

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT- <b>3</b>	Sheet No. 1/5
Branch	ELECTRICAL & ELECTRONICS ENGINEERING		Semester	6	
Course Code	E05	Course Name	CONSUMER ELECTRONICS		
Course Outcome 1	Discuss the Audio system			Teach Hrs	Marks
Learning Outcome 1	Explain Different types of microphone ( <b>cognitive</b> )			7	10
Contents	<ul style="list-style-type: none"> <li>● Characteristic of audio wave, frequency range, pitch, timbre, loudness.</li> <li>● Principle, working, characteristics and application of microphone <ul style="list-style-type: none"> <li>- Carbon granule microphone.</li> <li>- Condenser microphone.</li> <li>- Ribbon microphone.</li> <li>- Crystal microphone.</li> <li>- Dynamic microphone.</li> <li>- Electret microphone.</li> </ul> </li> </ul>				
Method of Assessment	External- End semester examination(theory)				
Learning Outcome 2	Describe various types loud speaker ( <b>cognitive</b> )			7	10
Contents	<ul style="list-style-type: none"> <li>● Principle &amp; working of speakers <ul style="list-style-type: none"> <li>- Types of speakers: PMMC</li> <li>- Frequency response of speaker</li> <li>- Audio amplifier</li> <li>- Application of audio amplifiers</li> <li>- Functional Block diagram of PA system</li> </ul> </li> <li>● Commercial Sound- stereo, Hi-Fi and Dolby system</li> </ul>				
Method of Assessment	External-End semester examination(theory)				
Learning Outcome 3	Analyze characteristics of audio system ( <b>Psychomotor</b> )			5	15
Contents	<ul style="list-style-type: none"> <li>● Study public address system and its components.</li> <li>● Study of audio amplifiers stages (pre amplifier, voltage amplifier, power amplifier)</li> <li>● Plotting of directional property of microphones &amp; speakers</li> <li>● Plot frequency response of microphone and speaker</li> </ul>				
Method of Assessment	External- End semester practical/ viva				

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT- <b>3</b>	Sheet No. 2/5
Branch	ELECTRICAL & ELECTRONICS ENGINEERING		Semester	6	
Course Code	E05	Course Name	CONSUMER ELECTRONICS		
<b>Course Outcome 2</b>	<b>Discuss Mobile Handset</b>			<b>Teach Hrs.</b>	<b>Marks</b>
<b>Learning Outcome 4</b>	Describe architecture and features of mobile handset ( <b>cognitive</b> )			4	10
<b>Contents</b>	<ul style="list-style-type: none"> <li>● Mobile handset architectures using block diagrams.</li> <li>● comparison between keypad mobile and touchscreen mobile</li> </ul>				
<b>Method of Assessment</b>	<b>Internal: Mid semester examination(theory)</b>				
<b>Learning Outcome 5</b>	Define functions of various components of mobile handset ( <b>cognitive</b> )			10	10
<b>Contents</b>	<ul style="list-style-type: none"> <li>● Different electronic components used in mobile phones <ul style="list-style-type: none"> <li>- Transmitter</li> <li>- Charging IC</li> <li>- RAM</li> <li>- ROM</li> <li>- VCO(voltage control oscillator)</li> <li>- Filter(Rx and Tx)</li> <li>- Flash IC</li> <li>- CPU</li> <li>- Crystal oscillator</li> <li>- microphone</li> <li>- Antenna</li> <li>- Audio IC</li> <li>- Speaker</li> <li>- Sensors(proximity, motion, vibration, ambient light )</li> <li>- Displays</li> <li>- Modules (wi-fi, Bluetooth, GPS, camera etc)</li> </ul> </li> </ul>				
<b>Method of Assessment</b>	<b>External- End semester examination(theory)</b>				
<b>Learning Outcome 6</b>	Demonstrate various components of given mobile handset.( <b>Psychomotor</b> )			5	<b>10</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>● Study various components of given mobile handset.</li> <li>● Demonstration of various setting in mobile handset.</li> <li>● Perform hardware test on mobile handset.</li> </ul>				
<b>Method of Assessment</b>	<b>Internal: Mid semester practical/ viva</b>				

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT- <b>3</b>	Sheet No. 3/5
Branch	ELECTRICAL & ELECTRONICS ENGINEERING		Semester	6	
Course Code	E05	Course Name	CONSUMER ELECTRONICS		
<b>Course Outcome 3</b>	Outline the Video technology			Teach Hrs.	Marks
<b>Learning Outcome 7</b>	Describe working of analog TV. ( <b>cognitive</b> )			7	10
<b>Contents</b>	<ul style="list-style-type: none"> <li>● Block diagram of TV communication system</li> <li>● Scanning and its need</li> <li>● Need of synchronizing and blanking pulses</li> <li>● VSB modulation</li> <li>● Composite Video Signal</li> <li>● Concept of Colour Mixing</li> <li>● Colour Triangle</li> <li>● VHF-UHF Channel allocation.</li> </ul>				
<b>Method of Assessment</b>	External: End semester examination(theory)				
<b>Learning Outcome 8</b>	Illustrate TV receiver and Display device ( <b>cognitive</b> )			7	10
<b>Contents</b>	<ul style="list-style-type: none"> <li>● Block diagram and working of B&amp;W TV receiver and PAL TV receiver.</li> <li>● Features and working of LCD and LED display.</li> <li>● Working principle of DLP, LCD and LED Projector.</li> </ul>				
<b>Method of Assessment</b>	External- End semester examination(theory)				
<b>Learning Outcome 9</b>	Discuss Digital TV and Camera ( <b>Psychomotor</b> )			5	10
<b>Contents</b>	<ul style="list-style-type: none"> <li>● Features of Smart-TV and HDTV.</li> <li>● Introduction to digital video broadcasting (DVB),</li> <li>● Features and basic function of digital Camera.</li> </ul>				
<b>Method of Assessment</b>	Internal: Mid semester practical/ viva				

