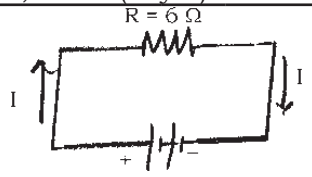
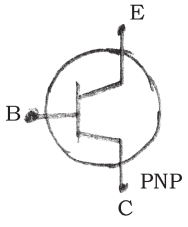
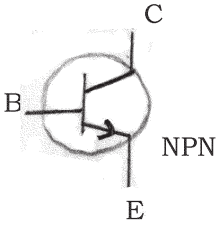
ಕೀಲಿ ಉತ್ತರ

ತರಗತಿ : 9 ವಿಷಯ : **Electronics and Hardware (Third Language)**

ಪ್ರಶ್ನೆ ಸಂಖ್ಯೆ	ಉತ್ತರದ ವಿವರ				ಅಂಕ ವಿಂಗಡಣೆ
I	1. B) 	2. B) Voltage	3. C) Inductor	4. A) Hammer	**1 Mark Each**
	5. D) Carbon stone	6. A) Copper rod	7. A) Chemical Hazard	8. D) Gravitational force	
	9. A) Air gap in faucet	10. C) RO + UV purifier			
II	11. Electrons	12. 21000 ± 5%Ω (OR) 21K ± 5%Ω		13. C = $\frac{Q}{V}$	**1 Mark Each**
	14. Thin film composition				
III	15. a) iii) Clean the storage tank b) i) Replace O-Ring c) iv) Replace shut-off valve d) vi) Pressurise the tank to 8PSI				**1 Mark Each**
IV					
16	**Diode** : When two semiconductors i.e. P-type and N-type semiconductors are combined to form a new component it is known as diode				**1 Mark Each**
17	**Wire stripper use** : It is a portable hand hold device used for removing protective layer/coating of an electric wire in order to replace or repair the wire				
18	The duration to change carbon filter is after 6-12 months				
19	**Flow Restrictor** : Maintains pressure on the inlet of the membrane to ensure highest quality of water				
20	The component used to avoid water leakage in a filter is O – ring				
21	Customer feedback form is filled by customer				
V					
22	**Conductor :** The material in which electrons are loosely held and can move easily are called conductors **Examples :** Copper, Aluminium, Steel (any 2) OR **Insulators :** The materials in which electrons are tightly hold, do not allow electrons to move are called insulators. **Examples :** Rubber, Plastic, Cloth, Glass (any 2)				1 1 1 1
23	 Given : V = 12V R = 6Ω I = ? According to Ohm's Law V = I ×R I = $\frac{V}{R}$ I = $\frac{\cancel{12}\ 2}{\cancel{6}1}$ I = 2A				½ ½ 1
24	Symbol of PNP transistor (1 mark)  Symbol of NPN transistor (1 mark) 				

P.T.O.

