

University of Mumbai
Curriculum Scheme: Rev2016

All Programs

Examination: FE Semester II_FH2022

Course Code: FEC203

Course Name: Applied Chemistry II

Time: 2 hour

Max. Marks: 60

Note: Atomic Weights – H-1, C-12, N-14, O-16, S-32, Cl-35.5

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks (2 marks each)
1.	The chemical reaction is not considered as green reaction when
Option A:	Renewable feedstock is used
Option B:	% Atom economy is high
Option C:	Catalyst is used
Option D:	Products are not biodegradable
2.	Aluminium gets less corroded than iron because
Option A:	Aluminium does not react with oxygen
Option B:	Aluminium is lighter than iron
Option C:	Aluminium forms stable nonporous oxide film
Option D:	Aluminium has large particle size than iron
3.	Wood's metal is an alloy of
Option A:	Lead
Option B:	Silver
Option C:	Zinc
Option D:	Copper
4.	LPG comes under category
Option A:	Primary liquid fuel
Option B:	Secondary liquid fuel
Option C:	Primary gaseous fuel
Option D:	Secondary gaseous fuel
5.	What is the amount of oxygen required for complete combustion of 1 kg of carbon?
Option A:	2.67 g
Option B:	2.67 kg
Option C:	1 kg
Option D:	2 kg
6.	Kevlar is an example of
Option A:	Glass fibres
Option B:	Carbon fibres
Option C:	Aramid fibres

Option D:	whiskers
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Q2	Solve any Four Questions out of Six	4marks each
A	With the help of neat diagram and reactions explain the mechanism of electrochemical corrosion with evolution of hydrogen.	
B	A gas has following composition by volume: CH ₄ = 40%, CO = 12%, H ₂ = 40%, N ₂ = 3%, CO ₂ = 3% and O ₂ = 2%. Calculate the volume of air required for complete combustion of 1 m ³ of fuel.	
C	a) Write effect of pH of medium on rate of corrosion. b) State any four principles of green Chemistry.	
D	Write a short note on structural composites.	
E	Explain the effect of alloying on steel with Nickel and Tungsten.	
F	Explain significance of proximate analysis of coal.	

Q3	Solve any Four Questions out of Six	4marks each
A	List any four constituents of Paint and write one function of each of them.	
B	Calculate % atom economy for the production of hydrogen? $\text{C}_6\text{H}_{10}\text{O}_5 + 7\text{H}_2\text{O} \rightarrow 6\text{CO}_2 + 12\text{H}_2$	
C	Describe Kjeldahl's method for determination of nitrogen.	
D	Define shape memory alloy and write its two properties and two uses.	
E	a) Write any four characteristics of composite materials. b) Calculate % of sulphur in 2g coal if weight of BaSO ₄ obtained in Bomb calorimeter experiment is 0.125 g	
F	Explain how purity of metal and proper designing help in controlling corrosion.	

Q4	Solve any Four Questions out of Six	4 marks each
A	Describe sacrificial anode method of cathodic protection. Give any two advantages of the method over impressed current method.	
B	Define Cracking. Write any three advantages of catalytic cracking over thermal cracking.	
C	Explain concept of Stress corrosion and Pitting corrosion with the help of one example each.	
D	0.2 gm of coal sample was burnt in combustion apparatus. The increase in the weights of KOH bulb and CaCl ₂ tube are 0.56 gm and 0.05 gm respectively. Calculate the percentage of Carbon and Hydrogen in the coal sample.	
E	Give traditional route for Indigo dye preparation. Suggest with reasoning green route for its preparation.	
F	Give composition & uses of (Any two) i) Gun metal ii) Duralumin iii) German silver	