University of Mumbai

Program: _First Year (All Branches) Engineering- SEM-II
Curriculum Scheme: Rev 2019
Engineering Chemistry-II

Question Bank

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NOTE: Atomic Weights: C = 12, H = 1, O = 16, N = 14, S = 32, Na=23 and Br=80

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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.	Which of the following spectroscopy can be used to quantify the concentration of protein and DNA in solution
Option A:	Infra-Red spectroscopy
Option B: ✓	UV spectroscopy
Option C:	NMR spectroscopy
Option D:	Raman spectroscopy
2.	The standard emf of the following cell is 0.012V Sn(s) ⎸Sn2+ (aq)(1M)‖Pb2+(aq)1M ⎸Pb(s) Calculate standard electrode potential of Sn electrode, if standard electrode potential for Pb electrode is -0.125V.
Option A: ✓	-0.137
Option B:	-0.113
Option C:	-0.005
Option D:	-0.245
3.	In greener synthesis of indigo, traditionally used Aniline is replaced by the following substrate.
Option A:	D-glucose
Option B:	Benzene
Option C:	Toluene
Option D: ✓	L-tryptophan

4.	Galvanization is preferred to tinning since, i) Zinc is more electro positive than iron ii) Zinc coating protects iron sacrificially iii) Punctured tin coating causes intense corrosion
Option A:	Only (i)
Option B:	Only (iii)
Option C: ✓	(i), (ii) &(iii)
Option D:	Only (ii)
5.	Corrosion in welded stainless steel is an example of ……
Option A:	Galvanic corrosion
Option B:	Pitting corrosion
Option C:	Waterline corrosion
Option D: ✓	Inter granular corrosion
6.	A sample of coal has following composition by mass C = 70 %, O = 8 %, H = 10 %, N = 3 %, S = 2%, Ash = 7 %.Calculate H.C.V. using Dulong formula
Option A: ✓	8805.80kcal/kg
Option B:	8277.80 kcal/kg
Option C:	8877.80 kcal/kg
Option D:	8205.80 kcal/kg
7.	Arrange n-octane, naphthalene and isooctane in the increasing order of their knocking tendency.
Option A:	n-octane < Naphthalene < isooctane
Option B: ✓	Naphthalene < isooctane< n-octane
Option C:	Isooctane < Naphthalene < n-octane
Option D:	Isooctane = n-octane < Naphthalene
8.	A cell is constructed from Ni+ 2 / Ni and Cu+2/ Cu half cells . The standard potential of the cell is -------. Given E0Ni = - 0.257 V and E0Cu = 0.337 V
Option A:	- 0.594 V
Option B:	0.008 V
Option C:	- 0.008 V
Option D: ✓	0.594 V
9.	Which of the following reactions are Green in nature: Addition reactions, Substitution reactions, Elimination reactions, Rearrangement reactions
Option A:	Addition and Substitution reactions
Option B:	Rearrangement and Elimination reactions
Option C: ✓	Rearrangement and Addition reactions
Option D:	Substitution and Elimination reactions
10.	An iron object is plated with a coating of Nickel to protect against corrosion. Does the Nickel protect iron by cathodic protection? Give suitable reason for your answer.
Option A:	No. The oxidation potential of Ni/Ni+2 is lower than that for Fe/Fe+2
Option B: ✓	Yes. The oxidation potential of Ni/Ni+2 is lower than that for Fe/Fe+2
Option C:	No. The oxidation potential of Fe/Fe+2 is lower than that for Ni/Ni+2
Option D:	Yes. The oxidation potential of Fe/Fe+2 is lower than that for Ni/Ni+2
11.	In quantum Mechanics, a set of rule exist, known as ‘Selection rules’ that basically explains which transitions are ‘allowed transitions’. Which amongst the following statements is an ‘allowed transitions’?
Option A: ✓	The spin quantum number of an electron doesnot change during the absorption or

