AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

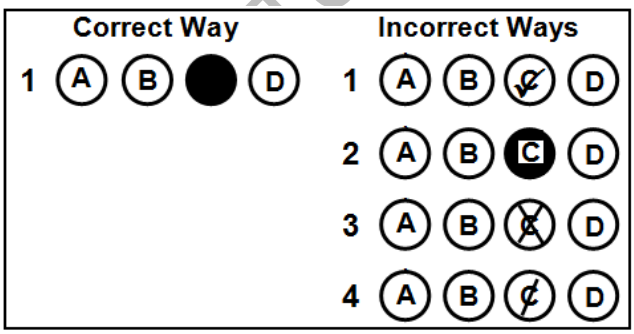
APRIL/ MAY 2019

Chemistry Paper I

Time: 45 minutes Marks: 30

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 30 only.
4. In each question, there are four choices A, B, C, D. Choose ONE. On the answer grid, black out the circle for your choice with a pencil as shown below.



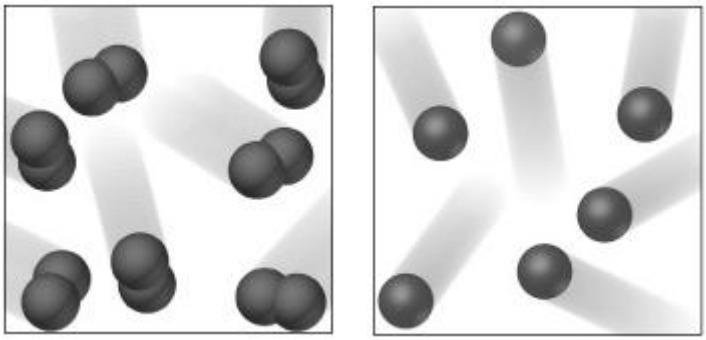
Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. A heterogeneous mixture is formed when water is added to

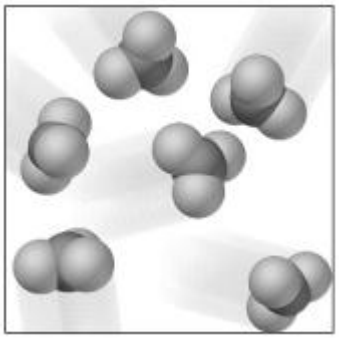
   A. butter.
   B. honey.
   C. glucose.
   D. alcohol.

2. Which of the following diagrams represents a pure compound?

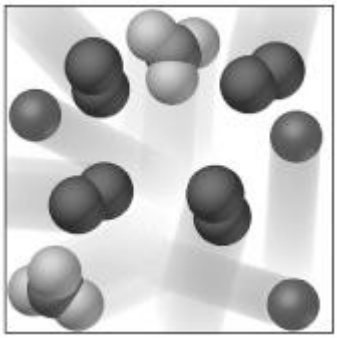


A

B



C



D

3. The branch of chemistry that emphasises on plantation to overcome greenhouse effect is

   A. biochemistry.
   B. organic chemistry.
   C. physical chemistry.
   D. environmental chemistry.

4. Ozone (O_3) is a highly reactive gas which is formed in the stratosphere with the help of ultraviolet radiations.

   If 10.5 moles of ozone gas is formed in the stratosphere, then its mass in grams will be

   (**Note**: $^{16}_{8}O$)

   A. 84
   B. 168
   C. 252
   D. 504

5. Which of the following bond(s) is/ are present in NH_4^+ ?

I. Coordinate covalent
II. Covalent
III. Ionic

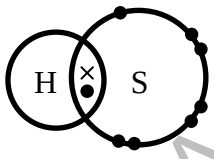
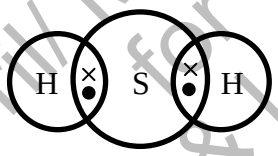
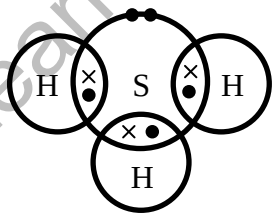
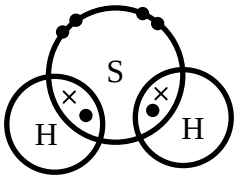
A. I only
B. III only
C. I and II
D. II and III

6. Which of the following properties is TRUE for ionic compounds?

A. They are malleable and ductile.
B. They have low melting and boiling points.
C. They are brittle and dissolve easily in non-polar solvents.
D. They dissolve in polar solvents and conduct electricity in molten form.

