2
7.	Write the Barkhausen criterion for oscillation.	L2	4	2
8.	Mention any two advantages of negative feedback in amplifiers.	L2	4	2
9.	Define the efficiency of a Class B amplifier.	L1	5	2
10.	Write the principle of operation of a Boost converter.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BTL	CO	Marks
11. a	Explain the V-I characteristics of a PN junction diode and Zener diode with neat diagrams.	L2	1	16
	Or			
b	Describe the operation of BJT and MOSFET along with their output characteristics.	L2	1	16
12. a	Analyze the frequency response of CE amplifier and derive the expression for mid-band gain.	L4	2	16
	Or			
b	Draw and explain the high frequency small-signal equivalent circuit of MOSFET and obtain its gain expression.	L4	2	16
13. a	Explain the working of a differential amplifier. Derive expressions for CMRR and differential gain.	L3	3	16
	Or			
b	Discuss the operation of tuned amplifiers and methods of neutralization for stability.	L3	3	16
14. a	With neat diagrams, explain the different types of negative feedback topologies and their effect on amplifier characteristics.	L4	4	16
	Or			
b	Explain the working principles of Wien Bridge and Colpitts oscillators. Derive their frequency of oscillation.	L4	4	16

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| 15. | a | Compare the operations of class A and Class C amplifiers with waveforms and compare the various parameters associated with it. | L5 | 5 | 16 |
| | | Or | | | |
| | b | Evaluate the performance of Buck, Boost, and Buck-Boost converters in terms of efficiency, voltage regulation, and component stress. Justify which converter is most suitable for renewable energy applications, supporting your answer with proper reasoning. | L5 | 5 | 16 |
