



CENTRAL POLYTECHNIC COLLEGE

THARAMANI, CHENNAI –600 113

(AN AUTONOMOUS INSTITUTION)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

QUESTION BANK

FOR

EEC61015–CONSUMER ELECTRONICS

UNIT	Q NO	QUESTIONS
1	1	The device which converts sound energy into electrical energy is called: (a) Loudspeaker (b) Microphone (c) Amplifier (d) Rectifier Ans:Microphone
1	2	The carbon microphone works on the principle of: (a) Electromagnetic induction (b) Variable resistance (c) Piezoelectric effect (d) Variable capacitance Ans:Variable resistance
1	3	Which type of microphone is commonly used in telephones? (a) Moving coil microphone (b) Ribbon microphone (c) Carbon microphone (d) Crystal microphone Ans:Carbon microphone
1	4	The moving coil microphone is also known as: (a) Dynamic microphone (b) Condenser microphone (c) Carbon microphone (d) Velocity microphone Ans:Dynamic microphone
1	5	Dolby system is related to: (a) Frequency modulation (b) Noise reduction (c) Power amplification (d) Sound synchronization Ans:Noise reduction
1	6	The main advantage of a wireless microphone is: (a) Higher fidelity (b) Lower cost (c) Mobility and freedom from cables (d) No battery required Ans:Mobility and freedom from cables
1	7	A moving coil microphone uses which effect? (a) Photoelectric effect (b) Electromagnetic induction (c) Hall effect (d) Electrostatic effect Ans:Electromagnetic induction
1	8	The sensitivity of a carbon microphone is: (a) Very low (b) Moderately low (c) High (d) Zero Ans:High
1	9	Which microphone requires an external battery supply? (a) Moving coil microphone (b) Ribbon microphone (c) Carbon microphone (d) Dynamic microphone Ans:Ribbon microphone
1	10	The output of a microphone is in the form of: (a) Sound waves (b) Light pulses (c) Electrical signals (d) Magnetic flux Ans:Electrical signals

UNIT	Q NO	QUESTIONS
1	11	The main parts of a permanent magnet loudspeaker are: (a) Carbon granules and diaphragm (b) Permanent magnet, voice coil, and cone (c) Laser and optical lens (d) Transformer and rectifier Ans:Permanent magnet, voice coil, and cone
1	12	Permanent magnet loudspeakers work on: (a) Variable resistance (b) Interaction between magnetic fields (c) Piezoelectric effect (d) Thermal expansion Ans:Interaction between magnetic fields
1	13	The voice coil in a loudspeaker is placed: (a) Outside the magnetic field (b) In the air gap of a permanent magnet (c) Directly on the outer frame (d) Behind the power supply Ans:In the air gap of a permanent magnet
1	14	A loudspeaker converts: (a) Sound energy to electrical energy (b) Electrical energy to sound energy (c) Mechanical energy to electrical energy (d) Heat energy to sound energy Ans:Electrical energy to sound energy
1	15	In a multi-speaker system, the high-frequency speaker is called: (a) Woofer (b) Tweeter (c) Midrange (d) Subwoofer Ans:Tweeter
1	16	The midrange speaker handles: (a) Only bass frequencies (b) Only treble frequencies (c) Frequencies between woofers and tweeters (d) Ultrasonic frequencies Ans:Frequencies between woofers and tweeters
1	17	The low-frequency speaker in a multi-speaker system is: (a) Tweeter (b) Woofer (c) Squawker (d) Horn Ans:Woofer
1	18	A crossover network is used in: (a) Single-unit speakers (b) Multi-speaker systems (c) Microphones (d) Power cables Ans:Multi-speaker systems
1	19	The efficiency of a loudspeaker is usually: (a) Very high (90%+) (b) Moderate (50%) (c) Very low (1% to 5%) (d) 100% Ans:Very low (1% to 5%)
1	20	A loudspeaker converts the signal by: (a) Varying resistance (b) Vibrating a diaphragm via magnetic force (c) Releasing light photons (d) Chemical change Ans:Vibrating a diaphragm via magnetic force

UNIT	Q NO	QUESTIONS
1	21	The tape used in magnetic recording is coated with: (a) Aluminum oxide (b) Magnetic oxide (c) Copper sulfate (d) Silicon Ans:Magnetic oxide
1	22	Magnetic recording stores sound as: (a) Pits and lands (b) Variations in magnetization (c) Grooves on a disc (d) Binary light pulses Ans:Variations in magnetization
1	23	Digital recording converts sound into: (a) Continuous voltage (b) Binary code (c) Variable pressure (d) Analog magnetic patterns Ans:Binary code
1	24	The main advantage of digital recording is: (a) More space (b) Low SNR (c) Reproduction without loss (d) High tape hiss Ans:Reproduction without loss
1	25	Optical recording uses: (a) Magnetic heads (b) Laser beams (c) Carbon granules (d) Stylus needles Ans:Laser beams
1	26	Magnetic recording was first used in: (a) Tape recorders (b) CD players (c) Gramophones (d) MP3 players Ans:Tape recorders
1	27	The device used to convert analog to digital in recording is: (a) Measuring amplitude at intervals (b) Increasing volume (c) Filtering bass (d) Copying tape Ans:Measuring amplitude at intervals
1	28	In digital sound recording, sampling means: (a) DAC (b) ADC (c) Amplifier (d) Transducer Ans:ADC
1	29	MP3 stands for: (a) Music Player 3 (b) MPEG Audio Layer III (c) Multi-Phase 3 (d) Magnetic Phase 3 Ans:MPEG Audio Layer III
1	30	Digital sound recording on CD uses: (a) Magnetic strips (b) Pits and lands (c) Carbon resistors (d) Vacuum tubes Ans:Pits and lands

