CB CBSE|DEPARTMENT OF SKILL EDUCATION

ELECTRONICS AND HARDWARE-(SUBJECT CODE - 420)

Marking Scheme for Class IX (Session 2024-2025)

Max. Time: 2 Hours Max. Marks: 50

General Instructions:

1. Please read the instructions carefully.
2. This Question Paper consists of **21 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 (5 +16=)21 questions, a candidate has to answer (5+10=)15 questions in the allotted (maximum) time of 2 hours.**
5. All questions of a particular section must be attempted in the correct order.
6. **SECTION A-OBJECTIVE TYPE QUESTIONS (24 MARKS):**
   i. This section has 05 questions.
   ii. There is no negative marking.
   iii. Do as per the instructions given.
   iv. Marks allotted are mentioned against each question/part.
7. **SECTIONB –SUBJECTIVE TYPE QUESTIONS (26 MARKS):**
   i. This section contains 16 questions.
   ii. A candidate has to do 10 questions.
   iii. Do as per the instructions given.
   iv. Marks allotted are mentioned against each question/part.

SECTION A: OBJECTIVE TYPE QUESTIONS

Q.1	**Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)**	**Marks**
(i)	(a) Listening	**1**
(ii)	(b) Negative thinking	**1**
(iii)	(a) Global Positioning System	**1**
(iv)	(c) Both of the above	**1**
(v)	(b) Ctrl + Z	**1**
(vi)	(b) Solar Energy	**1**
Q.2	**Answer any 5 out of the given 6 questions (1X5=5 marks)**	
(i)	(c) Semiconductor	**1**
(ii)	(c) Resistance	**1**
(iii)	(a) Megger meter	**1**
(iv)	(b) Water	**1**
(v)	(b) Drill machine	**1**
(vi)	(a) Check TDS of Water	**1**
Q.3	**Answer any 5 out of the given 6 questions (1X5=5 marks)**	
(i)	(c) Conductor	**1**
(ii)	(a) Element (Metallic Spring)	**1**
(iii)	(a)Total dissipated substance	**1**
(iv)	(b) Hammer	**1**
(v)	(b) Extrinsic	**1**
(vi)	(a) Diode	**1**
Q.4	**Answer any 5 out of the given 6 questions (1X5=5 marks)**	
(i)	(b) Electric field	**1**
(ii)	(a)Power	**1**
(iii)	(d) Megger meter	**1**
(iv)	(b) Chlorine	**1**
(v)	(b) Soft (might be used for drinking	**1**
(vi)	(c) Plier	**1**
Q.5	**Answer any 5 out of the given 6 questions (1X5=5 marks)**	
(i)	(b) Current	**1**
(ii)	(c) Both A and B	**1**
(iii)	(a) treads	**1**
(iv)	(d) Polymer	**1**
(v)	(c) Both A and B	**1**
(vi)	(b) Insulator	**1**

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions in 20-30 words each (2 x 3 = 6 marks).

Q.6	• Verbal communication is easy and quick. We can say what you want and get a quick response. It is an easier form of communication when you have to exchange ideas. • You keep changing your communication as per the other person's reply.	**2**
Q.7	Apps are software programs (a set of instructions, or a set of modules or procedures, that allow for a certain type of computer operation) that perform different functions.	**2**
Q.8	• **Self-control:** Ability to control your behavior, discipline, etc. • **Self-motivation:** Doing tasks on your own without any external motivation	**2**
Q.9	some of the distinguishing characteristics of entrepreneurship. 1. Ability to take up risks 2. Believe in hard work and discipline	**2**
Q.10	There are some resources, which are available in limited quantities and are going to be exhausted as a result of continuous use. For example, the stock of coal in the earth	**2**

Answer any 4 out of the given 6 questions in 20 – 30 words each (2x4=8marks)

Q.11	Active components produce energy in the form of Voltage or Current. These components required external source for their operation. Some of the common examples of active components are: Diode, Transistors, etc	**2**
Q.12	When two semiconductors i.e. P-type semiconductor and N-type semiconductor are combined to form new component which is known as diode.	**2**
Q.13	In everyday life clean and safe is essential. But, contaminants like germs, virus, bacteria, and parasite etc. are present in the water. Therefore, for making the water drinkable treatment of water is necessary.	**2**
Q.14	Neon bulb is connected between Resistance and Element (metallic spring). It is used as phase indicator bulb.	**2**
Q.15	Two reasons for low pressure from water outlet tap/faucet are • Incorrect air pressure i n storage tank • Blocked post carbon filter	**2**
Q.16	• Don't wear loose dress and cover hairs while drilling • Allow time for the drill bit to cool between uses.	**2**

Answer any 3 out of the given 5 questions in 80-100 words each (4x3=12marks)

Q.17	Total Dissolved Solids (TDS) are the total amount of dissolved solids present in water. It is the sum of positively charged ions (cations) and negatively charged ions (anions) in the water. It is measured in units of mg per unit volume of water (mg/L) and is also referred to as parts per million (ppm). **Reason for high TDS in output water and their solution are given below-**	**4**

Reason for fault	Solution
Blocked pre-filter	Replace pre-filter
Incorrectly sealed mem brane	Install the membrane cor rectly
Exhausted membrane	Replace membrane
Output and drain water lines reversed	Swap the connections

Q.18	Gravity based water purifiers are based on the principle of gravity. The water flows from a higher compartment over the filters to a lower compartment. They do not require electricity and use either chemical-based, UF based or ceramic cartridge-based filters to purify water. **The main advantages of using a gravity-based purifier are as shown in the following:** • Removes impurities and germs from muddy water • Environmental friendly • Does not require electricity to purify water • Suitable for soft water • Portable and easy to install	**4**
Q.19	Multimeters are very useful test instruments. By operating a multi-position switch on the meter they can be quickly and easily set to be a voltmeter, an ammeter or an ohmmeter. They have several settings (called 'ranges') for each type of meter and the choice of AC or DC. Some multimeters have additional features such as transistor testing and ranges for measuring capacitance and frequency. Multimeters are available in digital and analogue types.	**4**
Q.20	Light-Emitting Diode (LEDs) comprises of several layers of semi-conducting material. When the diode is being utilized with DC, the active layer produces light. The LED emits light in a particular colour and this colour is dependent on the type of semiconductor material used in it. LEDs are made of semiconductor crystals When current flows through them, they emit light in red, green, yellow, or blue colours depending on the composition of the crystal compounds. Blue LEDs also emit white light by using a yellowish fluorescent layer or by creating a mix of red, green, and blue (RGB) LEDs.	**4**
Q.21	Kirchhoff's voltage law states that —total voltage drop across the loads in the circuit are equal to the total voltage applied to the circuitǁ or —the algebraic sum of the products of currents and resistance in each of the conductors in any closed path (or mesh) in a network plus the algebraic sum of the E.M.F. in that path is zero. In other words, $\sum IR + \sum E.M.F. = 0$	**4**