

**Sample Question Paper**  
**Class X**  
**Science (Subject Code – 086)**

**Max. Marks: 80**

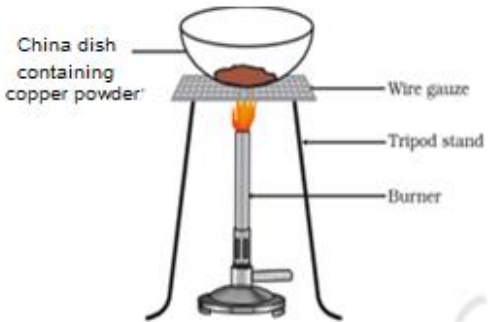
**Time Allowed: 3 hours**

**General Instructions:**

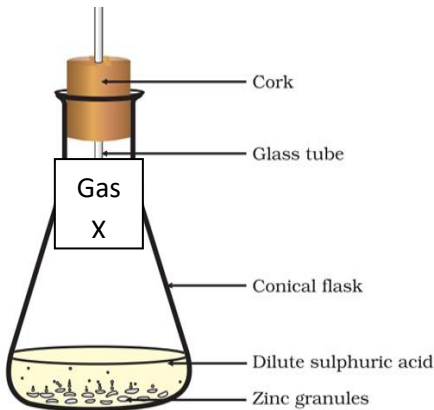
- i. This question paper consists of 39 questions in 5 sections.
- ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- iii. Section A consists of 20 objective-type questions carrying 1 mark each.
- iv. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- v. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
- vi. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.
- vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

**Section-A**

Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for an incorrect response.

| Q. Nos | Questions   | Mark | COMP. |
|--------|---|------|-------|
| 1      |  <p>Which of the following observations is correct for the above given experimental diagram?</p> <ol style="list-style-type: none"> <li>a) Red-coloured copper is reduced to black-coloured copper(I) oxide</li> <li>b) Red-coloured copper is oxidized to red-coloured copper(I) oxide</li> <li>c) Red-coloured copper is reduced to black-coloured copper (II) oxide</li> <li>d) Red-coloured copper is oxidized to black coloured copper(II) oxide</li> </ol> | 1    | U     |
| 2      | <p>The ratio (x:y) of reactants Fe and H<sub>2</sub>O in the given balanced chemical equation is .</p> $x\text{Fe(s)} + y\text{H}_2\text{O(g)} \rightarrow \text{Fe}_3\text{O}_4\text{(s)} + 4\text{H}_2\text{(g)}$ <ol style="list-style-type: none"> <li>a) x:y = 2:3</li> <li>b) x:y = 3:4</li> <li>c) x:y = 1:4</li> <li>d) x:y = 4:1</li> </ol>  | 1    | U     |

|   |  |   |   |
|---|--|---|---|
| 3 | <p>Washing soda is hydrated</p> <p>a) Sodium hydrogen carbonate<br/>b) Calcium hydrogen carbonate<br/>c) Slaked carbonate<br/>d) Sodium carbonate.</p>   | 1 | K |
| 4 | <p>The metal X does not react with cold water but floats on hot water with formation of colourless bubbles. Which of the following represents metal X.</p> <p>a) Aluminium<br/>b) Copper<br/>c) Magnesium<br/>d) Lead</p>  | 1 | U |
| 5 | <div style="text-align: center;"> <math display="block">\text{HC} \equiv \text{CH} \xrightarrow[+\text{H}_2]{\text{Pd}} \boxed{\text{X}}</math> <math display="block">\uparrow</math> <p>Hot conc<br/><math>\text{H}_2\text{SO}_4</math></p> <math display="block">\text{C}_2\text{H}_5\text{OH}</math> </div> <p>Which of the following correctly represents 'X' in the above chemical changes?</p> <p>a) Ethane<br/>b) Ethene<br/>c) Ethyne<br/>d) Ethanoic acid</p> | 1 | U |
| 6 | <p>Which of the following structures correctly represent the electron dot structure of a Nitrogen molecule?</p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="text-align: center;"> <p>a)</p> </div> <div style="text-align: center;"> <p>b)</p> </div> <div style="text-align: center;"> <p>c)</p> </div> <div style="text-align: center;"> <p>d)</p> </div> </div>  | 1 | K |

