

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	SECOND		
Name of the Course	Basic Electronic Components & Devices		
Course Code	B23-ELE-203		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M2		
Level of the course	100-199		
Pre-requisite for the course (if any)	Physics as a Subject at 4.0 Level (Class XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Learn about active, Passive components and junction diode's 2. Understand the applications of junction diode and Zener diode 3. Understand the Concept of Bipolar Junction Transistor 4. Understand various R, L and C circuits 5. Practical exposure of the different active and passive components in their uses		
Credits	Theory	Practical	Total
	1	1	2
Contact Hours	15	30	45
Max. Marks: 50 (30 Theory + 20 Practical) Internal Assessment Marks: 10 Theory + 5 Practical End Term Exam Marks: 20 Theory + 15 Practical		Exam Time: 3 Hours each for Theory & Practical	
Part B- Contents of the Course			
<u>Instructions for Paper- Setter</u> 1. Nine questions will be set in all. All questions will carry equal marks. 2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.			

Unit	Topics	Contact Hours
I	Passive Components: Resistors, Capacitors, Inductors, Transformers, Relays, Fuses (their types & applications). Junction Diodes: Rectifying diode, Forward and reverse bias characteristics, Varactor Diode, Light Emitting Diode, Photo diode and Photo transistors (qualitative only).	4
II	Rectifiers: Half wave, Full wave, Bridge, Clipping and Clamping circuits. Zener diode: Zener diode as voltage regulator.	3
III	Bipolar Junction Transistor: Basic working principle, Input and Output Characteristics of CB & CE configurations. Transistor as an amplifier, Transistor as a switch.	4
IV	Sinusoidal Circuit Analysis: for RL, RC and RLC Circuits, Resonance in Series and Parallel RLC Circuits, Frequency Response of Series and Parallel RLC Circuits, Quality (Q) Factor and Bandwidth.	4
V*	Note: A candidate is required to perform minimum 4 experiments out of the list provided during course of study in this semester. <ol style="list-style-type: none"> 1. Measurement of resistance value using colour codes and multimeter. 2. To study the V-I characteristics of PN junction diode. 3. To study the zener diode as voltage regulator. 4. To study HWR and measurement of ripple factor without filter. 5. To study FWR and measurement of ripple factor without filter. 6. To study diode as shunt clipping circuit. 7. To study diode as clamping element. 8. Study of CB characteristics. 9. Study of CE characteristics. 10. Measurement of voltage and Time period using CRO. 	30
Suggested Evaluation Methods		
Internal Assessment: > Theory 10 Marks <ul style="list-style-type: none"> • Class Participation: 4 Marks • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: 6 Marks > Practicum 5 Marks <ul style="list-style-type: none"> • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 Marks • Mid-Term Exam: 		End Term Examination: 20 Marks 15 Marks
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Integrated Electronics by Millman and Halkias.
2. Basic Electronics and Linear Circuits by NN Bhargava, DC Kulshreshtha (TTTI)
3. Electronics Devices and Circuit by Allen Mottershead
4. Basic Electronics SOLID STATE by B L Theraja