7. The dot and cross structure for the molecule of hydrogen sulphide is

(**Note**: $^{1}_{1}H$ and $^{32}_{16}S$)

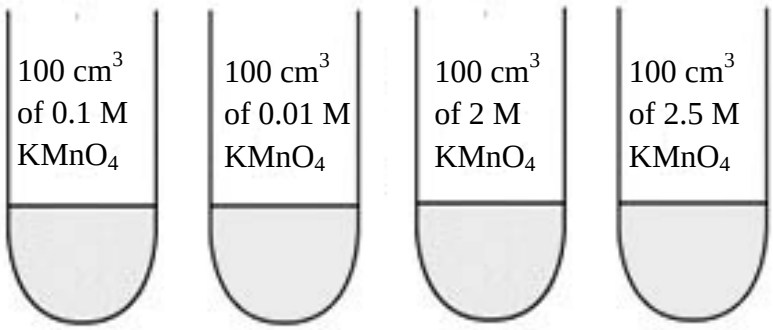
			
A	B	C	D

8. An element X belongs to group 15 and period 3 of the modern periodic table.

The number of electrons that would be present in the valence shell of the given element is

A. 3
B. 5
C. 15
D. 18

9. Among the given solutions of potassium permanganate ($KMnO_4$), which one has the highest concentration of water in it?



10. A student, for his research, prepared 1.25 M potassium chloride stock solution. What volume of the stock solution will he use to further prepare a 250 mL dilute solution of 0.2 M?

A. 40 mL
B. 50 mL
C. 62.5 mL
D. 250 mL

11. Which of the following is NOT a solution?

A. Fog
B. Butter
C. Bronze
D. Ammonia

12. Which of the following statements defines a solution?

A. A pure compound having one or more solutes dissolved in a solvent
B. A homogeneous mixture having one or more solutes dissolved in a solvent
C. A heterogeneous mixture having one or more solutes dissolved in a solvent
D. A pure compound having a solute and a solvent mixed in a fixed ratio by mass

13. In the periodic table, the group which consists of purely metals is

A. IIA
B. IIIA
C. VA
D. VIIIA

14. The valence shell electronic configuration of the most electronegative element of the periodic table is

A. ns^2np^3
B. ns^2np^4
C. ns^2np^5
D. ns^2np^6

15. An oxygen atom is similar to an atom of sulphur because they both

A. form diatomic molecules.
B. have the same number of protons.
C. form cations with a double negative charge.
D. have the same number of valence electrons.

16. Which periodic trend is observed in moving down group 17 of the modern periodic table?

A. Decreasing reactivity
B. Decreasing boiling point
C. Increasing electronegativity
D. Increasing ionisation energy

17. The given table shows four different atoms, P, Q, R and S.

Atom	Number of Protons	Number of Neutrons	Number of Electrons
P	17	18	17
Q	18	22	18
R	19	20	19
S	17	20	17