|    |   |   |    |
|----|---|---|----|
| 7  | <p>Which of the following tests is given by the gas 'X' produced in the set up shown?</p>  <p>a) Lime water turns milky white<br/>b) Puts off a burning matchstick<br/>c) Burning matchstick produces a pop sound and the flame puts off<br/>d) Choking smell with the smell of burning Sulphur</p>  | 1 | AN |
| 8  | <p>Gastric juice is secreted by gastric glands and contains hydrochloric acid, mucus, and pepsin. Which activity will be affected in the absence of hydrochloric acid?</p> <p>a) Digestion of proteins.<br/>b) Digestion of carbohydrates<br/>c) Digestion of lipids<br/>d) Digestion of starch.</p>  | 1 |    |
| 9  | <p>Rajesh noticed that a potted plant kept in the window of his room shows bending towards sunlight. This could be due to:</p> <p>a) More growth in the well lit region due to diffusion of auxin hormone<br/>b) More growth in the region away from light due to diffusion of auxin hormone<br/>c) More growth in the well lit region due to diffusion of cytokinin hormone<br/>d) More growth in the region away from light due to diffusion of cytokinin hormone</p> | 1 |    |
| 10 | <p>The lining of the alimentary canal has certain muscles that contract rhythmically in order to push the food forward. This process is called:</p> <p>a) Translocation<br/>b) Transpiration<br/>c) Peristalsis<br/>d) Autotrophism</p>   | 1 |    |
| 11 | <p>A cross between pure tall and pure short pea plants gives hybrid tall pea plants in the first generation. What would be the genotypic ratio in the offspring of the second generation if these F1 plants were self-pollinated?</p> <p>a) 3:1<br/>b) 9:3:3:1<br/>c) 1:2:1<br/>d) 1:1</p>  | 1 |    |

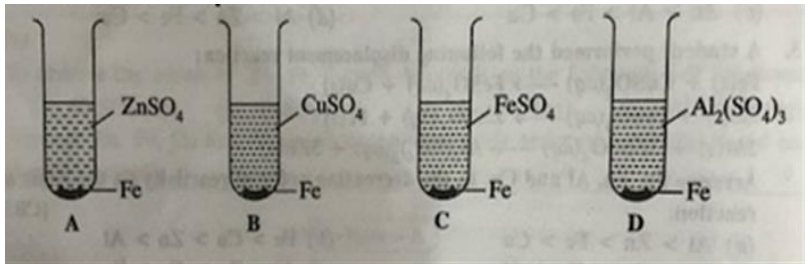
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| 12 | During exhalation, the exchange of gases takes place between<br>a) Alveoli of the lungs and blood.<br>b) Alveoli of lungs and tissue fluid.<br>c) Blood and body tissues<br>d) Tissue fluid and blood capillaries  | 1 |    |
| 13 | The light enters from air to glass having refractive index 1.5. the speed of light in glass is:<br>a) $3 \times 10^8 \text{m/s}$<br>b) $2 \times 10^8 \text{m/s}$<br>c) $1.5 \times 10^8 \text{m/s}$<br>d) $2.25 \times 10^8 \text{m/s}$   | 1 | RK |
| 14 | For a convex mirror the image distance ( $v$ ) = 5 cm, focal length ( $f$ ) = 10 cm and height of the image ( $h$ ) = 7.5 cm. The correct representation according to sign conventions is:<br>a) $v = -5 \text{ cm}$ , $f = -10 \text{ cm}$ and $h_i = -7.5 \text{ cm}$<br>b) $v = -5 \text{ cm}$ , $f = +10 \text{ cm}$ and $h_i = -7.5 \text{ cm}$<br>c) $v = +5 \text{ cm}$ , $f = -10 \text{ cm}$ and $h_i = +7.5 \text{ cm}$<br>d) $v = +5 \text{ cm}$ , $f = +10 \text{ cm}$ and $h_i = +7.5 \text{ cm}$ | 1 | RK |
| 15 | If all the organisms of one trophic level in a food chain die, what would be its impact on the population of organisms in other trophic levels? It will<br>a) remain the same in the next trophic level<br>b) increase in the next trophic level<br>c) increase in the lower trophic level.<br>d) remain the same in the lower trophic level.  | 1 |    |
| 16 | The chemicals that are non-degradable, get progressively accumulated at each trophic level, and their concentration is seen maximum in the bodies of top consumers. This phenomenon is known as:<br>a) Eutrophication<br>b) Pollution<br>c) Accumulation<br>d) Biomagnification  | 1 |    |
|    | Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:<br>a) Both A and R are true, and R is the correct explanation of A.<br>b) Both A and R are true, but R is not the correct explanation of A.<br>c) A is true but R is false.<br>d) A is false but R is true.  | 1 |    |
| 17 | Assertion (A): Copper ions migrate from the anode to the cathode during electrorefining of copper.<br>Reason (R): In the electrorefining process, metal ions accept electrons at the anode and are deposited as pure metal.  | 1 |    |
| 18 | Assertion (A): A lot of difference in the concentrations of ions was observed by a scientist between the fluid in xylem cells of roots and that of the soil.   | 1 |    |