	emission of light in an ‘allowed transition’.
Option B:	The change in orbital quantum number during an ‘allowed transition’ is zero.
Option C:	There is no change in magnetic quantum number during an ‘allowed transition’.
Option D:	The change in magnetic quantum number during a ‘forbidden transition’ is either zero, or +1, or -1.
12.	Small anodic area and large cathode area results in -
Option A:	Slow corrosion because of decreased demand of electrons by the small anode.
Option B:	Intense corrosion because of huge demand of electrons by the small anode.
Option C:	Slow corrosion because of decreased demand of electrons by the large cathode.
Option D: ✓	Intense corrosion because of huge demand of electrons by the large cathode.
13.	Selection rule to produce rotational spectra is
Option A:	Dipole moment of molecule must change during vibrations
Option B: ✓	Molecule must have permanent dipole moment
Option C:	Presence of chromophore in a molecule
Option D:	Presence of unpaired electron in a molecule
14.	Benzene is an important industrial solvent which is classified as
Option A:	Non-toxic
Option B:	Non-flammable
Option C:	Biodegradable
Option D: ✓	Carcinogenic
15.	Which of the following statement is incorrect about an electrochemical cell
Option A:	Oxidation occurs at anode and reduction at cathode
Option B:	Chemical energy is converted into electrical energy
Option C: ✓	Cell can work indefinitely
Option D:	Salt bridge maintains electrical neutrality of the electrolytes
16.	If a metal rod exhibits holes on its surface due to corrosion, the type of corrosion is
Option A:	Waterline
Option B:	Galvanic
Option C: ✓	Pitting
Option D:	Stress
17.	A good fuel has
Option A:	Low ignition temperature and high calorific value
Option B:	Low ignition temperature and low calorific value
Option C:	High ignition temperature and high calorific value
Option D: ✓	Moderate ignition temperature and high calorific value
18.	Spin multiplicity for the two unpaired electrons in excited singlet state is
Option A:	3
Option B:	2
Option C: ✓	1
Option D:	4
19.	Which of the following green chemistry principles are applicable to the alternate synthesis of ibuprofen?
Option A:	Maximize atom economy, preventaion of waste and use of renewable feedstock
Option B: ✓	Maximize atom economy, preventaion of waste and reduce unnecessary derivatisation
Option C:	Maximize atom economy, use of auxillary substances and increases energy effieciency
Option D:	Prevention of waste, renewable feedstock and increased energy efficiency.
20.	Proximate analysis of coal is used to determine
Option A:	% of Nitrogen
Option B:	% of Sulphur
Option C:	% of Hydrogen

Option D:	% of Moisture
21.	Season cracking is a special case of
Option A:	Chemical corrosion
Option B:	Stress corrosion
Option C:	Concentration cell corrosion
Option D:	Waterline corrosion
22.	By which process does the knocking starts in diesel engine?
Option A:	Due to sudden spontaneous combustion of last portion of fuel
Option B:	Due to delay in spontaneous combustion of last portion of fuel
Option C:	Due to the rise in temperature of diesel engine
Option D:	Due to the presence of straight chain paraffins in the diesel
23.	**Which of the metallic structure will require more impressed current density for cathodic protection?**
Option A:	Water boiler
Option B:	a ship hull
Option C:	Series of underground gas pipes
Option D:	an iron pipe buried in the soil
24.	In impressed current cathodic protection, anode is provided with a gypsum backfill because
Option A:	It enhances the rate of reaction
Option B:	It decreases metal to metal contact
Option C:	It enhances electrical contact with surrounding soil
Option D:	It decreases electrical contact with soil
25.	**Zn metal is corroding in the presence of acid. After sometimes corrosion stops.The reason is**
Option A:	addition of few drops of CuSO4
Option B:	Increased Hydrogen overvoltage of Zn
Option C:	Decreased Hydrogen Overvoltage of Zn
Option D:	Increased diffusion of H^+ ions
26.	As per Pilling- Bedworth rule, Greater the specific volume ratio,
Option A:	Higher is the oxidation corrosion
Option B:	Higher is the electrochemical corrosion
Option C:	Lower is the oxidation corrosion
Option D:	Lower is the electrochemical corrosion
27.	Calculate the emf of a concentration cell at 25^{o}C consisting of two Ag electrodes immersed in solutions of Ag^+ions of 0.2M and 0.01M concentrations
Option A:	0.777V
Option B:	-0.077V
Option C:	0.0385V
Option D:	0.077V
28.	The number of waves which can pass through a point in one second. This statement justifies, from the following
Option A:	Wavelength
Option B:	Frequency
Option C:	Wave number
Option D:	Acceleration
29.	Which is not the selection rule for the electronic transitions from the following
Option A:	Spin selection rule
Option B:	Symmetry rule
Option C:	Hund’s rule
Option D:	Angular momentum rule

