RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT-3	Sheet No. 1/5

Branch	Electronics & Tele-communication	Semester	6

Course Code	E03	Course Name	CONSUMER ELECTRONICS

Course Outcome 1	Discuss the Audio system	Teach Hrs	Marks
Learning Outcome 1	Explain Different types of microphone **(cognitive)**	8	10
Contents	• Characteristic of audio wave, frequency range, pitch, timbre, loudness. • Principle, working, characteristics and application of microphone - Carbon granule microphone. - Condenser microphone. - Ribbon microphone. - Crystal microphone. - Dynamic microphone. - Electret microphone.		
Method of Assessment	External- End semester examination(theory)		
Learning Outcome 2	Describe various types loud speaker **(cognitive)**	8	10
Contents	• Principle & working of speakers - Types of speakers: PMMC - Frequency response of speaker - Audio amplifier - Application of audio amplifiers - Functional Block diagram of PA system • Commercial Sound- stereo, Hi-Fi and Dolby system		
Method of Assessment	External-End semester examination(theory)		
Learning Outcome 3	Analyze characteristics of audio system **(Psychomotor)**	5	15
Contents	• Study public address system and its components. • Study of audio amplifiers stages (pre amplifier, voltage amplifier, power amplifier) • Plotting of directional property of microphones & speakers • Plot frequency response of microphone and speaker		
Method of Assessment	**External**- End semester practical/ viva		

RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT- 3	Sheet No. 2/5

Branch	Electronics & Tele-communication	Semester	6

Course Code	E03	Course Name	CONSUMER ELECTRONICS

Course Outcome 2	Discuss Mobile Handset	Teach Hrs.	Marks
Learning Outcome 4	Describe architecture and features of mobile handset **(cognitive)**	8	10
Contents	• Mobile handset architectures using block diagrams. • comparison between keypad mobile and touchscreen mobile		
Method of Assessment	Internal		
Learning Outcome 5	Define functions of various components of mobile handset **(cognitive)**	12	10
Contents	• Different electronic components used in mobile phones - Transmitter - Charging IC - RAM - ROM - VCO(voltage control oscillator) - Filter(Rx and Tx) - Flash IC - CPU - Crystal oscillator - microphone - Antenna - Audio IC - Speaker - Sensors(proximity, motion, vibration, ambient light) - Displays - Modules (wi-fi, Bluetooth, GPS, camera etc)		
Method of Assessment	**External**- End semester examination(theory)		
Learning Outcome 6	Demonstrate various components of given mobile handset.**(Psychomotor)**	5	**10**
Contents	• Study various components of given mobile handset. • Demonstration of various setting in mobile handset. • Perform hardware test on mobile handset.		
Method of Assessment	**Internal**		

RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT- 3	Sheet No. 3/5

Branch	Electronics & Tele-communication	Semester	6

Course Code	E03	Course Name	CONSUMER ELECTRONICS

Course Outcome 3	Outline the Video technology	Teach Hrs.	Marks
Learning Outcome 7	Describe working of analog TV. **(cognitive)**	14	10
Contents	• Block diagram of TV communication system • Scanning and its need • Need of synchronizing and blanking pulses • VSB modulation • Composite Video Signal • Concept of Colour Mixing • Colour Triangle • VHF-UHF Channel allocation.		
Method of Assessment	External		
Learning Outcome 8	Illustrate TV receiver and Display device **(cognitive)**	10	10
Contents	• Block diagram and working of B&W TV receiver and PAL TV receiver. • Features and working of LCD and LED display. • Working principle of DLP, LCD and LED Projector.		
Method of Assessment	External- End semester examination(theory)		
Learning Outcome 9	Discuss Digital TV and Camera **(Psychomotor)**	5	10
Contents	• Features of Smart-TV and HDTV. • Introduction to digital video broadcasting (DVB), • Features and basic function of digital Camera.		
Method of Assessment	Internal		

RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT- 3	Sheet No. 4/5

Branch	Electronics & Tele-communication	Semester	6
Course Code	E03	Course Name	CONSUMER ELECTRONICS