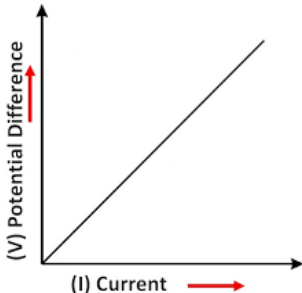
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|    | Reason (R): Xylem cells in the roots of plants which come in contact with the soil actively take up ions.  |   |    |
| 19 | Assertion (A): One circuit with 15 A current rating is used for appliances such as geysers and air coolers.<br>Reason (R): Appliances with metallic body are connected to an earth wire with low resistance. | 1 | AP |
| 20 | Assertion (A): All kitchen waste cannot form compost.<br>Reason (R): Material like milk packets may not be biodegradable.  | 1 |    |

### Section-B

**Question No. 21 to 26 are very short answer questions**

|        |   |                    |                     |             |             |             |   |                   |                    |       |       |   |                 |       |                     |       |   |   |
|--------|---|--------------------|---------------------|-------------|-------------|-------------|---|-------------------|--------------------|-------|-------|---|-----------------|-------|---------------------|-------|---|---|
| 21     | Salts are formed by the neutralisation reaction between an acid and a base. Complete the following table by filling the missing data: <table><tr><td>Sl.no.</td><td>Name of the salt</td><td>Formula</td><td>Parent Base</td><td>Parent Acid</td></tr><tr><td>1</td><td>Ammonium Chloride</td><td>NH<sub>4</sub>Cl</td><td>.....</td><td>.....</td></tr><tr><td>2</td><td>Copper Sulphate</td><td>.....</td><td>Cu(OH)<sub>2</sub></td><td>.....</td></tr></table>  | Sl.no.             | Name of the salt    | Formula     | Parent Base | Parent Acid | 1 | Ammonium Chloride | NH <sub>4</sub> Cl | ..... | ..... | 2 | Copper Sulphate | ..... | Cu(OH) <sub>2</sub> | ..... | 2 | U |
| Sl.no. | Name of the salt  | Formula            | Parent Base         | Parent Acid |             |             |   |                   |                    |       |       |   |                 |       |                     |       |   |   |
| 1      | Ammonium Chloride   | NH <sub>4</sub> Cl | .....               | .....       |             |             |   |                   |                    |       |       |   |                 |       |                     |       |   |   |
| 2      | Copper Sulphate   | .....              | Cu(OH) <sub>2</sub> | .....       |             |             |   |                   |                    |       |       |   |                 |       |                     |       |   |   |
| 22     | i) Name the reproductive and non-productive parts of <i>Rhizopus</i> .<br>ii) How are the spores protected till they begin to grow?   | 2                  |                     |             |             |             |   |                   |                    |       |       |   |                 |       |                     |       |   |   |
| 23     | Amount of urine produced generally decreases in summers as compared to other seasons if we don't keep ourselves sufficiently hydrated. Justify.<br><b>OR</b><br>What is the advantage of having a four-chambered heart in birds and mammals?  | 2                  |                     |             |             |             |   |                   |                    |       |       |   |                 |       |                     |       |   |   |
| 24     | Give reasons for the following:<br>a) Red traffic signals can be seen from a very long distance.<br>b) Stars appear to be slightly higher than their actual position.   | 1+1                | AP                  |             |             |             |   |                   |                    |       |       |   |                 |       |                     |       |   |   |
| 25     | Imagine a current carrying circular loop of wire on the plane of your answer sheet. The magnetic field inside the loop is into the plane of the paper.<br>i) What must be the direction of the current in the loop?<br>ii) State the rule used here.<br><b>OR</b><br>a) State the rule to determine the direction of the force experienced by a current-carrying straight conductor placed in a magnetic field which is perpendicular to it.<br>b) When will the magnitude of the displacement of the rod be the largest? | 1+1                | AP                  |             |             |             |   |                   |                    |       |       |   |                 |       |                     |       |   |   |