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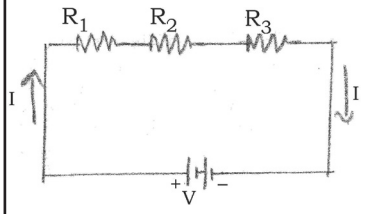
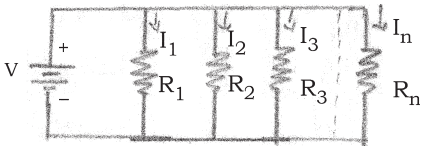
25	**Coagulation :** Coagulation in water purification is a process of transforming small particles to bigger particles. * In impure water, very small particles are present and hence these particles are not removed using a strainer * The most common form of chemical used is alum. It is a positively charged it neutralises the negative charge * These particles stick together and forms larger particles and hence can be removed easily OR **Filtration :** Filtration is the process of separating suspended solid particles from liquid. This is performed by passing water through some materials having pores called filter. The filtration tanks consist of layers of gravel and sand which filter out the remaining contaminants	1 ½ ½ 1 1
26	**STEPS TAKEN TO AVOID, ELECTRICAL HAZARDS** * Ensure the power tools used in the assembly process include extension cord of proper rating. * Do not use damaged electrical tool. * Inspect and test the installed electrical equipment and system at regular intervals * Check the rating and physical condition of the components and cables * Use standard techniques for assembling the components * Use protective equipments for safety purpose (any 4)	½ ½ ½ ½ ½ ½
27	**Properties of RO water purifier :** * Sustainable for hard water * Improves taste, odour and appearance of water * Simple operation and control * Removes dissolved salts and organic particles * Economical to purchase and easy to maintain * Removes impurities such as sulphates, fluorides (any 4)	**½ Mark Each**
VI		
28	**Series combination circuit**  (1 mark) R_1 – 1st resistor connected in series with R_2 R_2 – 2nd resistor connected in series with R_3 R_3 – 3rd resistor connected in series to negative terminal of battery R_T – Total Resistance $R_T = R_1 + R_2 + R_3$ In general $R_T = R_1 + R_2 + R_3$ ..... (½ mark)	**Parallel combination circuit**  (1 mark) In general R_T = Total Resistance $\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} ..... \frac{1}{R_n}$ OR $R_T = \frac{R_1 \times R_2 \times R_3 \times ... R_n}{(R_1 + R_2 + R_3 + ... R_n)}$ (½ mark) R_1 = 1st Resistance of circuit R_2 = 2nd Resistance of circuit R_3 = 3rd Resistance of circuit R_n = nth Resistance of circuit
29	**Chemical structure of water :** Water is a transparent, odourless, tasteless liquid. Its chemical formula is H_2O and it is made up of two hydrogen and one oxygen atom joined together by covalent bond. **Physical properties of water :** * Water is a universal solvent * High specific heat * Water has high surface tension and molecules of water have high adhesive property * Neutral pH value is 7 * Water has high polarity * The density of ice is lower than the density of water, water expands when it freezes (any 4) OR	1 ½ ½ ½ ½ ½ ½

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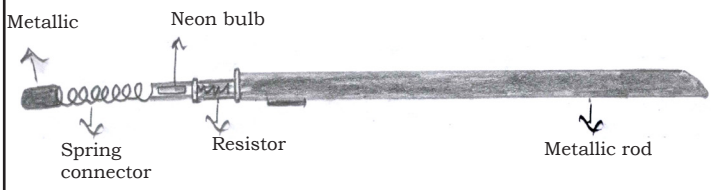
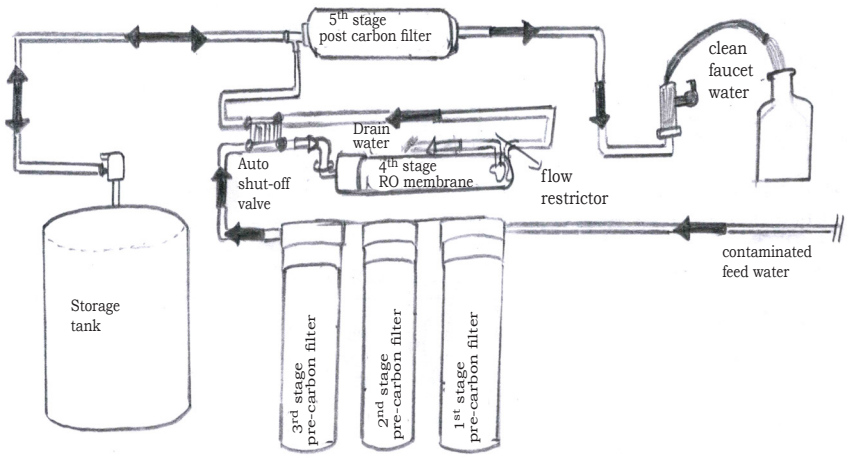
	Difference between water purifier and filter **Purifier :** * Eliminates contaminants such as bacteria and virus present in water * Kills and removes unwanted elements from water * Removes even essential minerals from water **Water filter :** * Eliminates or minimise impurities such as dissolved salts and heavy metals * Filter works like a strainer and prevents unwanted elements from entering * Cannot removes viruses from water		½ ½ ½ ½ ½ ½
30	**Diagram of line tester**  		3
31	No water flow the tap in RO system		
	Reason for faults	**Solution**	
	* Blocked or closed feed water input	Open or unblock valve	1
	* Blocked sediment or carbon filter	Replace the filter	1
	* Closed tank valve	Open valve	1
	* Blocked drain flow restrictor	Replace drain flow restriction	1
	* Membrane housing valve stuck	Replace or check the valve	1
	* Malfunctioning shut off valve	Replace automatic shut-off valve	1
	* Polluted membrane (any 3)	Replace the membrane	1
VII			
32	Water flow in RO water purifier  		4