Course Outcome 4	Explain solar energy system, security and safety system.	Teach Hrs.	Marks
Learning Outcome 10	Discuss Solar energy system **(cognitive)**	10	10
Contents	• Introduction to solar energy • over view of different types of solar modules - mono-crystalline, - polycrystalline - thin- film • Series and parallel connection of modules ,module array • Classification of solar PV plants - Stand-alone solar PV plants - Grid tie solar PV system - Grid connected solar PV system • Concept of blocking diode and bypass diode		
Method of Assessment	External		
Learning Outcome 11	Illustrate different Security & Safety System **(cognitive)**	10	10
Contents	Functional Block diagram and working of : • Home walkie-talkie • Video door phone • CCTV surveillance system • Electronic combination locks • Integrated fire safety system • Magnetic card and Near field card • RFID		
Method of Assessment	External		
Learning Outcome 12	Perform experiment on solar energy system and safety system **(Psychomotor)**	5	15
Contents	• Study of security and safety systems • Draw I-V curve of solar module and find out different parameters- short circuit current ,open circuit voltage , current at maximum power ,voltage at maximum power • Connect a solar power to different dc load.		
Method of Assessment	External		

RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT- 3	Sheet No. 5/5

Branch	Electronics & Tele-communication	Semester	6

Course Code	E03	Course Name	CONSUMER ELECTRONICS

Course Outcome 5	Outline the Miscellaneous Application of electronics	Teach Hrs.	Marks
Learning Outcome 13	Explain various Domestic & Consumer Appliances **(cognitive)**	10	10
Contents	• Functional Block diagram, specifications and working of Microwave ovens • comparison of microwave oven with convection oven and air fryer • Front penal control of Washing machines, Air-conditioners and Refrigerators		
Method of Assessment	Internal		
Learning Outcome 14	Understand Automobile electronics **(cognitive)**	10	10
Contents	• Need of Electronics in Automobiles. • Electronic control module. • Electronic ignition. • Anti-brake system (ABS). • Electronically controlled suspension. • Instrument panel displays (speedometer, milometer, fuel meter etc.) • Ultrasonic car safety system and parking system. • Theft detection and remote locking.		
Method of Assessment	Internal		

Suggested List of Experiments*:

S.N.	Experiment	CO
1	Setup a public address system.	**1**
2	Study of audio amplifiers stages (pre amplifier, voltage amplifier, power amplifier).	1
3	To Plot of directional property of microphones & speakers.	1
4	To Plot frequency response of microphone and speaker	1
5	Identify various components of given mobile handset.	2
6	Demonstration of various setting in mobile handset.	2
7	Perform hardware test on mobile handset.	2
8	Explore and list the Features of Smart-TV and HDTV.	3
9	Study digital video broadcasting (DVB),	3
10	Study Features and basic function of digital Camera	3
11	Draw I-V curve of solar module and find out different parameters- short circuit current ,open circuit voltage , current at maximum power ,voltage at maximum power	4
12	Demonstrate the Connection of solar power to different dc load	4

Suggestions for Practical:

Experiments are expected to be performed

1. Using Trainer kits.
2. On virtual lab platforms available online

Reference Books/Web Portals:

S.N.	Title	Author
1.	Consumer Electronics	SP Bali. Pearson Education
2.	Audio and video systems	R G Gupta
3.	Modern television practice	R R Gulati
4.	Television and video engineering	A M Dhake
5.	Automobile Electrical and Electronic Systems	Tom Denton, 3rd edition,
6.	Understanding Automotive electronics	William. B. Ribbens,
7.	Solar photovoltaic technology and systems	Chetan Singh Solanki
8.	Solar Photovoltaic : Fundamentals, Technologies and Application	Chetan Singh Solanki
9.	www.swayam.gov.in	
10.	www.nptel.ac.in	

RGPV (Diploma Wing) Bhopal	SCHEMEFORLEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	Format No. 4
		E	0	3	6	0		1	1	

COURSE NAME	Consumer Electronics
CO Description	Discuss the Audio system.
LO Description	Explain Different types of microphone **(cognitive)**

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract./TutHrs.	LRs Required	Remarks
LO-01	• Characteristic of audio wave, frequency range, pitch, timbre, loudness. • Principle, working, characteristics and application of microphone - Carbon granule microphone. - Condenser microphone. - Ribbon microphone. - Crystal microphone. - Dynamic microphone. - Electret microphone.	• Interactive classroom lecture, • PPT, • Video, • Demonstration • quiz, • Assignments.	Teacher will introduce subject and encourage students to identify and list key applications. Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	8	--	Text Books, PPT, Handouts, chalk board, charts, Video lecture- NPTEL and other online resources.	