UNIT	Q NO	QUESTIONS
1	31	The main feature of MP3 is: (a) High data consumption (b) Compression (c) Analog storage (d) Magnetic head Ans: Compression
1	32	The sampling rate used in CD system is approximately: (a) 8 kHz (b) 22.05 kHz (c) 44.1 kHz (d) 192 kHz Ans: 44.1 kHz
1	33	The storage capacity of a standard audio CD is around: (a) 100 MB (b) 700 MB / 80 Minutes (c) 4.7 GB (d) 25 GB Ans: 700 MB / 80 Minutes
1	34	Which of the following uses pits and lands for recording? (a) Magnetic Tape (b) Compact Disc (c) Vinyl Record (d) Hard Drive Ans: Compact Disc
1	35	The playback process in magnetic recording uses: (a) A playback head (b) A laser pickup (c) Carbon transmitter (d) Optical sensor Ans: A playback head
1	36	A stereophonic system uses: (a) One channel (b) Two independent channels (c) Five channels (d) No speakers Ans: Two independent channels
1	37	A monophonic system uses: (a) Multiple speakers (b) A single audio channel (c) Surround sound (d) Digital laser Ans: A single audio channel
1	38	The main advantage of stereophonic sound is: (a) Reduced cost (b) Directional sense and depth (c) Smaller file size (d) Less power Ans: Directional sense and depth
1	39	Home theatre system generally has: (a) Only one speaker (b) Multiple speakers (c) Only a microphone (d) No amplifier Ans: Multiple speakers
1	40	Surround sound system uses: (a) 2 speakers (b) Multiple speakers around listener (c) One woofer (d) Headphones Ans: Multiple speakers around listener

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1	41	In a 5.1 system, —.1 refers to: (a) Center speaker (c) Left rear speaker Ans:Subwoofer	(b) Subwoofer (d) Amplifier
1	42	The rear speakers in surround system are used for: (a) Main dialogue (c) Bass only Ans:Ambient sound and effects	(b) Ambient sound and effects (d) Powering TV
1	43	The center speaker in a home theatre is used for: (a) Low-frequency effects (c) Rear effects Ans:Dialogue and central sounds	(b) Dialogue and central sounds (d) Volume control
1	44	Stereo effect can be achieved using: (a) One microphone (c) Single mono amplifier Ans:Two or more microphones and speakers	(b) Two or more microphones and speakers (d) Carbon microphone
1	45	The quality of sound reproduction depends on: (a) Frequency response and distortion (c) Length of cord Ans:Frequency response and distortion	(b) Color of speaker (d) Weight of microphone
1	46	In home theatre, amplifier is used for: (a) Converting sound to light (c) Storing music Ans:Strengthening weak signals	(b) Strengthening weak signals (d) Reading pits
1	47	The surround system provides: (a) 1D sound (c) Lower volume Ans:Immersive 360-degree sound	(b) Immersive 360-degree sound (d) Mono sound
1	48	The output of a reproducing system is: (a) Electrical signal (c) Sound energy Ans:Sound energy	(b) Magnetic field (d) Digital code
1	49	What is the sampling rate for CD quality audio? (a) 44,100 Hz (c) 96,000 Hz Ans:44,100 Hz	(b) 10,000 Hz (d) 5,000 Hz
1	50	What do pits on a CD represent? (a) Analog levels (c) Dirt Ans:Binary data	(b) Binary data (d) Magnetic poles

UNIT	Q NO	QUESTIONS
2	1	What does the word “television” literally mean? (a) To hear from far away (b) To see from a distance (c) To record a scene (d) To broadcast light Ans:To see from a distance
2	2	Which transducer is used in a TV camera to convert light energy into electrical energy? (a) Microphone (b) Duplexer (c) Camera (d) Picture tube Ans:Microphone
2	3	In a basic TV system, the picture signal is modulated, and the sound signal is modulated. (a) Frequency; Amplitude (b) Amplitude; Frequency (c) Phase; Amplitude (d) Digital; Analog Ans:Amplitude; Frequency
2	4	What device combines the video and audio signals for transmission through the antenna? (a) Demodulator (b) Duplexer (c) Transformer (d) Scanner Ans:Duplexer
2	5	Scanning is the process by which an electron beam spot moves across a rectangular area called a. (a) Pixel (b) Field (c) Raster (d) Frame Ans:Raster
2	6	What is the movement of the electron beam from left to right across the screen called? (a) Retrace (b) Fly back (c) Trace (d) Vertical sweep Ans:Trace
2	7	The fast reversal of the electron beam from the right side back to the left side is known as. (a) Scanning (b) Retrace or fly back (c) Modulation (d) Interlacing Ans:Retrace or fly back
2	8	In a 625 line system with 25 frames per second, what is the horizontal scanning frequency? (a) 50 Hz (b) 15,625 Hz (c) 625 Hz (d) 312.5 Hz Ans:15,625 Hz
2	9	What is the vertical scanning frequency used in most standard TV systems? (a) 15,625 Hz (b) 625 Hz (c) 25 Hz (d) 4.43 MHz Ans:25 Hz
2	10	During which intervals are the scanning beams blanked so no picture information is transmitted? (a) Only horizontal trace (b) Horizontal and vertical retrace (c) Only vertical trace (d) During the odd field only Ans:Horizontal and vertical retrace

