

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

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

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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	