SCHEME OF ASSESSMENT

S. No.	MethodofAssessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal

LO-01	End semester examination(theory)	Student will be asked to (and/or):- 1. What is the most common type of microphone 2. What are the features of microphone? **3.** Explain particular type of microphone with diagram 4. Define audio Frequency range ,pitch ,loudness 5. Explain Characteristics of sound wave.	10	Question Paper, rubrics, Rating scale	External

RGPV (Diploma Wing) Bhopal	**SCHEMEFORLEARNING OUTCOME**	**Branch Code**			**Course Code**			**CO Code**	**LO Code**	FormatNo.**4**
		E	***0***	***3***	***5***	***0***		***1***	***2***	

COURSE NAME	**Consumer Electronics**
CO Description	Discuss the Audio system
LO Description	Describe various types loud speaker**(cognitive)**

SCHEME OF STUDY

S. No.	**Learning Content**	**Teaching –Learning Method**	**Description of T-L Process**	**Teach Hrs.**	**Pract. /Tut Hrs.**	**LRs Required**	**Remarks**
LO-02	• Principle & working of speakers - Types of speakers: PMMC - Frequency response of speaker - Audio amplifier - Application of audio amplifiers - Functional Block	Interactive classroom lecture, PPT, Video, Demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	8	--	Text Books, PPT, Handouts, chalk board, charts, Video lecture-NPTEL and others online resources.	

	- diagram of PA system - Commercial Sound-stereo, Hi-Fi and Dolby system						

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-02	End sem Theory Exam.	**Student will be asked to(and/or):** 1. What are the important parts of a loudspeaker 2. Explain working of PMMC types of speaker with diagram 3. Draw and explain block diagram of PA system 4. What is difference between Hi-fi and Dolby system	10	Question paper, Rating scale	External

RGPV (Diploma Wing) Bhopal	SCHEMEFORLEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	FormatNo.4
		E	*0*	*3*	*6*	*0*		*1*	*3*	

COURSE NAME	**Consumer Electronics**
CO Description	Discuss the Audio system
LO Description	Analyze characteristics of audio system**(Psychomotor)**

SCHEME OF STUDY

S. No.	Learning Content	Teaching– Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-03	• Study public address system and its components. • Study of audio amplifiers stages (pre amplifier, voltage amplifier, power amplifier) • Plotting of directional property of microphones & speakers • Plot frequency response of microphone and speaker	Lab demonstration, hands on practice, lab assignments, V-Lab.	• Teacher will explain the contents • Teacher with support from lab staff will demonstrate the procedure of lab experiments. • Student will conduct lab assignment based on these experiments		5	Trainer instruments/kit with measuring instruments, computer with relevant simulation software and high speed internet.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal

LO-03	End semester Practical Exam and Viva	**Student will be asked to**: 1. Draw directional property of microphones & speakers. 2. Draw frequency response of microphone and speakers. 3. Make a PA system setup in lab.	15	Rubrics, Rating scale	External

RGPV (Diploma Wing) Bhopal	SCHEMEFORLEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	Format No. 4
		E	*0*	*3*	*6*	*0*		*2*	*4*	

COURSE NAME	**Consumer Electronics**
CO Description	Discuss Mobile Handset
LO Description	Describe architecture and features of mobile handset**(cognitive)**

