

SEAL

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Invigilator's signature

Question Booklet No.

950243

2018

TGT — PAPER - I : CHEMISTRY

Time : 2 Hours

Maximum Marks : 100

ROLL NO.

INSTRUCTIONS FOR CANDIDATES

1. This Question Booklet contains 50 optional questions. Each question comprises four responses (answers). You will select ONLY ONE response which you consider the best and darken the bubble on the OMR RESPONSE SHEET.
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5. No candidate shall have in his/her possession inside the Examination Hall any book, notebook or loose paper, calculator, mobile phone, etc., except his/her admit card and other things paper permitted by the Commission.
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NB: CANDIDATES ARE ALLOWED TO TAKE THIS QUESTION BOOKLET ONLY AFTER COMPLETION OF 2 (TWO) HOURS OF EXAMINATION TIME.

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1. The number of protons in an atom is equal to the number of electrons because the atom is
 - (A) positively charged
 - (B) negatively charged
 - (C) electrically neutral
 - (D) sometimes positively and sometimes negatively charged
2. Which of the following elements do not belong to the same group?
 - (A) Li, Na, K
 - (B) Be, Mg, Ca
 - (C) B, Al, Ga
 - (D) N, O, F
3. Which of the following non-metals exists in solid state?
 - (A) Fluorine
 - (B) Chlorine
 - (C) Bromine
 - (D) Iodine
4. Calcium forms Ca^{2+} cation by loss of two electrons. The atomic mass of Ca^{2+} will be
 - (A) different from Ca
 - (B) same as that of Ca
 - (C) less than Ca
 - (D) greater than Ca
5. The number of neutrons present in the nuclide of uranium ${}_{92}^{235}\text{U}$ is
 - (A) 143
 - (B) 235
 - (C) 237
 - (D) 92
6. Diamond is composed of
 - (A) a mixture of metal carbonate
 - (B) a mixture of Ca and magnesium carbide
 - (C) pure carbon
 - (D) pure silicon
7. According to Mendeleev's periodic law, the elements were arranged in the order of
 - (A) decreasing atomic numbers
 - (B) increasing atomic numbers
 - (C) decreasing atomic masses
 - (D) increasing atomic masses
8. The three elements having chemical symbols of Si, B and Ge
 - (A) are all metals
 - (B) are all non-metals
 - (C) are all metalloids
 - (D) Si is metalloid, B is metal and Ge is non-metal
9. The three imaginary elements X, Y and Z represent Dobereiner's triads. If the atomic mass of elements X is 14 and that of element Y is 46, then the atomic mass of Z will be
 - (A) 28
 - (B) 78
 - (C) 60
 - (D) 72

10. The modern periodic table was prepared by
 (A) Dobereiner
 (B) Newlands
 (C) Bohr
 (D) Mendeleev
11. Which of the following statements about the modern periodic table is correct?
 (A) It has 18 vertical columns known as groups
 (B) It has 7 vertical columns known as periods
 (C) It has 18 horizontal rows known as periods
 (D) It has 7 horizontal rows known as groups
12. Which is the valence shell for the elements of second period of the modern periodic table?
 (A) M Shell
 (B) L Shell
 (C) K Shell
 (D) N Shell
13. The number of molecules of water of crystallization present in washing soda crystal is
 (A) 5
 (B) 6
 (C) 10
 (D) 7
14. Which of the following statements is *not correct* about the trends when going from left to right across the periods of the periodic table?
 (A) The atoms lose their electrons more easily
 (B) The number of valence electrons increases
 (C) The elements become less metallic in nature
 (D) The oxides become more acidic
15. What happens to the size of atoms of elements on moving down a group in the modern periodic table?
 (A) Increases
 (B) Decreases
 (C) Remains the same
 (D) First increases then decreases
16. What happens when dilute hydrochloric acid is added to iron filling?
 (A) H₂ gas and iron chloride are produced
 (B) Cl₂ gas and iron hydroxides are produced
 (C) No reaction takes place
 (D) Iron salt and water are produced
17. The following reaction

$$\text{Fe}_2\text{O}_3 + 2\text{Al} \longrightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$$
 is an example of
 (A) combination reaction
 (B) double displacement reaction
 (C) decomposition reaction
 (D) displacement reaction
18. Ethane with molecular formula C₂H₆ has
 (A) 6 covalent bonds
 (B) 7 covalent bonds
 (C) 8 covalent bonds
 (D) 9 covalent bonds
19. Butanone is a four-carbon compound with the functional group
 (A) carboxylic acids
 (B) aldehydes
 (C) ketones
 (D) alcohols
20. Which of the following is malleable and ductile?
 (A) A metal
 (B) A compound
 (C) A non-metal
 (D) A solution