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2	11	The flicker effect is caused by a scanning rate that is. (a) Too high (b) Too low (c) Exactly 50 Hz (d) Only using even lines Ans: Too low
2	12	In interlaced scanning, the total number of lines in a frame is divided into two. (a) Rasters (b) Fields (c) Segments (d) Chromas Ans: Fields
2	13	During the first field of interlaced scanning, which lines are scanned? (a) Even numbered lines (b) All 625 lines (c) Odd numbered lines (d) Only the first 20 lines Ans: Odd numbered lines
2	14	How many lines are scanned in each field of a 625 line TV system? (a) 625 lines (b) 585 lines (c) 312.5 lines (d) 400 lines Ans: 312.5 lines
2	15	What is the standardized aspect ratio for a television picture frame? (a) 1:1 (b) 16:9 (c) 4:3 (d) 3:2 Ans: 4:3
2	16	Why is the horizontal dimension of a TV frame wider than the vertical? (a) It saves power (b) Eyes move with more ease in the horizontal plane (c) To reduce flicker (d) To accommodate sub-pixels Ans: Eyes move with more ease in the horizontal plane
2	17	Which part of the eye has greater width than height, supporting the 4:3 aspect ratio? (a) Lens (b) Retina (c) Fovea (d) Optic nerve Ans: Retina
2	18	In a 625 line system, how many lines are active used for picture display? (a) 625 lines (b) 312.5 lines (c) 585 lines (d) 400 lines Ans: 585 lines
2	19	Vertical Resolution R_v is calculated using the number of active lines N and a factor k known as. (a) Aspect ratio (b) Resolution factor (c) Saturation index (d) Flicker constant Ans: Resolution factor
2	20	If $N = 585$ and $k = 0.69$, what is the approximate vertical resolution R_v? (a) 780 lines (b) 625 lines (c) 400 lines (d) 533 lines Ans: 533 lines

UNIT	Q NO	QUESTIONS
2	21	Which attribute refers to the actual shade or tint of a color eg red vs green? (a) Saturation (b) Hue (c) Luminance (d) Brightness Ans:Hue
2	22	What determines the hue of a color? (a) Amplitude (b) Wavelength (c) Amount of white (d) Vertical scanning frequency Ans:Wavelength
2	23	Saturation describes how a color is. (a) Bright (b) Pure (c) Dark (d) Distant Ans:Pure
2	24	A color with low saturation appears. (a) Rich (b) Faded (c) Bright (d) Black Ans:Faded
2	25	The luminance signal Y represents the of an image. (a) Color intensity (b) Brightness (c) Hue (d) Aspect ratio Ans:Brightness
2	26	What is the correct formula for the luminance signal Y? (a) $Y = 0.5R + \dots$ (b) $Y = 0.3R + \dots$ (c) $Y = 0.11R + \dots$ (d) $Y = R + G + B$ Ans:Y = 0.3R + ...
2	27	The chrominance signal C carries what information? (a) Only Brightness (b) Hue and Saturation (c) Scanning frequency (d) Vertical resolution Ans:Hue and Saturation
2	28	In the PAL system, chrominance is typically represented by which signals? (a) I and Q (b) U and V (c) Y and C (d) R and B Ans:U and V
2	29	Which component of the video signal are our eyes more sensitive to? (a) Hue (b) Saturation (c) Luminance (d) Vertical retrace Ans:Luminance
2	30	Chrominance signals are combined with to form a complete video signal. (a) Audio (b) Luminance (c) DC (d) Aspect ratio Ans:Luminance

UNIT	Q NO	QUESTIONS
2	31	Which organization develops digital television DTV standards like 4K UHD support? (a) NTSC (b) PAL (c) ATSC (d) SECAM Ans:ATSC
2	32	Which generation of ATSC first replaced the analog NTSC system in the US? (a) ATSC 1.0 (b) ATSC 2.0 (c) ATSC 3.0 (d) DVB-T Ans:ATSC 1.0
2	33	The NTSC system was primarily developed in which country? (a) Germany (b) France (c) United States (d) Japan Ans:United States
2	34	What is the frame rate used in the PAL and SECAM systems? (a) 29.97 fps (b) 30 fps (c) 25 fps (d) 60 fps Ans:25 fps
2	35	The NTSC system uses how many lines per frame? (a) 625 (b) 525 (c) 480 (d) 576 Ans:525
2	36	Which system is known as Sequential Color with Memory? (a) NTSC (b) PAL (c) SECAM (d) ATSC Ans:SECAM
2	37	What is the channel bandwidth for the NTSC system? (a) 7 MHz (b) 8 MHz (c) 6 MHz (d) 4.2 MHz Ans:8 MHz
2	38	Which color encoding system is used by the NTSC standard? (a) YUV (b) YIQ (c) RGB (d) FM-Chroma Ans:RGB
2	39	Which system is prone to hue shifts under weak signal conditions? (a) PAL (b) SECAM (c) NTSC (d) ATSC 3.0 Ans:SECAM
2	40	In which regions is the PAL system commonly used? (a) USA (b) UK (c) India (d) Germany Ans:UK

UNIT	Q NO	QUESTIONS
2	41	LCD technology works on the principle of light. (a) Emitting (b) Blocking (c) Reflecting (d) Refracting Ans:Blocking
2	42	LCDs require a because they do not emit their own light. (a) Cathode (b) Backlight (c) Phosphor (d) Plasma Ans:Phosphor
2	43	Liquid crystal molecules are sandwiched between electrodes made of what material? (a) Copper (b) Aluminum (c) Indium-tin oxide (d) Plastic Ans:Aluminum
2	44	What acts as tiny switches to control the voltage for each pixel in an LED LCD display? (a) Filters (b) TFTs (c) LED backlights (d) Phosphors Ans:TFTs
2	45	What does LED stand for in LED display technology? (a) Liquid Energy Display (b) Light Emitting Diode (c) Low Emission Device (d) Luminescent Electronic Diode Ans:Light Emitting Diode
2	46	How does an OLED differ from an LCD? (a) Fluorescent backlights (b) Emits light via organic material (c) Requires AC (d) Uses neon-xenon gas Ans:Emits light via organic material
2	47	Which layer in an OLED is responsible for transporting holes from the anode? (a) Emissive (b) Conductive (c) Cathode (d) Substrate Ans:Conductive
2	48	A plasma display uses electrically charged to illuminate each pixel. (a) Organic (b) Ionized gas (c) Crystal (d) LEDs Ans:Ionized gas
2	49	In a plasma TV, UV rays react with to produce colored light. (a) Filters (b) Phosphor (c) Electrodes (d) Dielectric Ans:Electrodes
2	50	Which display technology is sensitive to water because of its organic molecules? (a) LCD (b) LED (c) OLED (d) PLASMA Ans:OLED