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|--|---|-----|---|
| 26   | Marked decline in the thickness of ozone layer was noticed in the 1980s. Which human activity can be held accountable for this change? What is the possible effect of this on human health?   | 2   |   |
| <p style="text-align: center;"><b>Section-C</b></p> <p style="text-align: center;"><b>Question No. 27 to 33 are short answer questions</b></p> |   |     |   |
| 27   | <p>Sakshi was comparing the reactivity of different metals for her science project. She added iron filings in four test tubes A,B,C,D containing aqueous solutions of <math>\text{ZnSO}_4</math>, <math>\text{CuSO}_4</math>, <math>\text{FeSO}_4</math> and <math>\text{Al}_2(\text{SO}_4)_3</math> respectively as shown in the figure –</p>  <p>a. In which of the test tubes she will observe the reaction to be most vigorous</p> <p>b. What is the reason for her observation?</p> <p>c. Write a well-balanced equation of the reaction in (b)</p>  | 3   | A |
| 28   | <p>Metal 'A' is used in the thermite process as a reducing agent. When 'A' is heated with oxygen it gives an oxide 'B' which is amphoteric in nature. Identify A and B. Illustrate with the help of chemical equations the reaction of B with HCl and NaOH respectively.</p> <p style="text-align: center;"><b>OR</b></p> <p>a) "Carbon cannot be used to reduce metal oxides of sodium, magnesium, calcium, and aluminium to respective metals". Comment.</p> <p>b) These metals are obtained by electrolytic reduction of their molten chloride. Write the reactions that occur at the anode and cathode during the electrolytic reduction of molten sodium chloride.</p> <p>c) Illustrate with the help of a chemical equation reduction of manganese dioxide with Aluminium powder.</p> | 3   | U |
| 29   | State any three reasons to justify the use of contraceptive methods.  | 3   |   |
| 30   | <p>Given below are some disorders noticed in some patients. It could it be due to malfunctioning of which part of brain:</p> <p>a) Loss of sensation of feeling full</p> <p>b) Lowered ability to salivate</p> <p>c) Difficulty in maintaining the posture and balance in body</p>  | 3   |   |
| 31   | A 4 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 15 cm. Find the nature, position and the size of the image formed.   | 1x3 | U |

|    |   |     |   |
|----|---|-----|---|
|    | <p style="text-align: center;"><b>OR</b></p> <p>An object is placed at a distance of 60 cm from a concave lens of focal length 30 cm.</p> <p>a) Use lens formula to find the distance of image from the lens.</p> <p>b) Draw a ray diagram to justify your answer in part (a).</p>  |     |   |
| 32 | <p>a) A current of 10 A flows through a conductor for two minutes.</p> <p>i) Calculate the amount of charge passing through the conductor.</p> <p>ii) If the charge of an electron is <math>1.6 \times 10^{-19}</math> C, then calculate the total number of electrons flowing through the conductor.</p> <p>b) V-I graph for a conductor is as shown in the figure:</p> <div style="text-align: center;">  <p style="text-align: center;">What do you infer from this graph?</p> </div> | 2+1 | U |
| 33 | <p>a) Draw the pattern of the magnetic field lines around a current-carrying solenoid.</p> <p>b) Mention two precautions that should be taken to avoid the overloading of domestic electric circuits.</p>   | 2+1 | R |

