ATHARVA EDUCATIONAL TRUST'S
ATHARVA COLLEGE OF ENGINEERING
(Approved by AICTE, Recognized by Government of Maharashtra
& Affiliated to University of Mumbai - Estd. 1999 - 2000)
ISO 21001:2018 ISO 14001:2015 ISO 9001:2015
NAAC A+ Accredited

Applied Chemistry
Semester I (2024-25)
Question bank for Internal Assessment Test 1

1.	What are HCV and LCV? Mention the Units	3 marks
2.	Write any five characteristics of good fuel.	3 marks
3.	Describe the determination of percentage of moisture in a coal sample with its significance.	3 marks
4.	What is Dry Corrosion? Name the different types of oxide layer formed and state which oxide layers are non- protective in nature.	5 marks
5.	What is cathodic protection? Discuss sacrificial anode method of cathodic protection/ impressed current method with its application.	5 marks
6	What are corrosion inhibitors? Discuss its types with suitable examples.	5 marks
7.	Define corrosion. Explain the mechanism of wet corrosion with respect to neutral medium/ Acidic medium.	5 marks
8.	Differentiate between galvanizing and tinning.	4 marks
9.	Write a note on corrosion in electronic devices.	4 marks
10.	What steps would you take while selecting the metal and designing chemical vessel, so that corrosion will be minimized?	3 marks
11.	What are the metallic coatings?	3 marks
12.	Explain how the moisture, pH and temperature affect the corrosion?	3 marks
13.	What are the purpose of making an alloy with an example	4 marks
14.	What are alloys?	3 marks

Numericals

1.	A gaseous fuel has the following composition by volume: $CO = 5\%$, $C_2H_4 = 10\%$, $CH_4 = 40\%$, $N_2 = 2.5\%$, $H_2 = 35\%$, $CO_2 = 2\%$, $O_2 = 2.5\%$. Calculate the volume of air required for complete combustion of $1m^3$ of fuel.
2.	A coal sample contains. $C = 66\%$, $H = 4\%$, $O = 28\%$, $N = 0.8\%$ and $S = 1.5\%$ and Ash=0.2%. Calculate GCV and NCV of Fuel.
3.	By Kjedahl's method, 2.7 g of coal sample was taken for nitrogen estimation. The ammonia liberated required 12.5 ml of 0.5 N H_2SO_4 for neutralization. The same sample in bomb calorimeter experiment produced 0.64 g of $BaSO_4$. Calculate percentage of nitrogen and sulphur.
4.	2.499 g of coal sample was taken in as silica crucible and heated in oven maintained at $110^0 C$ for one hour. The weight after heating was 2.368 g. The same sample was analysed for volatile matter and weight obtained was 1.75 g, the sample was further treated to get fixed weight of 0.95 g. Calculate the percentage of moisture, volatile matter, ash, and fixed carbon content.
5.	If a sample of coal is found to contain $C = 90\%$, $O = 5\%$, $H = 1\%$, $S = 0.5\%$ and the remaining being Nitrogen. Find the weight and Volume of air required for complete combustion of kg of coal sample. Molecular weight of air = 28.94

Note: Numerical are only for reference purpose.