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Assignment: Applied chemistry

Module: 2nd Btech (E)

Instructor: Engr. Khalil Muhammad Khan

Part (A)

Q1: Objective Type?

1: A good liquid lubricant must possess the property of High boiling point.

2: Which of the following is not the liquid lubricant? Grease.

3: Petroleum oil are also called as Hydrocarbon oil.

4: Petrol captured the market up to the percentage of 98%.

5: A dispersion system consisting of two immiscible liquid is called Emulsions.

6: In oil in water emulsions, how much water is present 40 to 50%.

7: Which of the following is the example of the electrolytes? Acids.

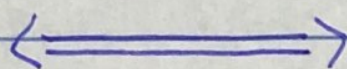
ID: 16216

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8: The resistance of the conductor in the electrolytic cell increases with increase in temperature.

9: The process of decomposition of an electrolyte by passing electric current through its solution is called as electrolysis.

10: The electrolyte is placed in a special type of cell known as conductance cell.



ID: 16216

Name: HAROON

Part (B)

Q2: (a) What is addition and condensation polymerization? Give examples.

(b) Draw a neat sketch of a galvanic cell.

Ans: (a) Addition polymerization

Polymerization that occurs through the coupling of monomers using their multiple bonds is called addition polymerization.

The simplest example involves the formation of polyethylene from ethylene molecules. In this reaction, the double bond in each ethylene molecule opens up, and two of the electrons originally in this bond are used to form new carbon-carbon single bonds with two other ethylene molecules.

Condensation polymerization

Condensation polymers form from the step growth polymerization. Here when molecules of monomers react to form a bond they replace certain molecules.

These molecules are the by-product of the reaction. In most cases, this by-product is a water molecule.

The type of polymers that result from a condensation polymerization depends on the monomers. If the monomer has only one reactive group

ID: 16216

Name: HAROON

the polymers that form have low molecular weight. When monomers have two reactive end groups we get linear polymers and monomers with higher than two reactive groups results in a polymer with a three-dimensional network. Polyester and nylon are two common condensation polymers. Even proteins and carbohydrates are a result of condensation polymerization.



(b) sketch of a galvanic cell.

P-T-O

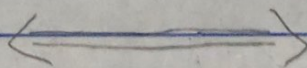
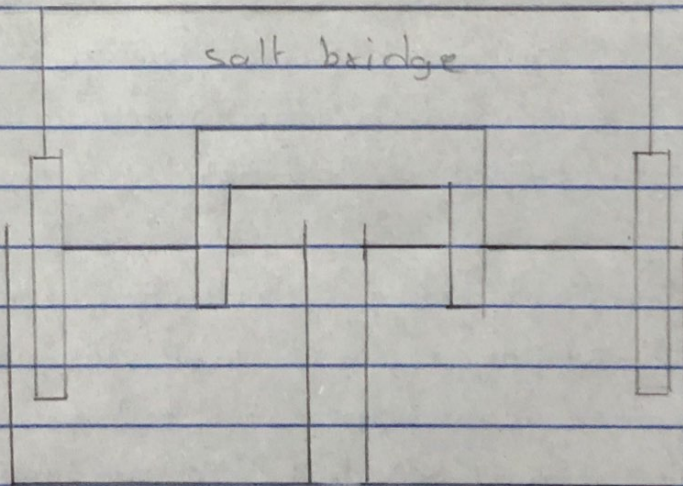
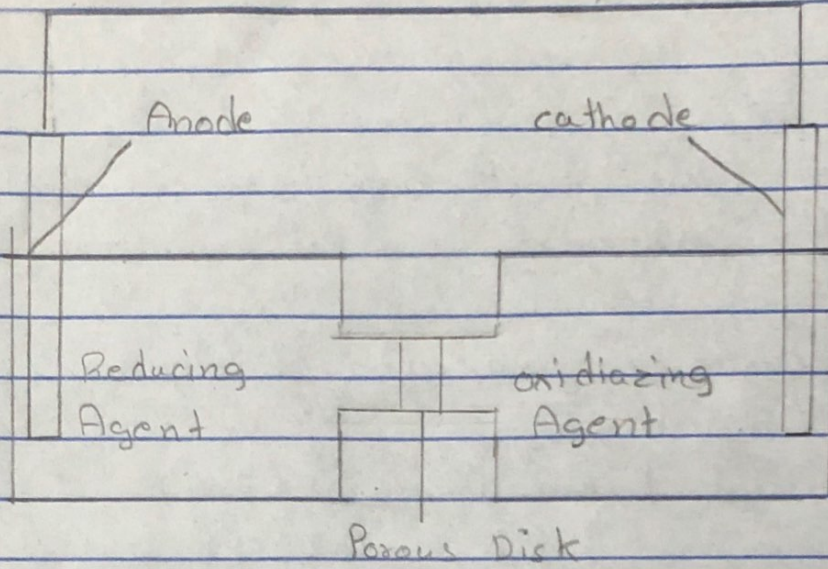
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ID: 16216

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ID: 16216

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Q3: a. Write any three applications of liquid crystals?