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT- <b>3</b>	Sheet No. 4/5
Branch	ELECTRICAL & ELECTRONICS ENGINEERING		Semester	6	
Course Code	E05	Course Name	CONSUMER ELECTRONICS		
<b>Course Outcome 4</b>	Explain solar energy system, security and safety system.		Teach Hrs.	Marks	
<b>Learning Outcome 10</b>	Discuss Solar energy system(cognitive)		7	10	
<b>Contents</b>	<ul style="list-style-type: none"> <li>● Introduction to solar energy</li> <li>● Over view of different types of solar modules <ul style="list-style-type: none"> <li>- Mono-crystalline,</li> <li>- Polycrystalline</li> <li>- Thin- film</li> </ul> </li> <li>● Series and parallel connection of modules ,module array</li> <li>● Classification of solar PV plants <ul style="list-style-type: none"> <li>- Stand-alone solar PV plants</li> <li>- Grid tie solar PV system</li> <li>- Grid connected solar PV system</li> </ul> </li> <li>● Concept of blocking diode and bypass diode</li> </ul>				
<b>Method of Assessment</b>	External: End semester examination(theory)				
<b>Learning Outcome 11</b>	Illustrate different Security & Safety System (cognitive)		7	10	
<b>Contents</b>	Functional Block diagram and working of : <ul style="list-style-type: none"> <li>● Home walkie-talkie</li> <li>● Video door phone</li> <li>● CCTV surveillance system</li> <li>● Electronic combination locks</li> <li>● Integrated fire safety system</li> <li>● Magnetic card and Near field card</li> <li>● RFID</li> </ul>				
<b>Method of Assessment</b>	External: End semester examination(theory)				
<b>Learning Outcome 12</b>	Perform experiment on solar energy system and safety system(Psychomotor)		5	15	
<b>Contents</b>	<ul style="list-style-type: none"> <li>● Study of security and safety systems</li> <li>● 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</li> <li>● Connect a solar power to different dc load.</li> </ul>				
<b>Method of Assessment</b>	External: End semester practical/ viva				

<b>RGPV (DIPLOMA WING) BHOPAL</b>		<b>OBE CURRICULUM FOR THE COURSE</b>		<b>FORMAT- 3</b>	<b>Sheet No. 5/5</b>
<b>Branch</b>	<b>ELECTRICAL &amp; ELECTRONICS ENGINEERING</b>		<b>Semester</b>	<b>6</b>	
<b>Course Code</b>	<b>E05</b>	<b>Course Name</b>	<b>CONSUMER ELECTRONICS</b>		
<b>Course Outcome 5</b>	<b>Outline the Miscellaneous Application of electronics</b>			<b>Teach Hrs.</b>	<b>Mark s</b>
<b>Learning Outcome 13</b>	Explain various Domestic & Consumer Appliances ( <b>cognitive</b> )			7	10
<b>Contents</b>	<ul style="list-style-type: none"> <li>• Functional Block diagram, specifications and working of Microwave ovens</li> <li>• comparison of microwave oven with convection oven and air fryer</li> <li>• Front panel control of Washing machines, Air-conditioners and Refrigerators</li> </ul>				
<b>Method of Assessment</b>	<b>Internal: Mid semester examination(theory)</b>				
<b>Learning Outcome 14</b>	Understand Automobile electronics ( <b>cognitive</b> )			7	10
<b>Contents</b>	<ul style="list-style-type: none"> <li>• Need of Electronics in Automobiles.</li> <li>• Electronic control module.</li> <li>• Electronic ignition.</li> <li>• Anti-brake system (ABS).</li> <li>• Electronically controlled suspension.</li> <li>• Instrument panel displays (speedometer, milometer, fuel meter etc.)</li> <li>• Ultrasonic car safety system and parking system.</li> <li>• Theft detection and remote locking.</li> </ul>				
<b>Method of Assessment</b>	<b>Internal: Mid semester examination(theory)</b>				

### Suggested List of Experiments\*:

<b>S.N.</b>	<b>Experiment</b>	<b>CO</b>
1	Setup a public address system.	1
2	Study of audio amplifiers stages (pre amplifier, voltage amplifier, power amplifier).s	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.	<a href="http://www.swayam.gov.in">www.swayam.gov.in</a>	
10.	<a href="http://www.nptel.ac.in">www.nptel.ac.in</a>	