UNIT	Q NO	QUESTIONS	
3	1	A cordless phone works on (a) Bluetooth (c) Infrared Ans:Radio waves	(b) Radio waves (d) Fiber optics
3	2	Cordless phones are mainly used for (a) Long-distance international calls (c) Satellite data transmission Ans:Short-range communication within a home/office	(b) Short-range communication within a home/office (d) High-speed internet browsing
3	3	The typical range of a cordless phone is about (a) 10 meters (c) 5 to 10 kilometers Ans:50 to 100 meters	(b) 50 to 100 meters (d) 100 kilometers
3	4	A digital cellular phone converts voice into (a) Analog signals (c) Binary data (0s and 1s) Ans:Binary data (0s and 1s)	(b) Light pulses (d) Microwave radiation
3	5	The main feature of digital cellular phones is (a) Low battery life (c) Analog transmission Ans:High security and better voice quality	(b) High security and better voice quality (d) Heavy weight
3	6	The first generation (1G) mobile system was (a) Digital (c) Global Ans:Analog	(b) Analog (d) High-speed
3	7	The second generation (2G) mobile system used (a) Digital signals (c) Satellite links only Ans:Digital signals	(b) Analog signals only (d) Fiber to the phone
3	8	The 4G mobile system provides (a) Only voice calls (c) Pager services only Ans:Ultra-broadband internet access	(b) Ultra-broadband internet access (d) Analog radio signals
3	9	IMEI stands for (a) International Mobile Equipment Identity (c) Integrated Mobile Electronic Index Ans:International Mobile Equipment Identity	(b) Internal Mobile Energy Indicator (d) International Mobile Encryption Interface
3	10	In cellular systems, each cell is served by a (a) Satellite (c) Router Ans:Base Station (BS)	(b) Base Station (BS) (d) Central exchange only

UNIT	Q NO	QUESTIONS	
3	11	CCTV stands for (a) Central Circuit Television (c) Coded Circuit Transmission Ans:Closed Circuit Television	(b) Closed Circuit Television (d) Common Control Television
3	12	CCTV is used for (a) Public entertainment broadcasting (c) Wireless radio communication Ans:Surveillance and security	(b) Surveillance and security (d) Satellite TV reception
3	13	The main components of a CCTV system are (a) Camera, Monitor, and Recorder (c) SIM card, Battery, and Screen Ans:Camera, Monitor, and Recorder	(b) Dish, LNB, and STB (d) Optical fiber, Laser, and Detector
3	14	The device used to record video in CCTV is (a) CPU (c) RAM Ans:DVR/NVR	(b) DVR/NVR (d) Modem
3	15	The IP-based CCTV uses (a) Analog cables (c) Radio FM waves Ans:Internet Protocol/Network	(b) Internet Protocol/Network (d) Satellite dishes
3	16	The camera used in low-light CCTV systems is (a) Daylight camera (c) DSLR camera Ans:IR (Infrared) camera	(b) IR (Infrared) camera (d) Webcam
3	17	The cable commonly used in CCTV systems (a) Telephone wire (c) Power lines Ans:Coaxial cable	(b) Coaxial cable (d) Copper ribbon
3	18	Modern CCTV systems transmit video through (a) Atmospheric air only (c) Magnetic tapes Ans:Digital networks (IP)	(b) Digital networks (IP) (d) Pager networks
3	19	The resolution of CCTV camera is measured in (a) Kilograms (c) Decibels Ans:Megapixels (MP) or TVL	(b) Megapixels (MP) or TVL (d) Watts
3	20	The video compression standard used in CCTV (a) MP3 (c) JPEG Ans:H.264 / H.265	(b) H.264 / H.265 (d) PDF

UNIT	Q NO	QUESTIONS	
3	21	DTH stands for (a) Digital Telephone Hub (c) Data Transfer Host Ans:Direct-to-Home	(b) Direct-to-Home (d) Direct Transmission Header
3	22	DTH uses which type of communication (a) Terrestrial (c) Underwater cables Ans:Satellite communication	(b) Satellite communication (d) Fiber optics
3	23	The signal received by DTH dish is (a) Infrared (c) Sound waves Ans:Microwave (Satellite signals)	(b) Microwave (Satellite signals) (d) Laser beams
3	24	The DTH system requires (a) Dish antenna and Set-top box (c) FM radio and Speaker Ans:Dish antenna and Set-top box	(b) Telephone line and Modem (d) Desktop PC only
3	25	The satellite used for TV broadcasting is in (a) Low Earth Orbit (c) Polar Orbit Ans:Geostationary Orbit	(b) Geostationary Orbit (d) Lunar Orbit
3	26	The main advantage of DTH is (a) No need for electricity (c) Can be used without an antenna Ans:Direct reception without local cable operators	(b) Direct reception without local cable operators (d) Works only in the rain
3	27	Video on Demand (VoD) means (a) Watching live news only (c) Mandatory TV viewing Ans:Choosing and watching content at any time	(b) Choosing and watching content at any time (d) Radio broadcasting
3	28	GPS stands for (a) General Process System (c) Geographic Path Server Ans:Global Positioning System	(b) Global Positioning System (d) Ground Point Signal
3	29	The GPS system uses (a) Ground towers only (c) Deep sea cables Ans:A constellation of satellites	(b) A constellation of satellites (d) High altitude balloons
3	30	The minimum number of satellites required for 3D GPS positioning is (a) 1 (c) 4 Ans:4	(b) 2 (d) 10