#### Section-D

**Question No. 34 to 36 are long answer questions.**

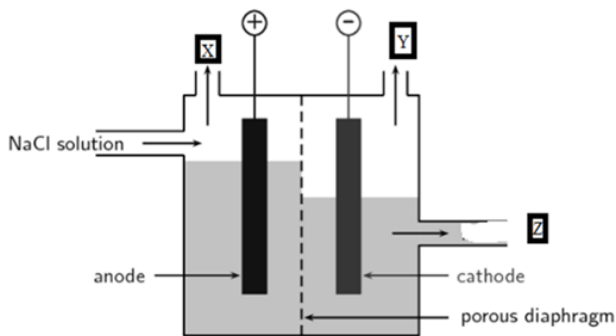
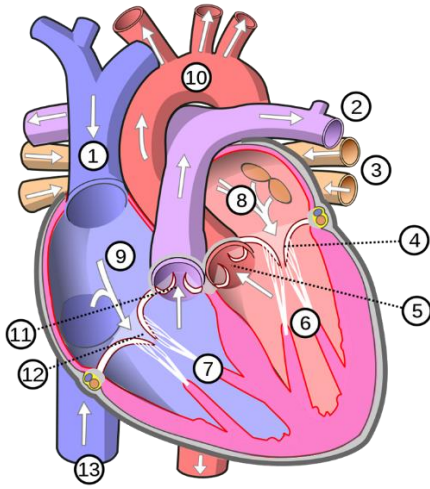
|    |  |     |   |
|----|--|-----|---|
| 34 | <p>An organic compound 'P' is a constituent of wines. 'P' on reacting with acidified <math>K_2Cr_2O_7</math> forms another compound 'Q'. When a piece of sodium is added to 'Q', a gas 'R' evolves which burns with a pop sound when a burning matchstick is brought near it.</p> <p>a) Give the chemical name of compound P.</p> <p>b) Mention another use of the compound 'P' apart from the use mentioned in the question.</p> <p>c) Illustrate with the help of chemical equation the conversion of 'P' into 'Q'.</p> <p>d) Give a balanced equation to depict the reaction of Q with sodium.</p> <p>e) What happens when 'P' is heated with conc. <math>H_2SO_4</math> at 443 K, write its chemical equation.</p> <p style="text-align: center;"><b>OR</b></p> <p>An organic compound 'X' is a liquid at room temperature. It is also a very good solvent and has the molecular formula <math>C_2H_6O</math>. Upon oxidation 'X' gives 'Y'. 'Y' releases a gas 'W' with brisk effervescence on reacting with <math>NaHCO_3</math>. X reacts with Y in the presence of conc. <math>H_2SO_4</math> to give another compound 'Z' which</p> | 1x5 | A |
|----|--|-----|---|

