

CBSE | DEPARTMENT OF SKILL EDUCATION

ELECTRONICS TECHNOLOGY (SUBJECT CODE-820)

MARKING SCHEME FOR CLASS XII (SESSION 2023-2024)

Max. Time: 3 Hours

Max. Marks: 60

General Instructions:

1. Please read the instructions carefully.
2. This Question Paper consists of **24 questions** in two sections – Section A & Section B.
3. Section A has Objective type questions whereas Section B contains Subjective type questions.
4. **Out of the given (6 + 18 =) 24 questions, a candidate has to answer (6 + 11 =) 17 questions in the allotted (maximum) time of 3 hours.**
5. All questions of a particular section must be attempted in the correct order.
6. **SECTION A - OBJECTIVE TYPE QUESTIONS (30 MARKS):**
 - i. This section has 06 questions.
 - ii. There is no negative marking.
 - iii. Do as per the instructions given.
 - iv. Marks allotted are mentioned against each question/part.
7. **SECTION B – SUBJECTIVE TYPE QUESTIONS (30 MARKS):**
 - i. This section contains 18 questions.
 - ii. A candidate has to do 11 questions.
 - iii. Do as per the instructions given.
 - iv. Marks allotted are mentioned against each question/part.

SECTION A: OBJECTIVE TYPE QUESTIONS

| Q. No. | QUESTION | Source Material (NCERT/PSSCIV E/ CBSE Study Material) | Unit/ Chap. No. | Page no. of source material | Marks |
|--------|---|--|-----------------------|-----------------------------------|-------|
| Q. 1 | Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks) | | | | |
| i. | (A) The boys | Employability NCERT book for class XII. | Unit 1 | 18 | 1 |
| ii. | (A) Self-confidence | Employability NCERT book for class XII. | Unit 2 | 33 | 1 |
| iii. | True | Employability NCERT book for class XII. | Unit 2 | page-25 | 1 |
| iv. | (B) click the cell, type the data and press Enter. | Employability NCERT book for class XII. | unit 3 | page-44 | 1 |
| v. | (B) interpersonal skills | Employability NCERT book for class XII. | Unit 4 | page-97 | 1 |


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| vi. | CNG | Employability NCERT book for class XII. | Unit 5 | page-115 | 1 |
| Q. 2 | Answer any 5 out of the given 7 questions (1 x 5 = 5 marks) | | | | |
| i. i. | True | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 1 | Page 8 | 1 |
| ii. | D. Cholera | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 1 | Page 5 | 1 |
| iii. | True | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 1 | Page 4 | 1 |
| iv. | True | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 1 | Page 15 | 1 |
| v. | True | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 1 | Page 5 | 1 |
| vi. | D. Stethoscope | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 1 | Page 9-10 | 1 |
| vii. | A. Hearing aids | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 1 | Page 11 | 1 |
| Q. 3 | Answer any 6 out of the given 7 questions (1 x 6 = 6 marks) | | | | |
| i. | Loudspeaker | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 2 | page 24 | 1 |
| ii. | True | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 2 | page 21 | 1 |
| iii. | D. A and B only. | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 2 | page 20- 21 | 1 |
| iv. | Capacitance microphone | Troubleshooting and maintenance of | Unit 2 | page 20 | 1 |

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| | | electronic equipment-CBSE handbook | | | |
| v. | True | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 2 | page 24 | 1 |
| vi. | B. Moving coil | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 2 | page 21 | 1 |
| vii. | Squawker | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 2 | page 26 | 1 |
| Q. 4 | Answer any 5 out of the given 6 questions (1 x 5 = 5 marks) | | | | |
| i. | True | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 3 | page 31 | 1 |
| ii. | D. Stylus | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 3 | page 42-43 | 1 |
| iii. | Digital signal | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 3 | page 30 | 1 |
| iv. | A. 1.2 mm. | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 3 | page 42 | 1 |
| v. | Digital | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 3 | page 29 | 1 |
| vi. | B. Sine wave | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 3 | page 44 | 1 |
| Q. 5 | Answer any 5 out of the given 6 questions (1 x 5 = 5 marks) | | | | |
| i. | High Power Linear Amplifier | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 4 | page 51 | 1 |
| ii. | Electronic oscillator | Troubleshooting and maintenance of electronic | Unit 4 | page 52 | 1 |