30.	**To calculate the net calorific value, the products are _____**
Option A:	cooled
Option B:	collected
Option C:	allowed to escape
Option D:	heated
31.	Which one of the following is not applicable to a green reaction?
Option A:	Should not use hazardous reagents in manufacture of products.
Option B:	All the atoms of the reactancts should be incorporated to give only the atoms of products
Option C:	Should not use hazardous reagents but can produce toxic products
Option D:	Should prevent accidents in chemical industries
32.	The device in which electrical energy from an external source can be used to produce chemical reactions, such device is known as_____
Option A:	Voltaic Cell
Option B:	Electrolytic Cell
Option C:	Concentration Cell
Option D:	Fuel Cell
33.	From the following which is not used as a reference electrode
Option A:	Hydrogen electrode
Option B:	Calomel electrode
Option C:	Silver/Silver chloride electrode
Option D:	Glass electrode
34.	Mechanism of electrochemical corrosion occurs due to evolution of hydrogen gas when
Option A:	Corrosive environment is acidic
Option B:	Corrosive environment is alkaline
Option C:	Corrosive environment is neutral
Option D:	Corrosive environment is alkaline and neutral
35.	Moisture and volatile matter free 3.3 gm of coal sample was ignited in muffle furnace to a constant weight of 0.252 gm of residue. What will be the percentage of ash in coal sample
Option A:	1.84 %
Option B:	11.31 %
Option C:	8.00 %
Option D:	6.63 %
36.	Which of the following metallic coating method involves hot dipping?
Option A:	Metal cladding
Option B:	Metal Spraying
Option C:	Galvanizing
Option D:	cementation
37.	For estimation of moisture content in coal sample silica crucible is heated at ____ degree Celsius
Option A:	120 degree Celsius
Option B:	105-110 degree Celsius
Option C:	925 degree Celsius
Option D:	750 degree Celsius
38.	Caustic embrittlement is which type of electrochemical corrosion?
Option A:	Waterline corrosion
Option B:	Stress corrosion
Option C:	Pitting Corrosion
Option D:	Galvanic cell corrosion

7.63≈8.00 so ma'am said mark C

39.	_____ is not the green chemistry principle from the following
Option A:	High atom economy
Option B:	Use of catalyst
Option C: ✓	Use of Non-renewable feedstock
Option D:	Use of green solvent
40.	Nobel metals do not undergo oxidation corrosion because it forms_____
Option A: ✓	Unstable oxide film
Option B:	Non-porous oxide film
Option C:	Porous stable film
Option D:	Volatile oxide film
41.	Which is used as a green solvent from the following?
Option A:	Alcohol
Option B:	Acetone
Option C: ✓	Supercritical CO_2
Option D:	Concentrated Sulphuric acid (H_2SO_4)
42.	Dulong's Pettit formula is used for the theoretical calculations of
Option A:	Rating of coal
Option B:	Saponification value
Option C: ✓	Calorific value
Option D:	Sulphur from coal
43.	In which spectrum, molecule falls from excited state to ground state with the emission of photon energy?
Option A:	Electromagnetic spectra
Option B:	Absorption spectra
Option C: ✓	Emission spectra
Option D:	Scattering spectra
44.	Which of the following is not synthesized by greener way?
Option A: ✓	Acetic acid
Option B:	Adipic acid
Option C:	Indigo
Option D:	Carbaryl
45.	**Identify the true statement of the following:-**
Option A:	EMF series includes non metals, metals and their alloys
Option B:	EMF series predicts the corrosion characteristics of metals and alloys correctly
Option C:	position of metals in EMF series changes with the change in the environment
Option D: ✓	It talks about the relative displacement tendencies of metals and non metals
46.	Electromagnetic spectrum is nothing but the arrangement of electromagnetic radiations according to
Option ✓	Increasing order of wavelength & Decreasing order of frequency

