**BSJE 2021**

**CHEMISTRY**

**Paper 3**

**23313**

**MARKING SCHEME**

TABLE 1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Volume of water in the boiling tube | 4 | 6 | 8 | 0 |
| Temperature when crystals first appear | 75 | 72 | 65 | 54 |
| Solubility g/100g of water | 112.5 | 75 | 56.25 | 45 |

**5 marks**

Graph

**Al-½**

**S-½**

**C-1**

**TOTAL=3**

**TEMPERATURE (°C)**

**Read from the graph at 68°C**

**TABLE 2a**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TEMPERATURE (°C)** | **80** | **70** | **60** | **50** |
| **TIME(s)** | **5** | **10** | **20** | **40** |
| **⅟ t (s** | **0.200** | **0.100** | **0.050** | **0.025** |

**5marks**

**Graph**

Al-½

S-½

P-1

C-1

TOTAL-3

**50 55 60 65 70 75 80**

**TEMPERATURE (°C)**

**ii) State and explain the shape the your graph**

**Ans. The graph is an exponential curve; rate of reaction increases exponentially with increase in temperature**

**iii) What does ⅟ t represent in your graph?**

**Ans. Rate of reaction**

**iv) From the graph determine the time the mixture will decolorize if the experiment is carried out at 65°C**

**At 65°C, ⅟ t =y**

**t=⅟ y**

**Q 02**

|  |  |
| --- | --- |
| **OBSERVATIONS** | **INFERENCES** |
| 1. **White solid dissolves in distilled water to form a colorless solution** | **Absence of colorless ions e.g. Fe, Fe³**˖ or Cu // soluble salt |
| 1. **i.No white precipitate is formed** | Ca ,Mg Al³˖ Zn or Pb absent |
| **ii. No white precipitate is formed** | SO₄ SO₃ or CO₃ absent |
| **iii. Yellow precipitate is formed** | I⁻ Present |
| **iv Lilac/ bluish purple/purple flame** | **K˖** Present |
| **v. Dark brown solution is formed** | I⁻ Present |

Q 03

|  |  |
| --- | --- |
| (i)Melts and burns with yellow sooty/smokey flame | = C =C= // ---C≡C---Present // Unsaturated Organic compound// Long chain hydrocarbon |
| (ii) Gas bubbles/Effervescence/Fizzing | ---COOH/R—COOH/H˖ /H₃O˖ Present |
| (iii) Purple acidified KMnOч (aq). Decolorizes | C=C= // --C≡C- present |