**NAME...........................................................................................ADM NO...................CLASS....**

Chemistry paper two revision questions

Year 2016

1. The table below gives some properties of three substances A, B and C.

|  |  |  |  |
| --- | --- | --- | --- |
| Substance | A | B | C |
| Appearance | Brown solid | Yellow solid | Yellow solid |
| Melting point (0C) | 1017 | 115 | 402 |
| Solubility | Insoluble | Insoluble | Sparing soluble |
| Electrical conductivity when solid | Conducts | Does not conduct | Does not conduct |
| Electrical conductivity when molten | Conducts | Does not conduct | Conduct |

a) Giving reasons for your answers which of the substances A, B, and C has a

i) Giant ionic structure (2mks)

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ii) Giant molecular structure (2mks)

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iii) Giant metallic structure. (2mks)

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b) Explain in terms of bonding and structure why the melting point of B is lower than that of C. (2mks)

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c) Which of these substances, if any, would dissolve in organic solvent like methylbenzene? Explain. (2mks)

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d. Explain why the following substances conduct an electric current. (2mks)

i) Magnesium metal

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ii) Molten magnesium chloride

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2. When sodium metal is left exposed to the atmosphere it may undergo the following processes.

 Na a Na2O b NaOH c Na2CO3

 d

 Na2CO3.H2O e Na2CO3.10H2O

What substances are absorbed at stages: (2mks)

i) a ................................................................................................

ii) b ..............................................................................................

iii) d ...........................................................................................

iv) Name the process e. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Balance the following chemical equations. (2mks)

a) Pb(NO3)2(s) PbO(s) + NO2(g) + O2(g)

b) FeSO4(s) Fe2O3(s) + SO2(g) + SO3(g)

4. The apparatus illustrated below were used to prepare and collect carbon (IV) oxide in the laboratory.

i) Identify two mistakes in the set up and explain how they are corrected. (3mks)

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ii) Identify Z and state its role in this reaction. (2mks)

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iii) Write a balanced chemical equation for the reaction. (1mk)

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iv) What other compound may be used instead of concentrated sulphuric acid. (1mk)

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v) State one property and one use of the gas produced. (2mks)

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5. Study the scheme below and answer the questions that follow.

Yellow residue

Solid X White

Brown gas + Oxygen

a) Name i) solid X \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 ii) Yellow residue \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (2mks)

b) Write an equation for the decomposition of solid X. (1mk)

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6. A mixture contains ammonium chloride, copper (II) oxide and sodium chloride.

Describe how each of the substances can be obtained from mixture. (3mks)

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7. Distinguish between the terms deliquescent and efflorescent as used in chemistry. (2mks)

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8. The table below gives information of four elements represented by letters P, Q, R and S. Stud it and answer the questions that follow. The letters do not represent the actual symbols of the elements.

|  |  |  |  |
| --- | --- | --- | --- |
| Element | Eletron arrangement | Atomic radius | Ionic radius |
| P | 2.8.2 | 0.136 | 0.065 |
| Q | 2.8.7 | 0.099 | 0.181 |
| R | 2.8.8.1 | 0.203 | 0.133 |
| S | 2.8.8.2 | 0.174 | 0.099 |

a) Which two elements have similar chemical properties? (2mks)

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b) What is the likely formula of the sulphide of R? (1mk)

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c) Which element is a non-metal? Explain. (2mks)

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d) i) Explain the trend in the atomic radii of element P and S. (2mks)

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ii) Between the elements named in d (i) above which is more reactive? Explain. (2mks)

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e) Explain why the atomic radius of S is less than that of R, yet they have the same number of energy levels. (1mk)

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f) Why is the ionic radius of Q larger than its atomic radius? (1mk)

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9. The table below gives some properties of three elements in group (VII) of the periodic table. Study it and answer the questions that follow.

|  |  |  |  |
| --- | --- | --- | --- |
| Element | Atomic No | Melting point (0C) | Boiling point (0C) |
| Chlorine | 17 | -101 | -34.7 |
| Bromine | 35 | -7 | 58.8 |
| Iodine | 53 | 114 | 184 |

a) Which element is in liquid form at room temperature? Give a reason. (1mk)

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b) Explain why the boiling point of iodine is much higher than that of chlorine? (2mks)

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10. i) State and explain the changes in mass that occur when the following are heated separately in open crucibles.

a) Zinc metal (2mks)

b) Zinc carbonate

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ii) Write a chemical equation for each reaction. (2mks)

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11. The set up below was used to study some properties of air.

i) Draw another well-labeled diagram to show the se-up after 24 hours. (1mk)

ii) Explain two observations made in the se-up. (2mks)

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iii) State the disadvantage of what is observed on moist iron. (1mk)

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12. The diagram below represents a set up for the laboratory preparation of oxygen gas.

i) Name solid R. (1mk)

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ii) Write an equation for the reaction in the flask. (1mk)

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iii) Give two uses of oxygen gas. (2mks)

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13. What name is given to elements which appear in group (II) of the periodic table? (1mk)

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14. Use dot and cross to draw the structure of ammonium ion (NH4+) (N =5, H = 1) (2mks)

15. Dilute sulphuric acid was added to a compound of magnesium P. The solid reacted with the acid to form a colourless solution Q and a colourless gas R, which formed a white precipitate when bubbled through lime water.

a) Name (3mks)

i) Compound P \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ii) Solution Q \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

iii) Colourless gas R \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) Write an equation for the reaction that took place. (1mk)

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c) State the observation that would be made if a similar compound of calcium was used instead of magnesium. Explain. (2mks)

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16. State whether solutions with the following PH values are acidic, basic or neutral. (3mks)

PH = 3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PH = 6 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PH = 2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PH = 12 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PH = 7 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PH = 8 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_