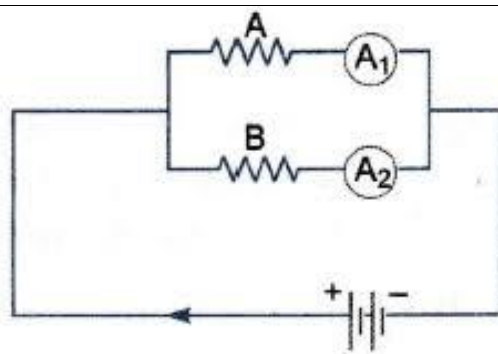
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|    | <p>has a pleasant smell. Z.</p> <p>a) Give the chemical name and chemical formula of Y.</p> <p>b) How will you test for the gas 'W'?</p> <p>c) Depict the formation Y and Z using chemical equations.</p> <p>d) Name the reaction of formation of 'Z'.</p> <p>e) Give any one use of 'Z'?</p>  |       |    |
| 35 | <p>a) Flow of energy in a food chain is unidirectional. Justify the statement.</p> <p>b)</p> <p>i) In a cross between pea plants having round green seeds and wrinkled yellow seeds, what progeny is expected in F1 and F2 generation?</p> <p>ii) What would be the impact on the ratio of F2 generation, if F1 progeny plants inherited a single whole gene set from each parent? Give reason for your answer.</p> <p style="text-align: center;"><b>OR</b></p> <p>a) How does blood sugar level get regulated in the human body?</p> <p>b)</p> <p>i) Which hormone is secreted into the blood when you are under stress? Name the gland that secretes this hormone.</p> <p>ii) How does it help the body to cope up in an emergency situation?</p> | 2+3   |    |
| 36 | <p>A person is unable to see objects distinctly placed within 75 cm from his eyes.</p> <p>a) Name the defect of vision the person is suffering from.</p> <p>b) List its two possible causes.</p> <p>c) Calculate the power of the lens needed to correct this defect. Assume that the near point for the normal eye is 25 cm.</p> <p style="text-align: center;"><b>OR</b></p> <p>a) Why is a normal eye not able to see clearly the objects placed closer than 25 cm?</p> <p>b) With the help of a diagram show recombination of the spectrum of white light.</p> <p>c) List two essential conditions for observing a rainbow.</p>  | 1+2+2 | AP |

### SECTION - E

**Question No. 37 to 39 are case-based/data -based questions with 2 to 3 short sub-parts. Internal choice is provided in one of these sub-parts.**

|    |   |       |   |
|----|---|-------|---|
| 37 | <p>Give any two uses of pH in everyday life other than mentioned</p> <p>Give any two uses of pH in everyday life other than mentioned in the context.</p> <p>In the diagram given below when electricity is passed through an aqueous solution of a common salt, A substance 'Z' is produced along with the evolution of gases 'X' and 'Y'. When a burning matchstick is brought near the gas 'Y' it burns with a pop sound, whereas X is used for disinfecting drinking water. When gas 'X' is passed through a solution of slaked lime, an insoluble substance 'A' is produced.</p> | 1+1+2 | U |
|----|---|-------|---|

|    |  |       |    |
|----|--|-------|----|
|    |  <p>a) Write the name of gases 'X' and 'Y'.</p> <p>b) Write the balanced chemical equation for the formation of substance 'A'.</p> <p>c) Write your observations:</p> <p>i) if a drop of blue litmus solution is added to the aqueous solution of substance 'Z'</p> <p>ii) if methyl orange is added to substance 'Z'</p> <p>OR</p> <p>Write a balanced chemical reaction that takes place when 'X' and 'Y' react with each other. The product so produced will turn blue litmus red only when wet, why?</p>   |       |    |
| 38 |  <p>a) Which chamber of the heart (6, 7, 8 or 9) pumps blood to the lungs for oxygenation, name it? Identify and name the blood vessels that carry blood to the lungs.</p> <p>b) Identify the structure at number 12 and state its function.</p> <p>c) Why do chambers 6 and 7 have thicker muscular walls than chambers 8 and 9? Name each of these chambers.</p> <p>OR</p> <p>i) Identify and name the chamber that receives oxygen rich blood and name the blood vessels which bring it.</p> <p>ii) State the significance of separation of right and left side of heart as seen in the above figure.</p> | 1+1+2 |    |
| 39 | <p>Rahima was investigating a circuit for her school project. She wanted to demonstrate the effect of length on the resistance of a conductor. The following is the given circuit with resistors A and B that are made of the same metal and the same thickness but 'A' is twice as long as 'B'. The total current in the circuit is 6 A and the Voltage of the battery is 12 V.</p>   | 1+1+2 | AP |



- a) What will be the resistance in the circuit? (1)
- b) Determine the value of ' $R_A$ ' and ' $R_B$ '. (1)
- c) Determine the current in both the ammeters. Will the current in ' $A_1$ ' and ' $A_2$ ' be the same? Justify your answer. (2)

**OR**

- c) Define resistivity. What are the factors affecting the resistivity of a conductor?