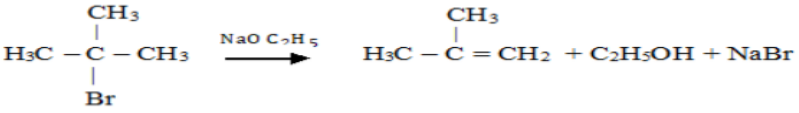
A:	
Option B:	Decreasing order of frequency & Decreasing order wave length
Option C:	Increasing order of wavelength & Increasing order of frequency
Option D:	Not related to frequency and wavelength order
47.	Which of the following is not a principle of proper designing?
Option A:	Avoid the contact of dissimilar metals
Option B: ✓	Anode should be smaller than cathode
Option C:	Corrosion should not be localized but uniform
Option D:	Anode should not be painted.
48.	In galvanic cell ------ energy is converted into ------ energy.
Option A: ✓	Chemical into electrical energy
Option B:	Electrical into Chemical energy
Option C:	Chemical into Chemical energy
Option D:	Electrical into Electrical energy
49.	Corrosion between two dissimilar metals in electrical contact is which type of corrosion
Option A:	Differential aeration corrosion
Option B: ✓	Galvanic corrosion
Option C:	Liquid metal corrosion
Option D:	Oxygen concentration cell corrosion
50.	Standard Hydrogen electrode is arbitrarily assigned ----- potential
Option A: ✓	Zero
Option B:	Two
Option C:	One
Option D:	Three
51.	When cathodic area is large and anodic area is small then corrosion is known as
Option A:	Galvanic corrosion
Option B:	Concentration cell corrosion
Option C: ✓	Pitting corrosion
Option D:	Dry corrosion

52.	In atmospheric corrosion, which film is developed over Aluminum, Titanium and Vanadium
Option A:	Stable porous film
Option B:	Volatile film
Option C:	Unstable film
Option D: ✓	Stable Non porous film
53.	Intergranular corrosion is also known as
Option A:	Galvanic corrosion
Option B:	Dry corrosion
Option C: ✓	Grain boundary corrosion
Option D:	Wet corrosion
54.	Which of the following constituent is measured in both proximate and ultimate analysis?
Option A:	Moisture
Option B: ✓	Ash
Option C:	Volatile matter
Option D:	Nitrogen
55.	Which of the following are principal constituents of fuel
Option A: ✓	Carbon and Hydrogen
Option B:	Oxygen and hydrogen
Option C:	Sulphur and Oxygen
Option D:	Sulphur and Hydrogen
56.	Quality of petrol is decided by it's
Option A:	Cetane number
Option B: ✓	Octane number
Option C:	Carbon number
Option D:	Hydrogen number
57.	Which of the following method is used for nitrogen estimation
Option A:	Precipitation method
Option B:	Combustion method
Option ✓	Kjeldahl's method

C:	
Option D:	Titration method

Descriptive Section

1.	A sample of coal has the following composition by mass: C = 85%, H = 6%, O = 8%, S = 0.5% and Ash = 0.5%. Calculate HCV and LCV using Dulong's Formula. Given Atomic Weights: C=12, H = 1, S = 32, O = 16
2.	Discuss differential aeration corrosion with the help of a suitable example.
3.	Explain the conventional and Green route of manufacturing Carbaryl. Highlight the green chemistry principle involved.
4.	Define Spectroscopy and Electromagnetic spectrum. Also explain the origin of spectrum.
5.	The standard emf of the following cell is 0.462 V. $Cu(s) / Cu^{+2}(aq)(1M) // Ag^{+}(aq)(1M) / Ag(s)$ Write the cell reaction. If the standard potential of Cu electrode is 0.337 V, what is the standard potential of Ag electrode?
6.	What is cathodic protection? What are the two types of cathodic protection? Discuss any one with the help of a suitable diagram.
7.	Calculate the percentage atom economy for the following reaction with respect to acetanilide. $C_6H_5NH_2 + (CH_3CO)_2O \longrightarrow C_6H_5NHCOCH_3 + CH_3COOH$ Given Atomic Weights: C = 12, H = 1, O = 16, N = 14
8.	Calculate the volume of air required for complete combustion of $1m^3$ of gaseous fuel having the following composition: CO = 5%, C_2H_4 = 10%, CH_4 = 40%, N_2 = 2.5 %, H_2 = 35%, CO_2 = 2%, O_2 = 2.5% Given Atomic Weights: C = 12, H = 1, O = 16, N = 14
9.	How do the following factors affect the rate of corrosion: (i) relative areas of anodic to cathodic part (ii) position of metal in galvanic series.
10.	(i) Distinguish between anodic and cathodic coating. (ii) What is Biodiesel? Give the trans-esterification reaction of the preparation of Biodiesel.
11.	Explain the conventional and Green route of manufacturing Adipic acid. Highlight the green chemistry principle involved.
12.	Give in tabular form the relation between electromagnetic spectrum, types of spectroscopy and corresponding energy changes.

