School of Science
B.Sc. (Chemistry) Programmme

Subject Code & Name: - BS02MDCHE3 Basic Electronics

Teaching and Evaluation Scheme:

Teaching Scheme				Examination Scheme			
Credits				Component Weightage			
				CCE		SEE	
L	T	P	Total	TH	PWE	TH	PWE
3	0	1	4	37.5 %	12.5 %	37.5 %	12.5 %

Programme Name	B.Sc. (Chemistry)
Semester	II
Course Code	BS02MDCHE3
Course Title	Basic Electronics
Course Content Type(Th./Pr.)	Theory + Practical
Course Credit	3+1
Sessions+ Lab. Per Week	3+2
Total Teaching/Lab. Hours	45 Theory Hours + 30 Practical Hours
* 2 Laboratory = 1 Session	

Learning Objectives

1. Learn about basic electronic components like semiconductor diode and transistor.
2. They will learn about types of special purpose diode, rectifier their types and its real world applications.
3. They will learn about characteristics of transistors, Boolean expression of different gates and various number systems.

Learning Outcomes

On the Completion of this course, students will able to:

1. The Student will get the overview of core concepts in the field of electronics.
2. Able to apply the theoretical knowledge of these fields to analyze and solve the problems of day to day life.
3. Learn the basic necessary analog and digital electronics.

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Detailed Contents

UNIT	TOPIC/SUB-TOPIC	TEACHING HOURS
I	**Semiconductor Diode:** ➢ Semiconductor Diode, Semiconductor diode as a rectifier, Rectifiers, Half wave rectifier, Output frequency of Half wave rectifier, Efficiency of Half wave rectifier, Full wave rectifier, Center tap full wave rectifier, Full wave Bridge Rectifier, Output frequency of full wave rectifier, Efficiency of full wave rectifier, Faults in center tap full wave rectifier, Nature of Rectifier output, Ripple factor, Filter circuits , Types of Filter circuits , ➢ Zener Diode, Reverse breakdown of diodes, Equivalent circuit of Zener Diode, Zener Diode as a voltage stabilizer, Solving Zener diode circuits, Application of Diodes and related problems	15
II	**Transistor:** ➢ Transistor Action, Transistor biasing, Transistor symbol, Transistor circuit as an amplifier, Transistor connections, Common base connection, Characteristics of common Base Connection, Common emitter connection, characteristics of common emitter connection, Measurement of leakage current, Characteristics of common Emitter connection, Common Collector connection, Transistor load line analysis , Operating point , Performance of transistor amplifier, Cut off and saturation points	15
III	**Digital Electronics:** ➢ Number Systems, The Decimal Numbers system, Binary system, Binary to Decimal Conversion, binary fraction, Decimal to binary conversion, Octal system octal to decimal conversion, decimal to octal conversion, octal to binary conversion, binary to octal conversion, advantages of octal number system, Hexadecimal number system, Count beyond F in Hexadecimal system, Binary to Hexadecimal conversion, Hexadecimal to binary conversion, ➢ Positive and Negative Logic, The OR gate, Diode OR gate, Transistor OR gate, Three input OR gate, Exclusive OR gate, The AND gate, Diode OR gate, NOT gate, Equivalent circuit for a NOT gate, The NOT operation, Bubbled gates, The NOR gates, NAND gates, NOR and NAND gates as a universal gates, The XOR gates related problems.	15

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Unit-IV-Practical(s)	**(30)**
1. To study V-I characteristics of P-N Diode. 2. To study V-I characteristics of Zener Diode. 3. Zener Diode as a voltage regulator. 4. Half wave Rectifier. 5. Full wave Rectifier. 6. Full wave Bridge Rectifier. 7. Logic gates. 8. V-I characteristics of Common Emitter Transistor.	
Text Book(s)	
1. Unit 1 & 2: Principles of Electronics by V. K. Mehta, Rohit Mehta, 12th edition, S. Chand. 2. Unit 3: Basic Electronics, Solid State, B. L. Theraja, S.Chand	
Reference Books for Practical	
1. B.Sc. Practical Physics by Harnam Singh and Dr. P.S. Hemne, S. Chand & Co. Ltd., New Delhi (2000). 2. An Advanced Course in Practical Physics by D. Chatopdhyay, P.C. Rakshit, New Central Book Agency Pvt. Ltd (1990). 3. Advanced Practical Physics by M S Chauhan and S P Singh, Pragati Prakashan, Meerut (1984).	
Web Resources	
1. https://phys.libretexts.org 2. https://drait.edu.in/assets/departments/ECE/materials/18EC24_Basic_Electronics_Notes.pdf	

L: Lecture, **T:** Tutorial , **P:**Practical

CCE: Continuous and Comprehensive Evaluation

(CCE Theory includes Mid Semester Examination, Assignment, MCQ quizzes, Seminar, Reflective notes, class participation, case analysis and presentation, slip tests (announced/ surprised), attendance etc. or any combination of these)

PWE: Practical Work Examination

(PWE includes Laboratory practical work, project work, viva simulation exercise work etc.)

SEE: Semester End Evaluation