Ans: Liquid crystal:

Substance that exhibit a phase of matter that have properties between those of a conventional liquid, and those of a solid crystal. Hence it shows Anisotropy.

1: Liquid crystal Display:

Liquid crystal display (LCD) is a flat electronic display panel used as a visual display aid. It uses liquid crystals to create visual effects on screen. Liquid crystal is a state of matter between solids and liquids. LCDs do not generate light on their own but rely on sunlight or room light to generate images with help of liquid crystal.

2: Liquid crystal Thermometers:

Liquid crystal thermometers use liquid crystals that change color in response to temperature changes. Mixtures of liquid crystal are enclosed in separate partitions. Numbers on the partitions indicate temperatures

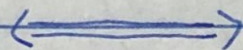
I.D: 16216

Name: HAROON

according to the amount of heat present. Liquid crystal thermometers include some indoor digital thermometers and fever thermometers, which are placed on the forehead.

3: Optical Imaging:

Optical imaging is an emerging technology with great potential for improving disease prevention, diagnosis, and treatment in the medical office, at the bedside, or in the operating room.



Q4: (a) Explain suspension polymerization method?

(b) Write notes on p-type conducting polymers?

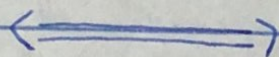
Ans: (a) Suspension polymerization is a heterogeneous radical polymerization process that uses mechanical agitation to mix a monomer or mixture of monomers in a liquid phase, such as water, while the monomers polymerize, forming spheres of polymer. This process is used in the production of many commercial resins, including polyvinyl chloride (PVC), a widely used plastic, styrene resins. Including polystyrene, expanded polystyrene

ID: 16216

Name: HAROON

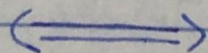
and high-impact polystyrene as well as poly(styrene acrylonitrile) and poly(methyl methacrylate).

(b): Ans: The band structure of conductive polymers can easily be calculated with a tight binding model. In principle, these same materials can be doped by reduction, which adds electrons to an otherwise unfilled band in practice, most organic conductors are doped oxidatively to give p-type materials.



Q5: a. Dielectric constant of gases possess values very close to each other. Why?

Ans: Dielectrical value of gas very close to each other because. The polarizability of a material (as well as the dielectric constant) depends on the particle density, and because the gas density is much lower than liquid or solid, the dielectric constant is almost 1. of all the gases.



ID: 16216

Name: HAROON

Q6.b. What is primary battery? Discuss the working and construction of a dry cell.

Ans: Primary battery:

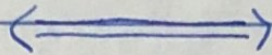
Primary battery are single use batteries which are cheap, have a lower self discharge rate. They are generally used in applications where the discharging rate is very low. The applications of such cells can be seen in watches, smoke detectors etc.

Working and construction of dry cell

A dry cell consists of a zinc container whose base acts as the negative electrode. The carbon rod placed at the centre with a brass cap acts as the positive electrode. This is surrounded by a mixture of manganese dioxide and charcoal in a muslin bag. The electrolyte used is a moist paste of ammonium chloride. The outer body (excluding the base) of the zinc container is insulated with cardboard. When the dry cell is connected in a circuit comprising a bulb, current flows in the circuit due to the chemical reaction that takes place in the cell. This makes the bulb glow. The dry cell is primary cell and it cannot be recharged.

ID: 16216

Name: HAROON



Q7: a. Write the design and working of tidal power?

Ans: Its the energy that makes use of tides to generate electricity.

These power plants are in experimental stage and their level of production is still very low.

Methods of generating tidal energy.

- Tidal barrage.
- Tidal stream generator (TSG)
- Dynamic tidal power (DTP)
- Tidal lagoon.

A tidal barrage uses the potential energy produced by the difference in height between high tides and low tides.

• The first tidal power station was the Rance tidal power plant built over a period of 6 years from 1960 to 1966 at La Rance, France. It has 240 MW installed capacity.

• also the world's second biggest tidal power station.