13.	What is an electrochemical cell? What are the types of electrochemical cell? Briefly discuss the different types.
14.	What is green chemistry? Explain the principle of 'Designing safer chemicals and products' and the principle of 'Use of renewable feedstocks'.
15.	(i) 1 g of coal sample was used for determination of nitrogen by Kjeldhal's method. The ammonia evolved was passed into 50 ml of 0.1 N H_2SO_4. The excess acid required 42 mL of 0.1 N NaOH for neutralisation. Calculate the percentage of N in the sample. (ii) One of the design and material selection principle is ' the anodic material should not be painted or coated' . Give reason for the same.
16.	Discuss season cracking.
17.	What are 'oxygenates' used in the fuel industry? Where and why are they added? Explain by giving examples.
18.	By kjeldahl's method 3 gm of coal sample was analysed. The ammonia evolved was absorbed in 40 ml of 0.5 N H2SO4. After absorption, the excess H2SO4 required 18.5 ml of 0.5N KOH for neutralization. A coal sample was subjected to ultimate analysis 2.45 g of coal on combustion in a Bomb-Colorimeter gave 0.67 of BaSO4. Calculate percentage of Nitrogen and sulphur.
19.	Discuss Bimetallic corrosion with the help of a suitable example
20.	Explain the conventional and Green route of manufacturing indigo dye. Mention the green chemistry principles involved.
21.	Explain construction and working of SHE with neat and labeled diagram.
22.	Explain different types of electromagnetic radiations.
23.	Draw a diagram of a cell made up of aluminium and silver half cells. Give representation of the cell along with electrode reactions.
24.	Calculate the volume and weight of air required for complete combustion of 1m3 of gaseous fuel having the following composition: CO = 10%, C3H8 = 12%, CH 4 = 30%, N 2 = 3 %, H 2 = 40%, CO2 = 3%, O2 = 2.0% (Molecular weight of air =28.949).
25.	How do the following factors related to nature of environment affect corrosion? i) Anodic and Cathodic area ii) Purity of metal
26.	 Find atom economy of the reaction with respect to 2-methyl propene.
27.	Explain 'Selection rules' that basically decide which transitions are 'allowed or forbidden' in spectroscopy
28.	Distinguish between Octane number and Cetane number
29.	i) Explain the principle of 'use of catalytic reagent' with respect to green chemistry. ii) How would you synthesize benzimidazole using green catalyst.
30.	Calculate the minimum amount of air required for the complete combustion of 1 kg of fuel containing C= 80%, H= 6%, O=8%, S= 1.5%, H2O= 1.0%, N= 1.5% and ash= rest.
31.	Explain why a "pure Zinc metal rod half immersed in saline water starts corroding at the bottom" Explain with neat diagram, reactions & corrosion product formation.
32.	Explain construction and working of a reference electrode which is used in pH meter.
33.	Write cell reaction and calculate the standard emf of the following cell.