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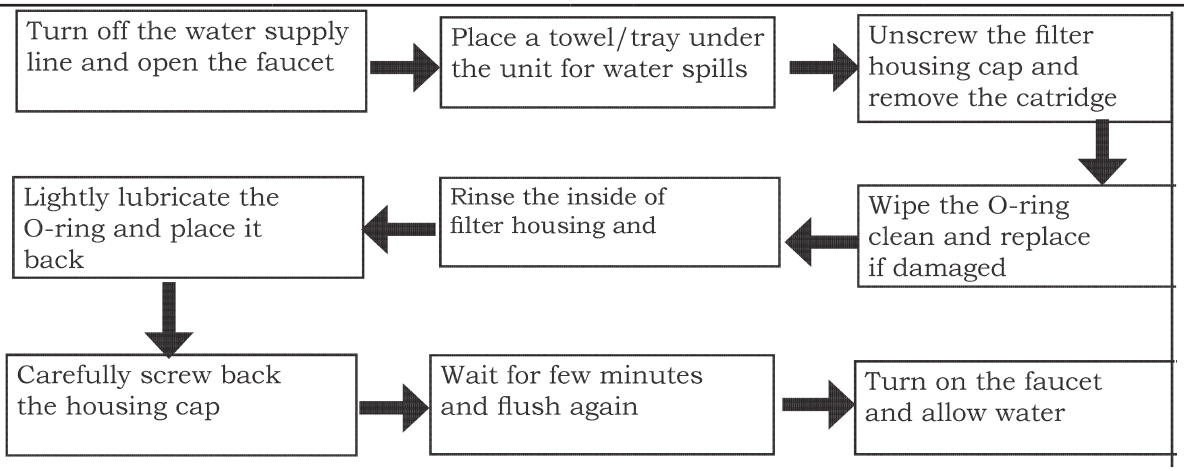
33	 OR **Steps to replace SS ball valve.** 1) Turn off the main water supply. 2) Release the excessive pressure using pressure release valve. 3) Cut the water supply using pipe cutter over which SS ball valve has to be placed. 4) SS ball valve has 2 ends having threads, one lever at the top to turn the supply OFF or ON. 5) Fit the SS ball valve at the appropriate place on the main water supply pipe. 6) Use thread tape for tightening the SS ball pin. 7) After properly tightening the SS ball valve, turn the SS ball valve ON by turning the lever parallel to the SS ball valve body. 8) Check for any Leakage at the joint and verify.	4 1 1 1 1
34	**Structure and functions of Transformer :** A transformer is a static unit. It simply transforms the voltage level of an AC signal. It either steps up or steps down AC voltage. It works on the principal of electromagnetic induction. **Functions of transformer** * High voltage is used for transmission and low voltage is used in office and at home. * Transformers are used to increase or decrease AC voltage in transmission and distribution of electricity. * Basic construction of transformer includes two coils wound on the magnetic frame or core. * The primary or input coil is connected to the energy source and secondary or output coil supplies power to Load. * Both coils are magnetically coupled, they are electrically insulated from each other. OR When impure atoms are added in the intrinsic semiconductor then that is called extrinsic semiconductor. Extrinsic semiconductor are classified as N-type and P-type Semiconductor. The process of adding atom in a semiconductor is called doping The atomic number of silicon is 14, electronic configuration of silicon is 2, 8 and 4 thus silicon has 4 outermost shell. In order to increase the conductivity, free charge carries are added. Silicon has 4 electrons in outermost shell. It is better to add impure atom having valence atom of either 5 or 3. * The atom which have five electrons in their outer shell are called pentavalent and which have three electrons in their outer shell are called trivalent. * When pentavalent impurity atom is added an extrinsic semiconductor formed is N-type semiconductor. When trivalent impurity atom is added an extrinsic semiconductor formed is P-type semiconductor.	1 1 1 1 ½ ½ 1 1 1