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| | | equipment-CBSE handbook | | | |
| iii. | True | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 4 | Page 56 | 1 |
| iv. | Cathode Ray Tube | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 4 | Page 57 | 1 |
| v. | C. Cable TV | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 4 | Page 64 | 1 |
| vi. | True | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 4 | Page 61 | 1 |
| Q. 6 | Answer any 5 out of the given 6 questions (1 x 5 = 5 marks) | | | | |
| i. | D. Electronic Private Branch Exchange | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 5 | Page 82 | 1 |
| ii. | Aluminium | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 5 | Page 85 | 1 |
| iii. | Travelling wave tubes | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 5 | Page 77 | 1 |
| iv. | A. Scanner | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 5 | Page 89 | 1 |
| v. | D. Printer | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 5 | Page 82 | 1 |
| vi. | False | Troubleshooting and maintenance of electronic equipment-CBSE handbook | Unit 5 | Page 76 | 1 |

SECTION B: SUBJECTIVE TYPE QUESTIONS

| Q. No. | QUESTION | Source Material (NCERT/PSSCIVE/ CBSE Study Material) | Unit/ Chap. No. | Page no. of source materi al | Marks |
|--------|---|--|--------------------|--|-------|
| | Answer any 3 out of the given 5 questions on Employability Skills in 20 – 30 words each (2 x 3 = 6 marks) | | | | |
| Q. 7 | The object in a sentence can be either direct or indirect . Direct objects are the ones directly ‘acted on’ by the action word (verb). If we ask — “What does Nisha sell?”, the answer is ‘laptop’, which is direct object. A direct object answers the question ‘what?’. An indirect object answers the questions, such as “to whom” and “for whom”. For example, in the sentence — “Abdul gave a gift to his mother.” The verb is ‘gave’. What did Abdul give? A gift. To whom did Abdul give the gift? To his mother. Here, ‘gift’ is direct object and ‘his mother’ is indirect object | Employability NCERT book for class XII. | Unit 1 | Page 17 | 2 |
| Q. 8 | 1. A student may set a goal of scoring high marks in an exam. 2. An athlete may run five miles a day. 3. A traveller may try to reach a destination city within three hours. | Employability NCERT book for class XII. | Unit 2 | Page 30 | 2 |
| Q. 9 | There are three main type of data — text, numbers and formula. Nowadays, it is also possible to enter pictures, audio, video and shapes in a spreadsheet. Let us see what they are used for. Raghu owns a shop. He keeps a record of all items, such as wheat, rice, <i>daal</i> , sugar, etc. He enters the name of the items, date of purchase, quantity purchased, cost price, selling price, etc. Using a spreadsheet, he can use text to enter names, numbers to enter quantity and date to show when an item was purchased. | Employability NCERT book for class XII. | Unit 3 | Page 45 | 2 |
| Q. 10 | Time management is the process of planning and following a conscious control of time spent on specific activities. It is the ability to use one’s time well. Time management includes the following. 1. Planning well 2. Setting goals 3. Setting deadlines 4. Giving important work responsibilities to other people in a team 5. Conducting the most important tasks first | Employability NCERT book for class XII. | Unit 4 | Page 104 | 2 |
| Q. 11 | Solar and wind power plants provide clean energy. A Solar Photovoltaic Installer installs and maintains solar panels in homes, | Employability NCERT book for class XII. | Unit 5 | Page 116 | 2 |