UNIT	Q NO	QUESTIONS
3	31	The GPS receiver calculates (a) Atmospheric pressure (c) Temperature Ans:Latitude, Longitude, and Altitude (b) Latitude, Longitude, and Altitude (d) Wind speed
3	32	The main application of GPS is (a) Cooking (c) Printing documents Ans:Navigation and Timing (b) Navigation and Timing (d) Analog radio
3	33	Satellite navigation works on (a) Echo location (c) Magnetic induction Ans:Trilateration (b) Trilateration (d) Visual sight
3	34	The frequency band used for satellite communication is (a) LF/MF (c) Audio band Ans:C-band, Ku-band, Ka-band (b) C-band, Ku-band, Ka-band (d) Ultrasonic band
3	35	GPS operates in which frequency range (a) L-band (c) X-ray range Ans:L-band (b) AM radio band (d) Visible light range
3	36	Optical fiber transmits data in the form of (a) Electrical pulses (c) Sound waves Ans:Light pulses (b) Light pulses (d) Radio waves
3	37	The core of an optical fiber is made of (a) Copper (c) Aluminum Ans:Glass or Plastic (b) Glass or Plastic (d) Carbon fiber
3	38	The principle of optical fiber transmission is (a) Total Internal Reflection (TIR) (c) Magnetic induction Ans:Total Internal Reflection (TIR) (b) Refraction only (d) Convection
3	39	The three main parts of an optical fiber are (a) Anode, Cathode, Grid (c) Transmitter, Receiver, Battery Ans:Core, Cladding, Coating (b) Core, Cladding, Coating (d) Input, Output, Ground
3	40	The type of fiber with one propagation path is (a) Multimode fiber (c) Step-index fiber Ans:Single-mode fiber (b) Single-mode fiber (d) Graded-index fiber

UNIT	Q NO	QUESTIONS
3	41	The fiber type suitable for short-distance data transfer is (a) Single-mode fiber (b) Multimode fiber (c) Satellite link (d) Coaxial fiber Ans:Multimode fiber
3	42	Optical fibers are immune to (a) Physical cutting (b) Electromagnetic Interference (EMI) (c) Dust (d) Bending Ans:Electromagnetic Interference (EMI)
3	43	The wavelength of light used in fiber communication is around (a) 100 nm (b) 850 nm to 1550 nm (c) 5000 nm (d) 1 meter Ans:850 nm to 1550 nm
3	44	Fiber optic cables are used in (a) High-speed internet (FTTH) (b) Local AM radio (c) Analog doorbells (d) Vintage record players Ans:High-speed internet (FTTH)
3	45	FTTH stands for (a) Fiber To The Home (b) Fast Transmission To Hub (c) Fixed Telephone Terminal Header (d) Fiber Technology To Host Ans:Fiber To The Home
3	46	The main advantage of FTTH is (a) It is cheaper than copper (b) Extremely high bandwidth and speed (c) It doesn't need any cables (d) It uses radio waves Ans:Extremely high bandwidth and speed
3	47	Optical fiber cables use (a) Electric current (b) Light for signal transmission (c) Sound vibrations (d) Chemical reactions Ans:Light for signal transmission
3	48	The loss of light energy in optical fiber is called (a) Amplification (b) Attenuation (c) Refraction (d) Reflection Ans:Attenuation
3	49	The device used to join two optical fibers is called (a) Soldering iron (b) Fusion Splicer (c) Glue gun (d) Switch Ans:Fusion Splicer
3	50	The maximum bandwidth among communication media is offered by (a) Coaxial cable (b) Twisted pair cable (c) Optical fiber (d) Satellite link Ans:Optical fiber

UNIT	Q NO	QUESTIONS
4	1	What is the primary function of a microwave oven? (a) Freeze food quickly (b) Cook or heat food quickly (c) Wash utensils (d) Dehydrate fruits Ans: Cook or heat food quickly
4	2	How do microwaves produce heat in food? (a) Burn surface (b) Vibrate water molecules (c) Circulate hot air (d) Infrared light Ans: Vibrate water molecules
4	3	Which component is responsible for generating microwave radiation? (a) Wave Stirrer (b) Capacitor (c) Magnetron (d) Turntable Ans: Magnetron
4	4	The magnetron converts electrical energy into what? (a) High-frequency microwaves (b) Mechanical energy (c) Sound waves (d) Magnetic static fields Ans: High-frequency microwaves
4	5	What type of vacuum tube is a magnetron? (a) Low-power glass tube (b) High-power vacuum tube (c) Gas-filled tube (d) X-ray tube Ans: High-power vacuum tube
4	6	Where is the cathode located in a magnetron? (a) Outer edge (b) Attached to door (c) Center (d) Inside turntable Ans: Center
4	7	What is the typical microwave frequency for domestic ovens? (a) 5.0 GHz (b) 2.45 GHz (c) 1.2 GHz (d) 60 Hz Ans: 2.45 GHz
4	8	What creates the magnetic field in a magnetron? (a) Permanent magnets (b) Turntable motor (c) Cavity walls (d) Cooling fan Ans: Permanent magnets
4	9	What is the purpose of the waveguide? (a) Rotate food (b) Channel microwaves (c) Filter air (d) Display time Ans: Channel microwaves
4	10	Why does a microwave oven have a turntable? (a) Generate power (b) Even distribution (c) Cool food (d) Activate magnetron Ans: Even distribution

UNIT	Q NO	QUESTIONS
4	11	What is the typical output power range for domestic magnetrons? (a) 100–200 W (b) 700–1200 W (c) 2000–3000 W (d) 50–100 W Ans:700–1200 W
4	12	Which material causes microwaves to bounce inside the oven? (a) Glass (b) Plastic (c) Metal walls (d) Ceramic Ans:Metal walls
4	13	Which is a safety feature of a microwave? (a) Wave guide (b) Door interlock (c) Turntable (d) Magnetron Ans:Door interlock
4	14	What should be used to clean a microwave's interior? (a) Bleach & steel wool (b) Water & mild detergent (c) Dry paper only (d) Sandpaper Ans:Water & mild detergent
4	15	Which is considered a disadvantage of microwave cooking? (a) Energy efficient (b) Defrost quickly (c) Not for deep frying (d) Reduces oil Ans:Not for deep frying
4	16	What is the main classification of washing machines? (a) Small/Large (b) Manual/Semi & Fully Auto (c) Fast/Slow (d) Plastic/Metal Ans:Manual/Semi & Fully Auto
4	17	Which machine requires human intervention to move clothes between tubs? (a) Fully Auto (b) Front Load (c) Semi-Automatic (d) Inverter-based Ans:Semi-Automatic
4	18	What characterizes a top load washing machine? (a) Front loading (b) Top loading (c) Tumble action (d) Long cycle Ans:Top loading
4	19	What is an advantage of a front load washing machine? (a) Cheapest (b) Most water use (c) Energy efficient (d) Shortest cycle Ans:Energy efficient
4	20	Which component drains water after washing? (a) Agitator (b) Pump (c) Inlet valve (d) Clutch Ans:Pump