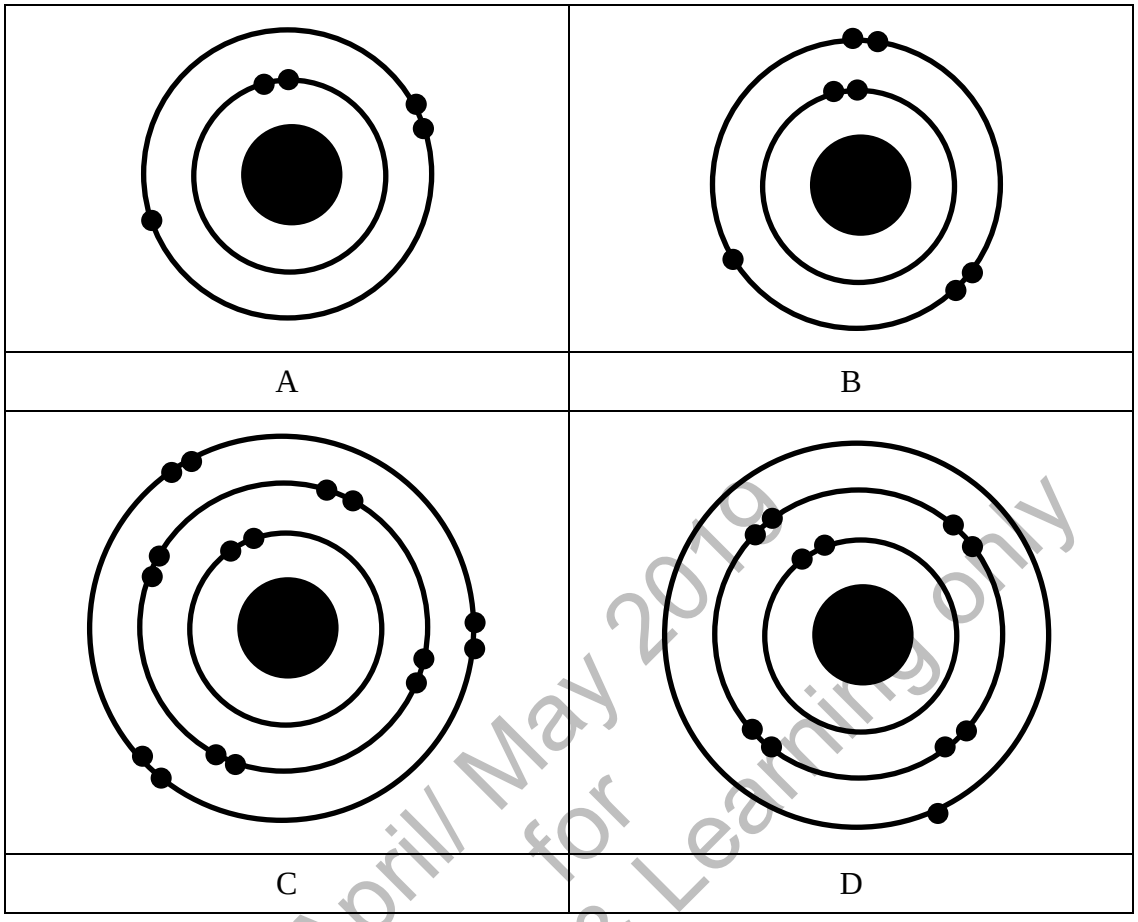
Which two atoms in the given table are isotopes of each other?

A. P and Q
B. Q and R
C. R and S
D. P and S

18. If an element X has atomic number 15, then its valence shell electronic configuration will be

A. $2s^1, 2p^4$
B. $2s^2, 2p^3$
C. $3s^1, 3p^4$
D. $3s^2, 3p^3$

19. The atomic structure of boron $(^{11}_{5}B)$ is represented by



20. Which of the following statements is TRUE about Bohr's atomic model?

A. It shows that an atom produces continuous spectrum.
B. It proves that the plum-pudding model of an atom was correct.
C. It proves that the size and energy of each orbit in an atom is quantised.
D. It shows that electrons emit radiation when revolving around the nucleus.

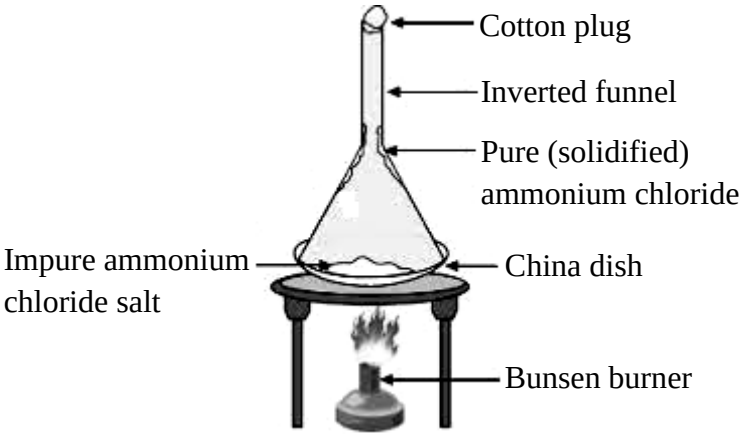
21. Solids, liquids and gases differ from each other on the basis of all of the following EXCEPT