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| | businesses or land. A solar lighting technician assembles, tests and repairs different types of solar photovoltaic home lighting system and streetlights. Some common jobs in this sector are roofer, solar panel installation technician and field technician. | | | | |
| Answer any 3 out of the given 5 questions in 20 – 30 words each (2 x 3 = 6 marks) | | | | | |
| Q. 12 | It is the discipline of anticipating, recognizing, evaluating and controlling health hazards in the working environments with the objective of protective worker health, well-being and safe guarding the community at large. | Troubleshooting and maintenance of electronic equipment- CBSE handbook | Unit 1 | Page 4 | 2 |
| Q. 13 | 1.They are used mostly to listen to the programme broadcasted at the receiving device. 2. Used in public address system (PAS). 3. Used in studio monitors | Troubleshooting and maintenance of electronic equipment- CBSE handbook | Unit 2 | Page 25 | 2 |
| Q. 14 |  <p>Analog signals are continuous waves and have their instantaneous values while Digital signals are having either Low or High values.</p> | Troubleshooting and maintenance of electronic equipment- CBSE handbook | Unit 3 | Page 30 | 2 |
| Q. 15 | 1.Used in infra-red/VHF range. 2. Covers 10-15 meters of distance. 3. Require pencil battery for operation. 4. 15-25 Operation buttons are available (varies according to application). 5. Controls all the functions of TV receiver. | Troubleshooting and maintenance of electronic equipment- CBSE handbook | Unit 4 | Page 60 | 2 |
| Q. 16 | Mobile phone does not require any physical connection between transmitter and receiver. The mobile unit consist of transmitter, receiver, dialing pad, antenna, microprocessor chip, display unit, battery etc. The telephone is a modern electronic device used for voice communication between two people separated at distance. When the communication is established between the two, the exchange sends steady current to both speakers and listeners. The steady nature of currents fluctuates in proportion with the sound pressure of microphone. The resulting air pressure fluctuation causes sound of human voice to be communicated | Troubleshooting and maintenance of electronic equipment- CBSE handbook | Unit 5 | Page 79 | 2 |
| Answer any 2 out of the given 3 questions in 30– 50 words each (3 x 2 = 6 marks) | | | | | |
| Q. 17 | It works on the principle of piezoelectric effect. Some of the materials show piezoelectricity. Under some mechanical pressure it exhibits voltage. The vibration or oscillation of pressure produces corresponding electrical signal. | Troubleshooting and maintenance of electronic equipment- CBSE handbook | Unit 2 | Page 22 | 3 |
| Q. 18 | The optical recording system is used for the storage of information for computers and computerized systems. The storage device would be optical disc. These discs are removable. The process of optical recording is carried out in digital manner. The data on the disc is in the form of pits and bumps. These are binary in nature one is considered as '1' and another is considered as '0'. We use these | Troubleshooting and maintenance of electronic equipment- CBSE handbook | Unit 3 | Page 38 | 3 |

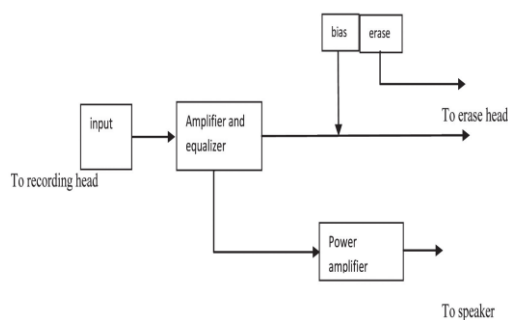
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| | <p>devices as secondary memory. It can be of two kinds that is read only and read-write. The optical disc storage capacity varies depending upon the manufacturing technology. The disc recording or read operation is carried out in the disc player.</p> <p>The disc is placed in the player. The player consists of rotating table on which the disc is placed. The rotating table rotates with the help of motor. Light beams are used to read and write the disc</p> | | | | |
| Q. 19 | <p>1. The BRIGHTNESS represents overall intensity of illusion and can be varied to get optimum results by varying the brightness control knob.</p> <p>2. CONTRAST represents the difference in light intensity for white and black part of the picture.</p> <p>It can also be adjusted by varying the contrast control knob.</p> <p>3. HUE represents actual colour seen by the eye.</p> <p>4. SATURATION represents purity of a colour.</p> <p>5. LUMINANCE represents amount of light intensity.</p> | Troubleshooting and maintenance of electronic equipment- CBSE handbook | Unit 4 | Page 62 | 3 |
| Answer any 3 out of the given 5 questions in 50– 80 words each (4 x 3 = 12 marks) | | | | | |
| Q. 20 | <p>1. Do not work alone with electricity. A co-worker can be of use in saving your life in an emergent situation.</p> <p>2. If there is fire, do not attempt to pour water. Only use a fire extinguisher made for electrical fires.</p> <p>3. If the floor is wet, try not to enter that area where electrical equipment's used.</p> <p>4. Fire extinguishers for use of electrical fires will be labeled as a C, BC or ABC extinguisher.</p> <p>5. Avoid contact with energized electrical circuit assume that they all are alive.</p> <p>6. During service or repair disconnect the power source.</p> <p>7. Use standard tools while working on electrical devices.</p> <p>8. When working with electrical devices avoid wearing metal watch band, ring etc.</p> <p>9. Be sure while working on live electrical circuits your hands are dry, wear non-conductive gloves, protective shoes and clothes.</p> <p>10. Try to work by one hand when working on live electrical circuit and keep other hand away from all conducting materials that may cause danger.</p> | Troubleshooting and maintenance of electronic equipment- CBSE handbook | Unit 1 | Page 7 | 4 |
| Q. 21 | <p>Woofers: It is a kind of driver used for low frequency range. For reproducing low frequencies woofer combines with enclosure design. In some of the applications the woofer is also used for the reproduction of mid-range frequencies. The frequency range varies according to the design of woofer. A typical range of woofer is about 20Hz-600Hz. It</p> | Troubleshooting and maintenance of electronic equipment- CBSE handbook | Unit 2 | Page 26 | 4 |

provides almost uniform frequency response at lower frequency ranges. However, at very low frequency the output attenuates and also at the end of the higher frequency range of the woofer the output lowers slightly attenuates.