UNIT	Q NO	QUESTIONS
4	21	What acts as the brain of a modern washing machine? (a) Drive belt (b) Agitator (c) Controller (d) Detergent dispenser Ans:Controller
4	22	Electromechanical timers are found in which type of models? (a) Older models (b) Smart IoT (c) High-end (d) None Ans:Older models
4	23	What is the purpose of the pre wash stage? (a) Dry clothes (b) Loosen dirt (c) Add softener (d) High spin Ans:Loosen dirt
4	24	During which stage is centrifugal force used? (a) Main wash (b) Rinse (c) Spin (d) Pre-wash Ans:Spin
4	25	What is the typical spin RPM range? (a) 50–100 (b) 700–1400 (c) 5000–6000 (d) 10–20 Ans:700–1400
4	26	What does a load sensor detect? (a) Water temp (b) Laundry amount (c) Detergent type (d) Door lock Ans:Laundry amount
4	27	Washing machine software commonly uses which programming language? (a) HTML/CSS (b) Python/Ruby (c) C or C++ (d) Java/Swift Ans:C or C++
4	28	What does FLWM represent? (a) Carpeted (b) Fixed timers (c) Sensor adaptive (d) Cold water only Ans:Sensor adaptive
4	29	Fuzzy logic works on degrees of truth instead of what? (a) Water levels (b) Binary logic (c) Mechanical gears (d) User inputs Ans:Binary logic
4	30	What does a foam sensor detect? (a) Temperature (b) Suds level (c) Load amount (d) Turbidity Ans:Suds level

UNIT	Q NO	QUESTIONS
4	31	What does a turbidity sensor measure? (a) Water weight (c) Speed Ans:Cloudiness
		(b) Cloudiness (d) Power
4	32	What is the typical washing cycle duration? (a) 10–20 min (c) 5–10 hrs Ans:40–90 min
		(b) 40–90 min (d) 2–3 min
4	33	Which algorithm is used for adjusting motor speed? (a) Binary search (c) Blockchain Ans:PID control
		(b) PID control (d) Sorting
4	34	Air conditioner works on which principle? (a) Combustion (c) Centrifugal Ans:Refrigeration cycle
		(b) Refrigeration cycle (d) Hydraulic
4	35	Where is the evaporator coil located? (a) Outside (c) Compressor Ans:Indoor unit
		(b) Indoor unit (d) Condenser
4	36	Which component increases refrigerant pressure? (a) Expansion valve (c) Compressor Ans:Compressor
		(b) Evaporator (d) Air filter
4	37	What is the function of the condenser coil? (a) Absorbs heat (c) Filters dust Ans:Releases heat
		(b) Releases heat (d) Lowers pressure
4	38	What is the function of the expansion valve? (a) Thermostat (c) Blower Ans:Reduce pressure
		(b) Reduce pressure (d) Motor
4	39	What is R 410A? (a) AC brand (c) Metal mesh Ans:Refrigerant
		(b) Refrigerant (d) Safety standard
4	40	Which device regulates cooling on and off? (a) Inverter (c) Capillary tube Ans:Thermostat
		(b) Thermostat (d) Vent fin

UNIT	Q NO	QUESTIONS
4	41	What is a window air conditioner? (a) Two units (b) Single compact (c) Needs open window (d) Portable Ans:Single compact
4	42	What is the main purpose of a refrigerator? (a) Heat food (b) Wash dishes (c) Preserve food (d) Dry clothes Ans:Preserve food
4	43	Through which component is heat released in a refrigerator? (a) Evaporator (b) Condenser fins (c) Freezer door (d) Bulb Ans:Condenser fins
4	44	What happens to gas inside the compressor? (a) Pressure decreases (b) Compressed & heated (c) Turns solid (d) Filtered Ans:Compressed & heated
4	45	What happens when liquid refrigerant evaporates? (a) Heating (b) Cooling (c) Magnetic effect (d) Sound Ans:Cooling
4	46	What is a disadvantage of fixed speed compressors? (a) Too small (b) Temp fluctuations (c) Never off (d) No electricity Ans:Temp fluctuations
4	47	How does an inverter adjust speed? (a) Color change (b) Control freq & voltage (c) Manual switch (d) Add refrigerant Ans:Control freq & voltage
4	48	What is the typical energy saving of an inverter system? (a) 5–10% (b) 30–50% (c) 90–100% (d) 0% Ans:30–50%
4	49	Inverter circuit converts AC into what? (a) Microwaves (b) DC (c) Steam (d) Gas Ans:DC
4	50	What is an advantage of an inverter system? (a) High noise (b) Short life (c) Stable cooling (d) High bills Ans:Stable cooling