21. The salt which will give an acidic solution on dissolving in water is
(A) KCl
(B) NH_4Cl
(C) Na_2CO_3
(D) CH_3COONa
22. The formula of baking soda is
(A) K_2CO_3
(B) KHCO_3
(C) NaHCO_3
(D) Na_2CO_3
23. Which of the following is treated with chlorine gas to obtain bleaching powder?
(A) CaSO_4
(B) Ca(OH)_2
(C) Mg(OH)_2
(D) KOH
24. Plaster of Paris is prepared by heating one of the following to a temperature of 100°C . This is
(A) $\text{CaSO}_3 \cdot 2\text{H}_2\text{O}$
(B) $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$
(C) $\text{CaCO}_3 \cdot 2\text{H}_2\text{O}$
(D) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
25. A salt whose aqueous solution will have pH of more than 7 will be
(A) K_2CO_3
(B) K_2SO_4
(C) NaCl
(D) CaSO_4
26. The removal of oxygen from a substance is called
(A) Oxidation
(B) Corrosion
(C) Reduction
(D) Rancidity
27. Which of the following can be decomposed by the action of light?
(A) NaCl
(B) KCl
(C) AgCl
(D) CuCl
28. The process of respiration is
(A) an oxidation reaction which is endothermic
(B) a reduction reaction which is exothermic
(C) a combination reaction which is endothermic
(D) an oxidation reaction which is exothermic
29. The reaction of magnesium with oxygen to produce magnesium oxide is an example of
(A) decomposition reaction
(B) elimination reaction
(C) combination reaction
(D) displacement reaction
30. Which of the following *does not* involve a chemical reaction?
(A) Digestion of food in our body
(B) Melting of candle wax on heating
(C) Burning of LPG gas
(D) Formation of carbohydrate on green leaf
31. Which of the following metals is obtained from haematite ore?
(A) Copper
(B) Sodium
(C) Iron
(D) Zinc
32. Brass is an alloy of
(A) Cu and Zn
(B) Cu and Pb
(C) Cu and Sn
(D) Pb and Sn
33. Which of the following metals are extracted by the electrolysis of their molten salts?
(A) Na and Hg
(B) Hg and Mg
(C) Na and Mg
(D) Cu and Fe

34. The nature of chemical bonds present in saturated hydrocarbons is/are
 (A) only C – C sigma
 (B) both C – C and C – H sigma
 (C) only C – H sigma
 (D) only C = C multiple
35. The soap molecule has a
 (A) hydrophilic head and a hydrophobic tail
 (B) hydrophobic head and hydrophilic tail
 (C) hydrophobic head and hydrophobic tail
 (D) None of the above
36. The functional group which can never be terminal in a carbon chain is
 (A) — OH
 (B) — CO —
 (C) — CHO
 (D) — COOH
37. The IUPAC nomenclature of CH_3COOH is
 (A) acetic acid
 (B) acetaldehyde
 (C) ethanal
 (D) ethanoic acid
38. The correct structure of acetylene is
 (A) $\text{HC} \equiv \text{CH}$
 (B) $\text{HC} \equiv \text{C} - \text{CH}_3$
 (C) $\text{H}_2\text{C} = \text{CH}_2$
 (D) CH_3CH_3
39. The property of self-combination of atoms to form long chains of carbons in hydrocarbons is known as
 (A) Protonation
 (B) Carbonation
 (C) Coronation
 (D) Catenation
40. The number of isomers formed by the hydrocarbons with molecular formula C_5H_{12} is
 (A) 2
 (B) 5
 (C) 3
 (D) 4
41. One mole of oxygen gas at standard temperature and pressure is equal to
 (A) 6.0222×10^{23} molecules of oxygen
 (B) 6.0222×10^{23} atoms of oxygen
 (C) 16g of oxygen
 (D) 6.0222×10^{23} ions of oxygen
42. The electronic configuration $1s^2 2s^2 2p^6$ of an element shows
 (A) ground state configuration of fluorine
 (B) noble gas configuration of neon
 (C) excited state of nitrogen
 (D) electronic structure of oxygen
43. Non-metals belong to
 (A) *s*-block elements
 (B) *p*-block elements
 (C) *d*-block elements
 (D) *f*-block elements
44. Which one of the following is the weakest bond?
 (A) Ionic bond
 (B) Covalent bond
 (C) Metallic bond
 (D) van der Waals forces
45. Which of the following is the standard for atomic mass?
 (A) ${}^1_1\text{H}$
 (B) ${}^{12}_6\text{C}$
 (C) ${}^{14}_6\text{C}$
 (D) ${}^{16}_8\text{O}$

46. The molecular formula of a homologue of butane is
- (A) C_4H_8
 - (B) C_3H_6
 - (C) C_4H_6
 - (D) C_3H_8
47. The number of isotopes for hydrogen element is
- (A) one
 - (B) four
 - (C) three
 - (D) two
48. Rutherford's scattering experiment is related to the size of the
- (A) nucleus
 - (B) atom
 - (C) electron
 - (D) neutron
49. The electronic configuration of an atom/ion can be defined by
- (A) Aufbau principle
 - (B) Hund's rule
 - (C) Pauli's exclusion principle
 - (D) All of the above
50. Two atoms are said to be isobars if
- (A) they have same atomic number but different mass number
 - (B) they have same number of electrons but different number of neutrons
 - (C) they have same number of neutrons but different number of electrons
 - (D) sum of the number of protons and neutrons is same but the number of protons is different