Question bank ESE ATKT Exam
Applied Chemistry I
CBCGS

Questions	50 Marks
1. Calculate the temporary and permanent hardness of a water sample, having following analysis: $MgCO_3$ – 16.9mg/l $Ca((HCO_3)_2$ –50.25mg/l $Ca(NO_3)_2$ – 8.3mg/l $MgSO_4$ – 6mg/l $CaCl_2$ – 22.3mg/l NaCl – 50mg/l KCl – 50mg/l a. Temp. hardness 51 ppm, Permanent 30.51 ppm b. Temp. hardness 31 ppm, Permanent 21 ppm c. Temp. hardness 21 ppm, Permanent 38 ppm d. Temp. hardness 11 ppm, Permanent 30.51 ppm	` 2
2. Best method available for estimation of hardness of water sample a. Soap titration method b. EDTA method c. Colorimetric method d. Spectrophtometric method	2
3. Hardness of water is due to a. Lighter metal ion b. Heavier metal ion c. Both d. None	1
4. Which of the following types of sewage treatment are properly matched? a. primary-biological process b. secondary-mechanical process c. advanced-physical and chemical processes d. secondary-chemical process	2

5. 0.5 gm of CaCO3 was dissolved in HCl and the solution made up to 500 ml with distilled water. 50 ml of the solution required 45 ml of EDTA solution for titration. 50 ml of hard water sample required 15 ml of EDTA and after boiling and filtering required 10 ml of EDTA solution. Calculate temporary hardness of water. a. 111.11ppm b. 222.22ppm c. 333.33ppm d. 111.11ppm	2
6. What is used as regenerating agent in Zeolite method? a. 10% $CaCl_2$ solution b. 20% NaCl solution c. 10% NaCl solution d. Any one of the above solution	2
7. The word 'polymer' meant for material made from _____. a. Single entity b. Two entities c. Multiple entities d. Any entity	1
8. Kevlar is commercial name for _____ . a. Glass fibers b. Carbon fibers c. Aramid fibers d. Cermets	1
9. Elastic deformation in polymers is due to _____. a. Slight adjust of molecular chains b. Slippage of molecular chains c. Straightening of molecular chains d. Severe of Covalent bonds	1

10. In ionic polymerisation "living Polymer" is formed when; a. propagation reactions do not occur b. termination reactions do not occur c. initiation reactions occur faster then termination reactions d. None of the above	2
11. These polymers cannot be recycled: a. Thermoplasts b. Thermosets c. Elastomers d. All polymers	1
12. Following is the unique to polymeric materials: a. Elasticity b. Viscoelasticity c. Plasticity d. None	2
13. **Identify the odd type of lubricant from following**, a. Semi solid b. Liquid c. Gaseous d. Solid	2
14. What type of lubrication is used in delicate machines like watches, sewing machines, etc? a. Fluid film lubrication b. Extreme lubrication c. Boundary lubrication d. Thin film lubrication	2

15. Animal and vegetable oils are also used as, a. Oiliness carrier b. Blending agent c. Solvent agent d. Extreme pressure additives	2
16. Shorter the chain of petroleum oil, a. Lower viscosity b. Higher viscosity c. Softer d. None of above.	1
17. Example of mineral / petroleum oil is or are, a. Oleic acid b. Stearic acid c. Oxalic acid d. Acetic acid	1
18. Solvent refining step in purification of petroleum oil comprises use of solvent, a. Furfural b. Dichloroethyl ether c. Nitrobenzene d. All of above	1
19. What is Gibbs phase rule for general system? a. P = C – 1 – F b. P = C + 1 – F c. P + F = C – 2 d. P + F = C + 2	2
20. **What is degree of freedom when two phases co – exist?** a. 2 b. 3 c. 0 d. 1	2

21. **For single component system when degree of freedom is 1(one) then number of phases _____** a. 2 b. 3 c. 0 d. 1	2
22. **The degree of freedom at a triple point in the unary diagram for water is _____** a. 2 b. 3 c. 0 d. 1	2
23. Following is wrong about a phase diagram. a. It gives information on transformation rates. b. Relative amount of different phases can be found under given equilibrium conditions. c. It indicates the temperature at which different phases start to melt. d. Solid solubility limits are depicted by it.	2
24. Condensed phase rule is : a. P+F=C-1 b. P+F=C+1 c. P+F=C-2 d. P+F=C+2	2
25. Principal constituent of cement is: a. lime b. silica c. iron oxide d. sulphur trioxide	1
26. Solidification of cement comprises of : a. setting b. hardening c. setting and hardening d none of the above	1

27. Hardening of concrete is due to: a. Addition reaction b. Decomposition reaction c. Substitution reaction d. Hydration reaction	2
28. . Fuel consumption is higher in : a. Dry process b. Wet process c. Burning d. Grinding process	1
29. Lubricant is a substance which a. reduces friction b. increases the friction c. both a and b d. none of the above	2
30. One of characteristic properties of polymer material _____ . a. High temperature stability b. High mechanical strength c. High elongation d. Low hardness	2
	2