A. size of particles.
B. velocity of particles.
C. space among particles.
D. arrangement of particles.

22. Sulphur dioxide and methane gas have different rates of diffusion at a fixed temperature because they both have different

A. chemical bonding.
B. molecular masses.
C. molecular formula.
D. intermolecular forces.

23. The given diagram shows the process of

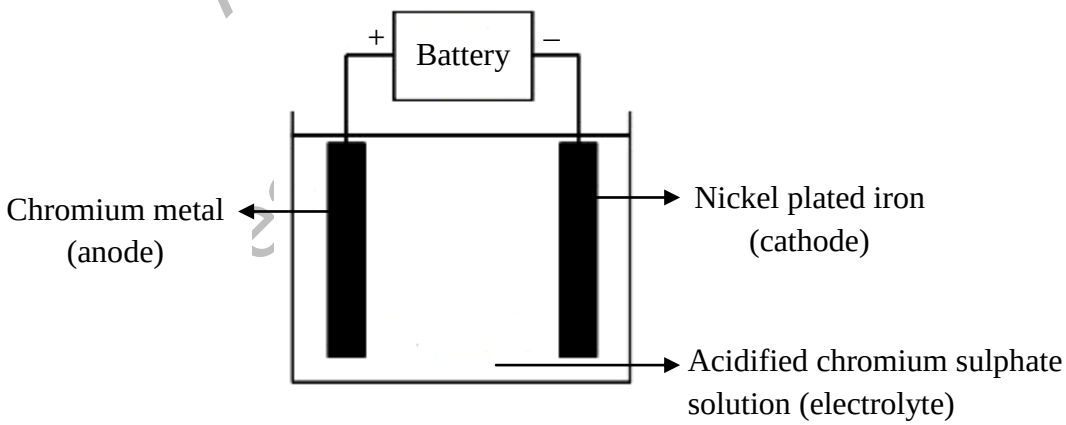


A. boiling.
B. melting.
C. sublimation.
D. condensation.

24. Liquids can be converted into solids by

A. increasing collision among the molecules.
B. decreasing kinetic energy of the molecules.
C. increasing volume occupied by the molecules.
D. decreasing force of attraction among the molecules.

25. The following diagram shows an electrolytic cell used for electroplating iron with chromium.



The chemical reaction that takes place at cathode is

A. $Cr_{(s)} \rightarrow Cr^{2+}_{(aq)} + 2e^-$
B. $Cr^{2+}_{(aq)} + 2e^- \rightarrow Cr_{(s)}$
C. $Cr_{(s)} \rightarrow Cr^{3+}_{(aq)} + 3e^-$
D. $Cr^{3+}_{(aq)} + 3e^- \rightarrow Cr_{(s)}$

26. The oxidation state of chlorine in ClO_3^- is

A. +1
B. +3
C. +5
D. +7

27. A voltaic (galvanic) cell is an electrochemical cell which

A. converts electrical energy into chemical energy.
B. generates electricity through spontaneous redox reaction.
C. comprises of two electrodes made up of the same inert metal.
D. consists of a positively charged anode and a negatively charged cathode.

28. Like metals, most of the non-metals react with oxygen to form oxides. The nature of the oxides of non-metals, with a few exceptions, is

A. basic.
B. acidic.
C. neutral.
D. amphoteric.

29. Silver is a noble metal because it is

A. highly ductile and malleable.
B. white lustrous in appearance.
C. resistant to oxidation in moist air.
D. poor conductor of heat and electricity.

30. Which of the following classification of metals is CORRECT?

	Alkali Metal	**Alkaline Earth Metal**
A	Sodium	Cesium
B	Beryllium	Lithium
C	Rubidium	Strontium
D	Barium	Calcium

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