Tweeter: It is used for reproduction of highest frequencies. Its design is difficult because of the nature of high frequency audio wave. A tweeter is applied form of speaker that is specially designed to respond in high frequency audio ranges (2kHz-20kHz). It has flat frequency response at high audible frequency ranges. Three different kinds of tweeters are mostly used in accordance with their application. They are named as soft-dome tweeter, horn loaded compression tweeter and ribbon tweeter. Soft-dome tweeter is used in home stereo system where as horn loaded compression tweeter is used in reproduction of professional sound. In recent time ribbon tweeter are also used in place of horn loaded compression tweeter because it can handle larger amount of output power.

Q. 22 Tape recorder is made up of particles of magnetic material which passes through magnetic field that varies in accordance with audio frequency signal. The principle relies on a current-carrying coil placed close to the magnetic medium, such as a magnetic tape/disk. In this technique, the required current to magnetize the recording medium can be quite large and coil of many windings is used.

Block Diagram:

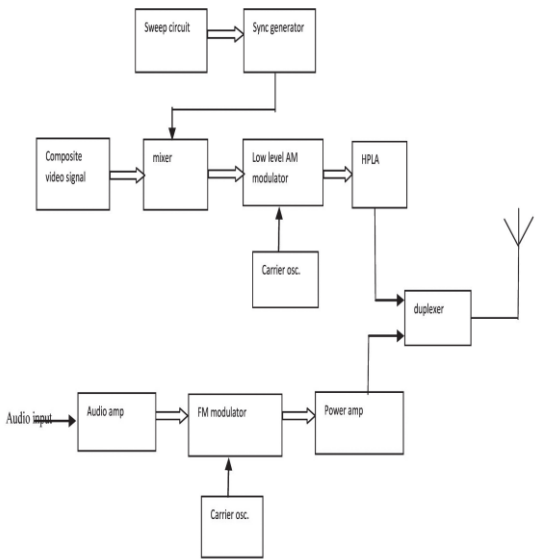


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| <p>Q. 23</p> | <p>Working principle: For the transmission of information at distant location, transmitting device is required. Transmitter requires transmitting channel through which the information travels. TV transmitter is used to transmit the video and audio signals. It consists of video section and audio section as shown in following Fig. The video section comprises of Mixer, AM modulator, Sweep circuit, Sync generator, High power linear amplifier (HPLA). The audio section comprises of audio amplifier, FM modulator and power amplifier. The outputs of video and audio section are combined with the help of duplexer. This signal is transmitted through the transmitting antenna. In this way transmission of information is carried out with the use of transmitter.</p>  | <p>Troubleshooting and maintenance of electronic equipment- CBSE handbook</p> | <p>Unit 4</p> | <p>Page 51</p> | <p>4</p> |
| <p>Q. 24</p> | <p>A printer is a peripheral which make a persistent human readable representation of graphics or text on paper or similar physical media. In simple printer is most simple output device which is used to print information on paper. Printers are essential to getting output of any computer-based application.</p> <p>A fax machine is designed to send and receive documents. So, it contains a transmitter as well as receiver section. The transmitter section is similar to computer scanner with a charged coupled device. It scans the image line by line. It looks at each line separately, scans the black areas and the white areas, and transmits electric pulse on the phone line to represent it in black and white. The information is transmitted to other side fax through phone line. The receiver side fax machine receives information in the form of electrical pulses. If the receiving fax hears “black”, it draws a tiny black dot on the page, if it hears white, it moves along slightly, leaving a white space. It takes</p> | <p>Troubleshooting and maintenance of electronic equipment- CBSE handbook</p> | <p>Unit 5</p> | <p>Page 83-87</p> | <p>4</p> |

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| about a minute to transmit a single page of writing. In this way, fax machine works to transmit black and white lines from sending end to receiving end. | | | | |
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