SCHEME OFSTUDY

S. No.	Learning Content	Teaching–Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-04	• Mobile handset architectures using block diagrams. • comparison between keypad mobile and touchscreen mobile	Interactive classroom lecture, PPT, Video, Demonstration, quiz, assignments.	• Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	8	-	Text Books, PPT, Handouts, chalk board, charts, Video lecture-NPTEL and others online resources.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-04	Progressive test/quiz/assignment/presentation/seminar	**Student will be asked to**(and/or): 1. Draw and explain Mobile handset using block diagrams 2. Compare keypad mobile and touch screen mobile 3. Write short note touch screen mobile	10	Question paper, Rating scale	Internal

ADDITIONALINSTRUCTIONSFORTHEHOD/FACULTY(IFANY)

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	FormatNo.4
		E	*0*	*3*	*6*	*0*		*2*	*5*	

COURSE NAME	**Consumer Electronics**
CO Description	Discuss Mobile Handset
LO Description	Define functions of various components of mobile handset**(cognitive)**

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-05	Different electronic components used in mobile phones • Transmitter • Charging IC • RAM • ROM • VCO(voltage control oscillator) • Filter(Rx and Tx) • Flash IC • CPU • Crystal oscillator • microphone • Antenna • Audio IC • Speaker • Sensors(proximity , motion, vibration, ambient light) • Displays • Modules (wi-fi, Bluetooth, GPS, camera etc)	Interactive classroom lecture, PPT, Video, Demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	12	--	Text Books, PPT, Handouts, chalk board, charts, Video lecture-NPTEL and others.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-05	End sem Theory Exam.	**Student will be asked to** (and/or) 1. List the important component of mobile hand set 2. Describe the features and working of given components.	10	Question paper, Rating scale	External

RGPV (Diploma Wing) Bhopal	SCHEMEFORLEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	FormatNo.4
		E	*0*	*3*	*6*	*0*		*2*	*6*	

COURSE NAME	**Consumer Electronics**
CO Description	Discuss Mobile Handset
LO Description	Demonstrate various components of given mobile handset.**(Psychomotor)**

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /TutHrs.	LRs Required	Remarks
LO-06	• Study various components of given mobile handset. • Demonstration of various setting in mobile handset. • Perform hardware test on mobile handset.	Lab demonstration, hands on practice, lab assignments, V-Lab.	• Teacher will explain the contents • Teacher with support from lab staff will demonstrate the procedure of lab experiments. • Student will conduct lab assignment based on these experiments	--	5	Trainer instruments/kit with measuring instruments, computer with relevant simulation software and high speed internet.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-06	Internal practical/quiz/assignment/ppt /lab record	Student will be asked to 1. Perform hardware test on mobile handset 2. List various components of given mobile handset 3. List various setting in mobile handset	10	Rubrics,, Rating scale	Internal

RGPV (Diploma Wing) Bhopal	SCHEMEFORLEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	FormatNo.4
		E	0	3	6	0		3	7	

COURSE NAME	**Consumer Electronics**
CO Description	Outline the Video technology
LO Description	Describe working of analog TV. **(cognitive)**

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-07	• Block diagram of TV system. • Scanning and its need • Need of synchronizing and blanking pulses • VSB modulation • Composite Video Signal • Concept of Colour Mixing • Colour Triangle • VHF-UHF Channel allocation.	Interactive classroom lecture, PPT, Video, Demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	14	--	Text Books, PPT, Handouts, chalk board, charts, Video lecture-NPTEL and others.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-07	End sem Theory Exam.	**Student will be asked to**(and/or): 1. Draw and explain block diagram of TV system 2. What is need of synchronizing and blanking pulses 3. Draw and explain composite video signal 4. What concept of colour mixing used in TV system	10	Question paper, Rating scale	External

RGPV (Diploma Wing) Bhopal	SCHEMEFORLEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	FormatNo.4
		E	*0*	*3*	*6*	*0*		*3*	*8*	

COURSE NAME	**Consumer Electronics**
CO Description	Outline the Video technology
LO Description	Illustrate TV receiver and Display device**(cognitive)**