	Cd(s) | Cd +2 (aq)(1M) ‖ Ni2+ (aq)(1M) | Ni(s) If the standard potential of Cd electrode is -0.40 V and the standard potential of Ni electrode is -0.25 V
34.	Write a note on Catalytic converter with the help of chemical reactions.
35.	i) Give significance of determination if moisture in coal. ii) What is season cracking?
36.	Which molecule is used as a component in various therapeutic drugs? Give any one traditional and green synthesis of the same.
37.	Write the Nernst Equation and calculate Emf of the following cell at 298K: Mg(s)/Mg2+(0.001M) || Cu2+(0.0001M)/Cu(s). $Given$: $E^0_{Cu2+/Cu}$ = 0.34 V and $E^0_{Mg2+/Mg}$= -2.37 V
38.	With the help of traditional and green synthesis of ibuprofen, list the principles of green chemistry involved in it.
39.	What is knocking? How is knocking of gasoline related to chemical structure of hydrocarbons present in it? Define octane rating.
40.	A sample of coal was found to contain C = 80%, H = 5%, O = 1%, N = 2%, Ash=12%. Calculate the minimum amount of air required for complete combustion of 1kg of coal sample.
41.	Draw the energy level diagram showing various molecular energies and explain why molecular spectra contains broad bands whereas atomic spectra consist of sharp lines.
42.	A cell uses Zn2+/Zn and Ag+/Ag electrodes. Write the cell representation, Half-cell reactions, Net cell reactions and calculate the standard Emf of the cell. $Given$: $E^0_{Zn2+/Zn}$ = -0.76 V and $E^0_{Ag+/Ag}$ = 0.8 V
43.	Define Green chemistry. As per Green chemistry Principles, why is it essential to design energy efficient process. Explain with suitable examples.
44.	What is oxidation corrosion. Name the different types of oxide layer formed and state which oxide layers are non-protective in nature. Explain with suitable examples.
45.	Determine C, H, N elements as % from the following observations in experiments of analysis of coal. 0.25g coal on burning in a combustion tube and passing the gases through tubes containing anhydrous CaCl2 and KOH increases their weight by 0.09 g and 0.8g respectively. In Kjeldahl's method, ammonia evolved by 0.42g coal was absorbed in 49.5ml of 0.12 N HCl solution. After absorption, the excess acid required 36.5ml of 0.12 N NaOH for neutralization.
46.	What are antiknocking agents? Explain the factors affecting antiknocking characteristics of a compound
47.	What is electrochemistry? Write the cell reaction and Calculate the standard emf of the following cell ***(5)*** $Zn_{(s)} \mid Zn^{2+}_{(aq)}$ (1M) $\mid\mid Cu^{2+}_{(aq)}$ (1M) $\mid Cu_{(s)}$ $Given$: E^0_{Zn}= -o.763 V and E^0_{Cu}= 0.337 V
48.	What is Green Chemistry? Calculate percentage atom economy for the following reaction with respect to acetophenone ***(5)*** **$C_6H_6 + CH_3COCl \longrightarrow C_6H_5COCH_3 + HCl$** **Acetophenone** (Atomic weights: C=12, H=1, O=16, Cl=35.5)
49.	Define corrosion. Explain sacrificial anode method with suitable diagram. ***(5)***
50.	Calculate the weight and volume of air required for complete combustion of 1 kg of coal containing C=65%, H=4%, O=7%, N=3%, moisture=15% and remaining is ash. (molecular weight of air=28.94 gm) ***(5)***
51.	Give the classification of Spectroscopy based on atomic level of study. Distinguish between absorption and emission spectra. ***(2+3)***
52.	What is metallic coating? Differentiate between Galvanizing and Tinning. ***(5)***

53.	List 12 principles of Green Chemistry. Explain Biodiesel as a Green fuel ***(5)***
54.	List the factors affecting the rate of corrosion. Explain Galvanic cell Corrosion ***(5)***
55.	3.2 gm of coal in Kjeldahl's experiment evolved NH_3 gas was absorbed in 40 ml of 0.5 N H_2SO_4. After absorption the excess acid required 16 ml of 0.5N NaOH for complete neutralization. 2.5 gms of coal sample in quantitative analysis gave 0.42 gm BaSO4. Calculate the % N and S. ***(5)***
56.	Define spectroscopy and explain different regions of electromagnetic spectrum with the help of diagram
57.	What is Electrochemistry? Differentiate between electrolytic cell and Galvanic cell
58.	List the 12 Principles of Green chemistry and calculate % atom economy for the following reaction with respect chlorobenzene $C_6H_6 + Cl_2 \longrightarrow C_6H_5Cl + HCl$ Atomic weight C = 12, H = 1, Cl = 35.5
59.	What is Electrochemical corrosion? Explain Hydrogen evolution mechanism with the help of diagram
60.	Calculate the amount of air needed for complete combustion of 1Kg of coal containing C = 65%, H = 13 %, O = 6 %, N = 2% S = 4%
61.	Give construction and working of hydrogen-oxygen fuel cell with the help of diagrams and reactions.
62.	What is standard potential? Calculate standard emf of following cell $Zn(s)\|Zn^{2+}{}_{(aq)}$ (1M) $\|\|$ $Cu^{2+}{}_{(aq)}$ (1M) $\|Cu_{(s)}$ Given E^0 Zn =-0.763 V and E^0 Cu = 0.337V
63.	Explain the mechanism of 'Rusting of iron in water' with the help of diagram and reactions.
64.	Explain sacrificial anode method for prevention of corrosion with the help of diagram and also distinguish between Galvanizing and Tinning
65.	What is Fuel? and what are ideal characteristics of fuel. Give classification of fuels.