APPLIED (A) SS PP-2021

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1. **4 fractions with carbon range obtained from fractional distillation of petroleum?**

The four fractions obtained from petroleum which are used as fuels are:

- Gasoline
- Kerosene
- Diesel Oil
- Petrol

2. **Reforming?**

The process which is designed to increase the volume of gasoline that can be produced from a barrel of crude oil. Hydrocarbons in naphtha stream have roughly the same number of carbon atoms as those in gasoline, but their structure is generally more complex.

3. **Catalytic cracking:-**

A process in which complex hydrocarbon are broken down into simpler molecules. It breaks complex hydrocarbons into simpler molecules in order to increase the quality and quantity of lighter, more desirable products and decrease the amount of residuals.

4. **Products of refining:-**

After crude oil is removed from the

ground, it is sent to a refinery where different parts of the crude oil are separated into useable petroleum products. These products include gasoline, distillates such as diesel fuel and heating oil, jet fuel, petrochemical feedstocks, waxes, lubricating oils and asphalt.

5. **Why desalting of crude oil is important?**
It is the first refining process applied to crude oil. The process removes salt, water and solid particles that would lead to problems during refining such as corrosion, fouling of equipment or poisoning of catalysts.

6. **Bleaching of paper pulp:-**
The process of making pulp white to improve printing properties and its ability to absorb liquids. Bleaching also attacks some contaminants to reduce stray dark colored particles in the final sheet of paper.

7. **Soda pulping:-**
The method which is mainly used for processing annual crops such

as straws, bagasse and hardwood. In fact, the alkaline process of delignification in soda pulping is quite comparable to the Kraft method with the exception of sulfur content. Sodium hydroxide (NaOH) is used to generate an aqueous alkaline medium.

8. **Why is wheat straw preferred over rice straw for paper pulp?**

Wheat straw preferred over rice straw for paper pulp because the use of rice straw in paper making is limited as it contains silica and give some process problems.

9. **Beating process of paper production?**

The beating process of paper production is the mechanical treatment and modification of fibers so that they can be formed into paper or board of the desired properties.

It is the important unit process, when preparing paper making fibers for high-quality papers or paperboards.

10. How paper pulp manufacturing causes water pollution?

Its discharge contains alcohols and chelating agents and inorganic materials like chlorates and transition metal compounds. Nutrients such as nitrogen and phosphorus can cause eutrophication of fresh water bodies such as lakes and rivers. The waste water may also be polluted with organochlorine compounds.

11. Action of calcium cyanide as fertilizer:-

Calcium cyanide/cyanamide also known as nitrolime which has been used as slow release nitrogen/calcium fertilizer with liming effect for over 100 years. Because of its negative effect on many soil borne diseases it is now often applied to prevent yield and quality losses during increasingly tight crop rotations.

2. 2 Examples of Phosphate fertilizer:-

The most common phosphate

fertilizers are:-

- Single superphosphate (SSP)
- Triple superphosphate (TSP)
- Monoammonium phosphate (MAP)
- Diammonium phosphate (DSP)
- Ammonium polyphosphate liquid.

13. Raw materials for normal superphosphate fertilizer:-

The major raw materials for normal superphosphate fertilizers are phosphorite and apatite. Phosphorites are sedimentary rocks of organic origin consisting mainly of phosphates.

14. Name few natural organic fertilizers:-

- Manure: used as fertilizer can include manure from cows, horses and chickens.
- Compost: made up from decomposing materials such as scraps and leaves.
- Minerals: such as potassium sulfate can mined from the ground.

15.

Micro nutrients	Macro nutrients
* These are the nutrients	* These are the nutrients

your body needs in smaller amount.	your body needs in larger amount.
* Such as vitamins and minerals	* Such as carbohydrates proteins and fats.

7th Semester

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1. **Different unit processes involved in treatment of crude oil:-**

i) **Crude desalting process:-** The process in which salt and other contaminants are removed from crude oil before it is sent to atmospheric distillation for separation.

ii) **Atmospheric distillation:-** It is the first major unit process in a refinery which is used to separate the crude oil into its component distillation fractions.

iii) **Fractional distillation:-** The process in which crude oil is separated into its various fractions like kerosene, diesel and heavy residue etc.

2. **Migration of oil:**

The movement of petroleum/oil from source rock toward a reservoir or seep. There are numerous factors controlling the hydrocarbons migration processes like kerogen, expansion, increase in pressure and hydrocarbon expulsion out of source rock.

3. **Catalytic alkylation:-**
It is a chemical process in which, light, gaseous hydrocarbons are combined to produce high-octane components of gasoline. The light hydrocarbons consist of olefins such as propylene and butylene and isoparaffins such as isobutane.

4. **How prilling is carried out during urea manufacturing?**
Prilling is a process by which solid particles are produced from molten urea. Molten urea is sprayed from the top of a prill tower. As the droplets fall through a countercurrent air flow, they cool and solidify into nearly spherical particles.

5. **Role of beating in pulp refining:-**
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6. **Action of ammonium sulfate as fertilizer:-**
It is the most commonly used artificial fertilizer for alkaline soils. When introduced into damp oil, an ammonium ion is released. This

creates a small amount of acid which lowers the pH balance of the soil. It also contributes nitrogen, which aids in plant growth.

7. **Kraft pulping process:-**
In this process, the white liquor penetration and diffusion into the interior of wood chips. When the wood chips are heated the delignification reaction starts, but the reaction rate is very slow. The specific Kraft cooking temperature is generally 135-175°C in which lignin structure and other organic compounds are broken down into small fragments and solubilized into the alkaline solution.

8. **Temperature and catalyst conditions for Haber's process:-**
In this process, normally an iron catalyst is used and the whole procedure is conducted by maintaining a temperature of around 400-450°C and a pressure of 150-200 atm.

9. **Agriculture waste used to make paper.**
The most important agricultural

waste used in papers industry are straws, bagasse and grasses. These are the agri-waste which are used in making papers.

10. **Significance of Potash fertilizer:-**
It is used to regulate the movement and storage of solutes throughout the plant comparable to the blood system in animals or human. Small quantities are used in manufacturing potassium-bearing chemicals such as detergents, ceramics etc.

APPLIED (A) SS PP-2019

1. 4 fractions with carbon range obtained from fractional distillation of petroleum.

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2. Explain isomerization:-

The process which involves the production of branched paraffins from straight chain CH's. It is used to convert low-octane n-paraffins to high octane iso-paraffins; which is used for blending straight run gasoline to improve its octane number. It is usually carried out at 100-200°C

3. Different unit processes involved in treatment of crude oil:-

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4. 4 raw materials for paper industry:-

- Wood based material
- Agricultural wastes (straw, bagasse, grasses)
- Waste paper
- Cotton linters and waste.

5. Role of sweetening process in crude oil refining:-

The process which is used to remove the so called Acid Gases which are

sulfide and carbon dioxide from the refinery gas streams. This process is used either to purify a gas stream for further use or for environmental reasons.

6. Temperature and catalyst conditions for Haber's process?

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7. Migration :-

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8. Micro-nutrients Macro-nutrients

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9. Why desalting of crude oil is important?

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10. Urea assimilation in soil :-