

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Bachelor of Technology (Civil Engineering) SEMESTER - 1 Summer 2026 (Supply.)

Course :Bachelor of Technology (Civil Engineering) Branch : Engineering and Technology

Semester : SEMESTER - 1

Subject Code & Name: 24AFICHEBS102 - ENGINEERING CHEMISTRY

Time : 3 Hours]

[Total Marks : 60

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and include objective-type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No.6
4. Use of non-programmable scientific calculators is allowed.
5. Assume suitable data wherever necessary and mention it clearly.

Q1. Objective type questions. (Compulsory Question)

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- 1 Hardness caused by sulphates of calcium and magnesium is called:-----
A) Temporary hardness B) Permanent hardness C) Carbonate hardness D) Alkalinity
- 2 Dissolved oxygen in water is important because it indicates:----- A) Acidity
B) Purity of water C) Hardness D) Salinity
- 3 Disinfection of water is commonly carried out using:----- A) Chlorination B) Distillation C) Filtration only D) Sedimentation
- 4 Proximate analysis gives percentage of:----- A) Carbon and hydrogen B) Moisture, ash, volatile matter and fixed carbon C) Nitrogen and sulphur D) Oxygen only
- 5 Acid value of lubricant indicates:----- A) Oxidation stability B) Free fatty acid content C) Volatility D) Density
- 6 Fire point is the temperature at which lubricant:----- A) Produces vapours B) Burns continuously C) Solidifies D) Decomposes
- 7 Conductometric titration is based on a change in:----- A) pH B) Resistance C) Conductance D) Pressure
- 8 H_2-O_2 fuel cell produces:----- A) Ammonia B) Water and electricity C) Hydrogen peroxide D) Methane
- 9 Lambert-Beer law relates absorbance with:----- A) Temperature and pressure B) Concentration and path length C) Frequency and wavelength D) Conductance and resistance
- 10 TLC stands for:----- A) Thin layer chromatography B) Thermal layer chromatography C) Total liquid chromatography D) Thin liquid column
- 11 Portland cement mainly contains:----- A) Silicates and aluminates B) Carbonates only C) Sulphides D) Chlorides
- 12 Urea formaldehyde resin is an example of:----- A) Elastomer B) Thermoplastic C) Thermosetting resin D) Natural polymer

Q2. Solve the following.

- A) Explain Hot Lime-Soda Process for softening of water with reactions

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- B) What is Dissolved Oxygen (DO). Explain determination of Dissolved Oxygen (DO) by Winkler's method 6
- Q3. Solve the following.
- A) Explain Ultimate Analysis of Coal in detail 6
- B) Define Lubricant. Explain the properties of lubricants: viscosity, surface tension, flash point and fire point 6
- Q4. Solve Any Two of the following.
- A) Explain Wheatstone bridge method for conductance measurement 6
- B) Describe construction and working of Glass Electrode 6
- C) Explain rechargeable Lithium-ion battery with neat labeled diagram 6
- Q5. Solve Any Two of the following.
- A) Explain principle and working of Double Beam UV-Visible Spectrophotometer 6
- B) Explain principle and working of Flame Photometer 6
- C) Describe the classification of chromatography and give appropriate examples for each type 6
- Q6. Solve Any Two of the following.
- A) Explain composition and functions of constituents of cement 6
- B) Differentiate between Thermoplastic and Thermosetting resins 6
- C) Explain synthesis, properties and applications of Urea Formaldehyde resin 6

*** End ***