SCHEME OF STUDY

S. No.	Learning Content	Teaching–Learning Method	Description of T-L Process	Teach Hrs.	Pract. /TutHrs.	LRs Required	Remarks
LO-08	• Block diagram and working of B&W TV receiver and PAL TV receiver. • Features and working of LCD and LED display. • Working principle of DLP,LCD and LED Projector.	Interactive classroom lecture, PPT, Video, Demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	10	--	Text Books, PPT, Handouts, chalk board, charts, Video lecture-NPTEL and others.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-08	End sem Theory Exam.	**Student will be asked to(and/or):** 1. Draw and explain Block diagram of B&W TV receiver 2. Draw and explain Block diagram of PAL receiver 3. Compare LCD and LED display 4. Draw block diagram and explain working of LCD,DLP and LED Projectors.	10	Question paper, Rating scale	External

RGPV (Diploma Wing) Bhopal	SCHEMEFORLEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	FormatNo.4
		E	*0*	*3*	*6*	*0*		*3*	*9*	

COURSE NAME	**Consumer Electronics**
CO Description	Outline the Video technology
LO Description	Discuss Digital TV and Camera**(Psychomotor)**

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /TutHrs.	LRs Required	Remarks
LO-09	• Features of Smart-TV and HDTV. • Introduction to digital video broadcasting (DVB). • Features and basic function of digital Camera.	Lab demonstration, , lab assignments, V-Lab.	• Teacher with support from lab staff will demonstrate the procedure of lab experiments. • Student will conduct lab assignment based on these experiments.	-	5	Lab manual, charts, experimental trainer instruments/kit with measuring instruments, computer with relevant simulation software and high speed internet.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-09	Internal Practical Make a survey report /presentation followed by quiz on the following/Lab record	**Student will be asked to:** 1. Study of smart TV. 2. Study of HDTV. 3. List the features of DVB. 4. Study of digital camera. 5. Discuss Latest advancement in TV technology.	10	Rubrics, Rating scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)												
RGPV (Diploma Wing) Bhopal		**SCHEMEFORLEARNING OUTCOME**	**Branch Code**			**Course Code**			**CO Code**	**LO Code**	FormatNo.**4**	
			E	*0*	*3*	*6*	*0*		*3*	*10*		
COURSE NAME	**Consumer Electronics**											
CO Description	Explain solar energy system, security and safety system.											
LO Description	Discuss Solar energy system**(cognitive)**											

SCHEME OF STUDY

S. No.	Learning Content	Teaching– Learning Method	DescriptionofT-L Process	Teach Hrs.	Pract. /TutHrs.	LRs Required	Remarks
LO-10	• Introduction to solar energy • over view of different types of solar modules - mono-crystalline, - polycrystalline - thin- film • Series and parallel connection of modules ,module array • Classification of solar PV plants - Stand-alone solar PV plants - Grid tie solar PV system - Grid connected solar PV system • Concept of blocking diode and bypass diode	• Interactive classroom lecture • PPT • Video • Demonstration, • Quiz • Assignments.	• Teacher will explain the contents and provide hand-outs to students. • Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge	10	--	• Text Books, • PPT • Hand-outs, • chalkboard, • charts,Video • Lecture-NPTEL and others.	

SCHEME OF ASSESSMENT						Extern
S. No.	**Method of Assessment**	**Description of Assessment**	**Maximum Marks**	**Resources Required**	**External / Internal**	
LO-10	End sem theory exam	**Student will be asked to** 1. list different types of solar module explain any one 2. Explain different types of solar PV plants 3. What is the purpose of blocking and bypass diode in solar module? 4. Write note on the following - series module - parallel module - module array	10	Question paper, Rating scale	External	

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal	**SCHEMEFORLEARNING OUTCOME**	**Branch Code**			**Course Code**			**CO Code**	**LO Code**	Format No. **4**
		E	***0***	***3***	***6***	***0***		***4***	***11***	

COURSE NAME	**Consumer Electronics**
CO Description	Explain solar energy system, security and safety system.
LO Description	Illustrate different Security & Safety System**(cognitive)**

SCHEME OF STUDY

S. No.	Learning Content	Teaching–Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-11	Functional Block diagram and working of : • Home walkie-talkie • Video door phone • CCTV surveillance system • Electronic combination locks • integrated fire safety system • Magnetic card and Near field card • RFID	• Interactive classroom lecture, PPT, Video, • Demonstration , quiz, assignments.	• Teacher will explain the contents and provide handouts to students. • Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	10	--	• Text Books, • PPT • Hand-outs, • chalkboard, • charts,Video • Lecture-NPTEL and others.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal

LO-11	End sem Theory Exam.	**Student will be asked** **1.** What is electronic combination lock? Explain it. **2.** Draw the block diagram and explain working of given electronic Security & Safety System.	10	Question paper, Rating scale	External

RGPV (Diploma Wing) Bhopal	SCHEMEFORLEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	FormatNo.4
		E	0	3	6	0		4	12	

COURSE NAME	**Consumer Electronics**
CO Description	Explain solar energy system, security and safety system.
LO Description	Perform experiment on solar energy system and safety system**(Psychomotor)**

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /TutHrs.	LRs Required	Remarks
LO-12	• Study of security and safety systems • Draw I-V curve of solar module and find out different parameters- short circuit current ,open circuit voltage , current at maximum power ,voltage at maximum power • Connect a solar power to different dc load.	Lab demonstration, hands on practice, lab assignments, V-Lab.	• Teacher with support from lab staff will demonstrate the procedure of lab experiments. • Student will conduct lab assignment based on these experiments. • Industrial visit to solar power plant	-	5	• Lab manual, charts, • experimental trainer, Instruments/kit with measuring instruments • Computer with relevant simulation software and high speed internet.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal

LO-12	External practical exam/ viva	**Student will be asked to** 1. Draw I-V curve of solar module and find out different parameters- short circuit current ,open circuit voltage , current at maximum power ,voltage at maximum power 2. Connect a solar power to different dc load 3. Visit the solar power plant.	15	Rubrics, Rating scale	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RGPV (Diploma Wing) Bhopal	**SCHEME FOR LEARNING OUTCOME**	**Branch Code**			**Course Code**			**CO Code**	**LO Code**	FormatNo.**4**
		E	***0***	***3***	***6***	***0***		***5***	***13***	

COURSE NAME	**Consumer Electronics**
CO Description	**Outline the Miscellaneous Application of electronics**
LO Description	Explain various Domestic & Consumer Appliances.**(cognitive)**

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-13	• Functional Block diagram, specifications and working of Microwave ovens • comparison of microwave oven with convection oven and air fryer • Front penal control of Washing machines, Air-	• Interactive classroom lecture, • PPT, Video, • Demonstration, quiz, • Assignments.	• Teacher will explain the contents and provide handouts to students. • Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge..	10	--	• TextBooks, • PPT, • Hand-outs • chalk board, • charts • Video lecture- NPTEL and	

	conditioners and Refrigerators					others.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-13	Progressive test/quiz/assignment/presentation/seminar	**Student will be asked to (**and/or) • Explain working of Microwave ovens with block diagram • Compare of microwave oven with convection oven and air fryer. • List front panel control of washing machine / air conditioner / refrigerators and write there functions.	10	Rubrics, Rating scale	Internal

RGPV (Diploma Wing) Bhopal	SCHEMEFORLEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	FormatNo.4
		E	0	3	6	0		5	14	

COURSE NAME	**Consumer Electronics**
CO Description	**Outline the Miscellaneous Application of electronics**
LO Description	Understand Automobile electronics**(cognitive)**

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-14	• Need of Electronics in Automobiles. • Electronic control module. • Electronic ignition. • Anti-brake system (ABS). • Electronically controlled suspension. • Instrument panel displays (speedometer,milometer, fuel meter etc.) • Ultrasonic car safety system and parking system. • Theft detection and remote locking.	• Interactive classroom lecture, • PPT, Video, • Demonstration, quiz, • Assignments.	• Teacher will explain the contents and provide handouts to students. • Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	10	--	• Text Books, • PPT, • Handouts • chalk board, • charts • Video lecture-NPTEL and others.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal

LO-14	Progressive test/quiz/assignment/presentation/seminar	**Student will be asked to (and/or):** 1. Explain Electronic ignition with neat diagram. 2. How Electronically controlled suspension works 3. What is the technic of Ultrasonic car safety system and parking system	10	Rubrics, Rating scale	Internal