

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, (Backlog) Dec 2023
BTech (Common to all disciplines) Semester-I

Roll No.....

Course Code: AS1107

Time: 3 hours

Max. Marks: 30

Course Name: APPLIED CHEMISTRY

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.
4. Calculator is allowed

Q 1	A liquid waste discharged by industries, is called wastewater. This water contains different quantities of contaminants, that pollute water and make it unfit for any productive or domestic use. Discuss the highly efficient method which can completely remove the hardness from wastewater.	05 LO1
Q 2	Discuss the suitable lubrication mechanism which protects the machine in hard-working conditions and reduces the wear and tear process.?	05 LO2
Q3	The hardness of 50000 liters of a sample was removed by passing it through a zeolite softener. Then required 200 liters of NaCl solution, containing 125g/liter of NaCl for regeneration. Calculate the hardness of the sample of water. OR	05 LO1&LO2

Q4	Discuss the chemical constitution of liquid crystalline behaviors of thermotropic and lyotropic liquid crystals. OR An oil sample under test has a saybolt universal viscosity of 64 seconds at 210 F and 564 seconds at 100 F. The low viscosity standard (Gulf oil) possesses a saybolt viscosity of 64 seconds at 210 F and 774 seconds at 100 F. The high viscosity standard (Pennsylvanian oil) gave the saybolt viscosity values of 64 seconds at 210F and 414 seconds at 100F. calculate the viscosity index of the oil sample under test.	05 LO3 & LO2
Q.5	A water sample contains the following impurities $\text{Ca}^{2+} = 20\text{ppm}$ $\text{Mg}^{2+} = 18\text{ppm}$ $\text{HCO}_3^- = 183 \text{ ppm}$ and $\text{SO}_4^{2-} = 24\text{ppm}$. Calculate the amount of lime and soda needed for softening. (Ca= 40 ; Mg= 24;) OR How do you define the chemical sensor, and what are the important characteristics required for the chemical sensor.	05 LO1& LO5
Q 6	Short note on QA- PANI and give it an industrial application.. QB- classification of lubricants and their specific industrial application	05 LO3 & LO2