Program :	**Diploma in Electronics Engineering / Electronics & Communication Engineering**
Course Code : **6042B**	Course Title: **Contemporary Electronics**
Semester : **6**	Credits: **4**
Course Category: **Open Elective**	
Periods per week: **4 (L:4, T:0, P:0)**	Periods per semester:**60**

Course Objectives:

- To provide information to the knowledge level; electronic devices are used in everyday life.

Course Outcomes:

On completion of the course, the student will be able to:

COn	Description	Duration (Hours)	Cognitive Level
CO1	Interpret the application of electronics in everyday life.	11	Understanding
CO2	Explain the working principle of entertainment electronic devices.	14	Understanding
CO3	Explain the working of domestic appliances and power backup devices.	17	Understanding
CO4	Explain Electric vehicle and charging standards.	16	Understanding
	Series Test	2	

CO – PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2						
CO2	2						
CO3	2						
CO4	2						

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline:

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	**Interpret the application of electronics in everyday life.**		
M1.01	Explain evolution of integrated circuits.	6	Understanding
M1.02	Interpret application of microcontrollers in consumer electronics.	5	Understanding
Contents: **Consumer electronics Fundamentals**: History of Electronic Devices- Vacuum Tubes, Transistors, Integrated Circuits-Moore's Law. Microprocessors, Microprocessor Vs Microcontrollers, Microcontrollers in consumer electronics.			
CO2	**Explain the working principle of entertainment electronic devices.**		
M2.01	Explain construction and working principle of domestic audio entertainment system.	4	Understanding
M2.02	Demonstrate display parameters used in video entertainment system.	5	Understanding
M2.03	Compare various audio video ports.	5	Understanding
	Series Test – I	1	
Contents: **Entertainment Electronics systems**: Construction and working principle: Microphone, Loud speaker, AM and FM receiver, stereo, 2.1 home theatre, 5.1 home theatre. Display systems - LCD, LED. Resolution - 1080p, 2K, UHD, 4K, 8K. Ports - familiarize Audio/ Video ports - VGA, AV, S Video, HDMI, optical ports. Video Players: DVD and Blue RAY.			
CO3	**Explain the working of domestic appliances and power backup devices.**		
M3.01	Explain construction and working principle of domestic appliances.	5	Understanding
M3.02	Illustrate backup power system used at home and office.	6	Understanding
M3.03	Demonstrate specification and maintenance of batteries.	6	Understanding
Contents: **Home Appliances**: Construction and working principle - Washing Machines, Microwave Oven, Induction Stoves. Air conditioners: Inverter, non-inverter, tonnage and tonnage calculation. **Solar energy system:** on grid, off grid - block diagram - comparison. UPS - online,			

offline, specification, load calculation. UPS vs Inverter - comparison.

Storage battery: primary and secondary batteries, battery ratings, efficiency, Ampere hour efficiency- watt hour efficiency- lead acid batteries, VRLA batteries - precautions while handling -maintenance of lead acid batteries.

CO4	**Explain Electric vehicle and charging standards.**		
M4.01	Illustrate simple schematics of an Electric Vehicle.	5	Understanding
M4.02	Explain slow charger, fast charger, AC and DC charging system.	6	Understanding
M4.03	Demonstrate charging standards and connectors.	5	Understanding
	Series Test – II	1	

Contents:

Electric vehicle: simple schematic. Charging Equipment - Block Diagram of Charger, Difference between Slow charger and fast charger, Slow charger design rating, Fast charger design rating, AC charging and DC charging, Mode of charger Mode -2 , Mode-3 and Mode-4 EVSE associated charge times calculation.

Selection and sizing of Common types of connectors and applications: Selection of AC charger type-1, type -2 and type -3; Communication between AC charger and EV; Selection of DC charger connector GB/T, CHAdeMO, CCS-1 and CSS-2; Communication methodology of DC fast chargers; IS/ IEC/ARAI/ standard of Charging topology, Communication and connectors (IEC 61851-1, IEC 61851-24,62196-2)

Text / Reference:

T/R	**Book Title/Author**
T1	Thomas L Floyd "Electronic Devices" 10th Edition Pearson Education Asia 2018.
T2	Philp Hoff "Consumer Electronics for Engineers" - Cambridge University Press.1998.
T2	Dennis C Brewer, "Home Automation", Que Publishing 2013.
T3	Everyday Electronics, Course material provided by SITTTR.

Online Resources:

Sl.No	**Website Link**
1	An Overview on Electric Vehicle Charging Infrastructure,Manoz Kumar M Tirupati, TATA ELXSI available at https://www.tataelxsi.com/