UNIT	Q NO	QUESTIONS
5	1	What is a barcode primarily used for? (a) To transmit audio signals (b) To store product information like Price and ID (c) To power electronic devices (d) To protect against physical damage Ans:To store product information like Price and ID
5	2	Which type of barcode encodes data in both horizontal and vertical dimensions? (a) 1D Barcode (b) Linear Barcode (c) 2D Barcode (d) UPC-A Ans:2D Barcode
5	3	Which barcode type is typically used for retail products in the US and Canada? (a) EAN-13 (b) UPC-A (c) ITF-14 (d) GS1-128 Ans:UPC-A
5	4	The empty white space at the edges of a barcode is known as? (a) Number system digit (b) Manufacturer code (c) Quiet zone (d) Check digit Ans:Quiet zone
5	5	In an EAN-13 barcode, what do the first three digits represent? (a) Manufacturer code (b) Product code (c) Number System Digit (Prefix) (d) Check digit Ans:Number System Digit (Prefix)
5	6	Which component of a barcode is used to verify it was scanned correctly? (a) Quiet zone (b) Check digit (c) Product code (d) Prefix Ans:Check digit
5	7	How does a barcode scanner detect the pattern of a barcode? (a) By measuring heat (b) By detecting reflected light from white spaces (c) By physical contact (d) By using radio frequencies Ans:By detecting reflected light from white spaces
5	8	What does the decoder in a barcode scanner do? (a) Shines light on the label (b) Converts analog signals to electrical ones (c) Translates the bar pattern into readable data (d) Stores the final database Ans:Translates the bar pattern into readable data
5	9	Which barcode type is a 2D square code used for healthcare and traceability? (a) UPC-E (b) Data Matrix (c) ITF-14 (d) Code 128 Ans:Data Matrix
5	10	What is the typical data capacity of a standard 1D barcode? (a) Thousands of characters (b) Up to 20–25 characters (c) Exactly 100 characters (d) Unlimited Ans:Up to 20–25 characters

UNIT	Q NO	QUESTIONS
5	11	What is a barcode primarily used for? (a) To transmit audio signals (b) To store product information like Price and ID (c) To power electronic devices (d) To protect against physical damage Ans:To store product information like Price and ID
5	12	Which type of barcode encodes data in both horizontal and vertical dimensions? (a) 1D Barcode (b) Linear Barcode (c) 2D Barcode (d) UPC-A Ans:2D Barcode
5	13	Which barcode type is typically used for retail products in the US and Canada? (a) EAN-13 (b) UPC-A (c) ITF-14 (d) GS1-128 Ans:UPC-A
5	14	The empty white space at the edges of a barcode is known as? (a) Number system digit (b) Manufacturer code (c) Quiet zone (d) Check digit Ans:Quiet zone
5	15	In an EAN-13 barcode, what do the first three digits represent? (a) Manufacturer code (b) Product code (c) Number System Digit (Prefix) (d) Check digit Ans:Number System Digit (Prefix)
5	16	Which component of a barcode is used to verify it was scanned correctly? (a) Quiet zone (b) Check digit (c) Product code (d) Prefix Ans:Check digit
5	17	How does a barcode scanner detect the pattern of a barcode? (a) By measuring heat (b) By detecting reflected light from white spaces (c) By physical contact (d) By using radio frequencies Ans:By detecting reflected light from white spaces
5	18	What does the decoder in a barcode scanner do? (a) Shines light on the label (b) Converts analog signals to electrical ones (c) Translates the bar pattern into readable data (d) Stores the final database Ans:Translates the bar pattern into readable data
5	19	Which barcode type is a 2D square code used for healthcare and traceability? (a) UPC-E (b) Data Matrix (c) ITF-14 (d) Code 128 Ans:Data Matrix
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5	21	What is a barcode primarily used for? (a) To transmit audio signals (b) To store product information like Price and ID (c) To power electronic devices (d) To protect against physical damage Ans: To store product information like Price and ID
5	22	Which type of barcode encodes data in both horizontal and vertical dimensions? (a) 1D Barcode (b) Linear Barcode (c) 2D Barcode (d) UPC-A Ans: 2D Barcode
5	23	Which barcode type is typically used for retail products in the US and Canada? (a) EAN-13 (b) UPC-A (c) ITF-14 (d) GS1-128 Ans: UPC-A
5	24	The empty white space at the edges of a barcode is known as? (a) Number system digit (b) Manufacturer code (c) Quiet zone (d) Check digit Ans: Quiet zone
5	25	In an EAN-13 barcode, what do the first three digits represent? (a) Manufacturer code (b) Product code (c) Number System Digit (Prefix) (d) Check digit Ans: Number System Digit (Prefix)
5	26	Which component of a barcode is used to verify it was scanned correctly? (a) Quiet zone (b) Check digit (c) Product code (d) Prefix Ans: Check digit
5	27	How does a barcode scanner detect the pattern of a barcode? (a) By measuring heat (b) By detecting reflected light from white spaces (c) By physical contact (d) By using radio frequencies Ans: By detecting reflected light from white spaces
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5	34	The empty white space at the edges of a barcode is known as? (a) Number system digit (b) Manufacturer code (c) Quiet zone (d) Check digit Ans: Quiet zone
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5	39	Which barcode type is a 2D square code used for healthcare and traceability? (a) UPC-E (b) Data Matrix (c) ITF-14 (d) Code 128 Ans: Data Matrix
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5	50	What is the typical data capacity of a standard 1D barcode? (a) Thousands of characters (b) Up to 20–25 characters (c) Exactly 100 characters (d) Unlimited Ans: Up to 20–25 characters

UNIT NO	PART B/C	Q. N O	QUESTION
1	B	1	Define a Transducer and give examples from audio systems.
1	B	2	What are the primary characteristics used to specify a microphone?
1	B	3	Explain the basic principle of a Carbon Microphone
1	B	4	List the main constructional elements of a carbon microphone
1	B	5	What is the fundamental frequency of a carbon microphone's metal diaphragm
1	B	6	State two advantages and disadvantages of a Carbon Microphone.
1	B	7	Describe the principle of a Moving Coil Microphone.
1	B	8	List the three main components of a wireless microphone system
1	B	9	What are the primary disadvantages of using wireless microphones
1	B	10	Define a Loudspeaker and list its common applications
1	B	11	Define 'Efficiency' and 'Power handling capacity' in the context of type loudspeaker
1	B	12	What is the purpose of the 'Spider' in a dynamic cone-type loudspeaker
1	B	13	Explain the basic principle of Magnetic Recording.
1	B	14	What do 'Pits' and 'Lands' represent in the context of digital CD recording?
1	B	15	What is the primary goal of the MP3 audio format regarding compression
2	B	1	Define Television and state its fundamental aim.
2	B	2	List the basic components of a television system.
2	B	3	What are the functions of a TV camera?
2	B	4	Define scanning in television.
2	B	5	Differentiate between trace and retrace.
2	B	6	What is horizontal frequency in a 625-line system?
2	B	7	What is flicker effect?
2	B	8	Define Aspect Ratio and state its standard value.
2	B	9	What is Vertical Resolution?
2	B	10	Define Hue, Saturation, and Brightness.
2	B	11	What is Luminance (Y) signal?
2	B	12	Write the formula for luminance signal.
2	B	13	Compare NTSC and PAL frame rates.
2	B	14	What is interlaced scanning?
2	B	15	What is the function of synchronization pulses?
3	B	1	What are the two main parts of a cordless phone and what does the base unit contain?
3	B	2	Explain the principle of operation for a cordless phone.
3	B	3	List any three disadvantages of using a cordless phone.
3	B	4	Define a digital cellular phone and mention three technologies it operates on.
3	B	5	What is the function of the BSC (Base Station Controller) in a cellular network?
3	B	6	Explain the role of HLR and VLR in call authentication.
3	B	7	What is handoff and why is it necessary in mobile communication?
3	B	8	Differentiate between CCTV and broadcast television.
3	B	9	Explain the function of the LNB (Low Noise Block) in a DTH system.
3	B	10	What is a Conditional Access System (CAS) in the context of DTH?

3	B	11	Define Video on Demand (VoD) and list two platforms where it is commonly used.
3	B	12	How does Adaptive Bitrate Streaming (ABR) improve the user experience?
3	B	13	Describe the three segments of a GPS system.
3	B	14	What is the principle of Total Internal Reflection in optical fibers?
3	B	15	State three advantages of Fiber to the Home (FTTH) over traditional copper connections.
4	B	1	Define a microwave oven.
4	B	2	What is the function of a magnetron in a microwave oven?
4	B	3	Mention any three safety features of a domestic microwave oven.
4	B	4	List three advantages of using a microwave oven for cooking.
4	B	5	State two disadvantages of microwave ovens related to health or food quality.
4	B	6	Distinguish between a semi automatic and a fully automatic washing machine.
4	B	7	What are the pros and cons of a front load washing machine?
4	B	8	Describe the purpose of a wash cycle in a washing machine.
4	B	9	What is the role of a thermostat in an air conditioner?
4	B	10	Define Fuzzy Logic in the context of a washing machine.
4	B	11	What are the typical power ratings and frequency of a domestic microwave?
4	B	12	List three key components of a refrigerator.
4	B	13	What is the main difference between window ACs and split ACs?
4	B	14	What does a turbidity sensor and dirt sensor do in a washing machine?
4	B	15	Mention three applications of a domestic refrigerator.
5	B	1	Define a barcode and list its two main types.
5	B	2	Describe the Quiet Zone of a barcode and its purpose.
5	B	3	What is the function of the Check Digit in a barcode?
5	B	4	Describe about Passive RFID tags and their power source.
5	B	5	What are the three primary components of an RFID system?
5	B	6	Define a QR code and identify what QR stands for.
5	B	7	What are Finder Patterns in a QR code, and where are they located?
5	B	8	List the four error correction levels available for QR codes.
5	B	9	Differentiate between a Smart Watch and a Fitness Band in terms of display.
5	B	10	Explain the role of the Microphone in a digital hearing aid.
5	B	11	Describe Augmented Reality (AR).
5	B	12	What is SLAM (Simultaneous Localization and Mapping) in AR?
5	B	13	Define Virtual Reality (VR) and its primary goal.
5	B	14	What is a Wake Word in the context of a Smart Speaker?
5	B	15	Describe the basic function of an image sensor in a digital camera.
1	C	1	Explain the construction and working mechanism of a Carbon Microphone with a neat diagram
1	C	2	Explain the working principle and construction of a Moving Coil (Electro Dynamic) Microphone
1	C	3	Discuss the operation of a Wireless Microphone system, including its components and frequency range
1	C	4	Explain the layers of a Compact Disc (CD) and the process of reproducing sound from it

1	C	5	Compare Monophonic, Stereophonic, and Surround Sound (5.1) systems in terms of channels and listener experience
2	C	1	Explain the fundamental operation of a television system with a neat block diagram.
2	C	2	Explain horizontal scanning and saw-tooth waveform in detail.
2	C	3	Explain vertical scanning and synchronization process.
2	C	4	Explain LED and OLED display units with diagrams.
2	C	5	Discuss plasma display technology with advantages and disadvantages.
3	C	1	Describe the components, operation, and typical applications of a cordless phone system.
3	C	2	Explain in detail the step by step process of how a call is initiated and received in a digital cellular network.
3	C	3	Discuss the different types of CCTV arrangements, including systems with multiple cameras and the role of recorders.
3	C	4	Compare and contrast single mode fiber, multimode step index fiber, and multimode graded index fiber.
3	C	5	Explain the architecture and working of Fiber to the Home (FTTH), including the roles of OLT and ONT.
4	C	1	Describe the construction and working principle of a magnetron with a neat diagram.
4	C	2	Explain the step by step working process of a microwave oven from generation to heat distribution.
4	C	3	Discuss the various types of domestic washing machines based on operation and drum type.
4	C	4	Illustrate the working principle of a domestic refrigerator and describe its main components.
4	C	5	Discuss inverter technology in appliances with its working and major advantages.
5	C	1	Explain the step by step process of a barcode scanner and decoder work together to process data.
5	C	2	Discuss RFID technology, including its types (Passive, Semi Passive, and Active) and its advantages over traditional barcodes.
5	C	3	Detail the components of an RFID system and describe its complete operational cycle from tag activation to actionable output.
5	C	4	Discuss the operation and applications of Smart Speakers, explaining how they use Natural Language Processing (NLP) to assist users.
5	C	5	Explain the working principle of a digital camera and describe the different types of digital cameras available in the market.