



Roll No. _____

No. of Pages: 2

[68]

Sardar Patel University

B. Sc. (Semester III) Examination

Date: 17-06-2021, Friday

Time: 12:00 – 2:00 PM

Industrial Chemistry Vocational

COURSE NO: US03CICV21 (Chemical Plant Auxiliaries & Manufacturing)

Notes: Figures to the right indicate full marks.

Total marks: 70

Q.1 Answer the following Multiple-Choice Questions. (All are compulsory) (10)

- Purest form natural water is:
a) River water b) Rain water c) Sea water d) Lake water
- Permanent hardness in water is caused by presence of:
a) Calcium chloride b) Magnesium sulphate c) Both of them d) None of these
- Hardness in water is caused by presence of...
a) Sodium chloride b) Sodium carbonate c) Calcium chloride d) Potassium nitrate
- A refrigerant compressor is used to.....
a) Raise the pressure of the refrigerant
b) Raise the temperature of the refrigerant
c) Circulate the refrigerant through the refrigerating system
d) All of the above
- The refrigerant supplied to compressor must be:
a) Superheated vapor refrigerant
b) Dry saturated liquid refrigerant
c) A mixture of liquid and vapor refrigerant
d) None of these
- The pressure at the inlet of a refrigerant compressor is called:
a) Suction pressure b) Discharge pressure c) Critical pressure d) Back pressure
- The rate of Nitration depends upon what?
a) Temperature b) Concentration c) Pressure d) All of them
- The nitration in paraffinic produces?
a) Mono-nitroparaffin b) Dinitro paraffin c) Trinitro paraffin d) All of them
- What is meant by equilibrium constant 'k' of the reaction?
a) (Ester X water) / (Acid X Alcohol)
b) (Ester X Alcohol) / (Acid X Water)
c) (Acid X Water) / (Ester X Alcohol)
d) None of the mentioned
- What should be the free energy so that reaction is spontaneous?
a) Positive c) Neutral
b) Negative d) None of the mentioned

Q.2 Are the following statements true or false? (All are compulsory)

(08)

1. Carbonates and bicarbonates are dissolved minerals in water.
2. Hardness is not preventing the lathering of soap.
3. Operation ration in case of diesel engine is 5 to 10.
4. In the water tube boiler steam generation is 3000 kg/hr.
5. Sulfamates are used as an Herbicide.
6. Liquid phase nitration is less important because of low yield and low conversion.
7. Hydrochloric and sulfuric acids are act as catalyst in esterification process.
8. Low temperature and pressure are the condition for effective hydrolysis.

Q.3 Answer the following short questions (Attempt Any 10 out of 12)

(20)

1. Name the principal sources of water.
2. Why is rain water a purest form of natural waters?
3. What is the cause for alkanity of natural water?
4. Enlist the classification of compressors.
5. Define the term Suction volume.
6. State Discharge pressure and Stroke volume.
7. Giving suitable example define term Oxy-Nitration.
8. Enlist factors affecting the Bechamp Reduction.
9. Enlist the methods generally used for the preparation of primary amines.
10. Write about liquid phase oxidation & vapour phase oxidation
11. Define term hydrogenation and write effect of solvent in it.
12. Enlist the catalyst used for hydrogenation reaction.

Q.4 Answer the following Long questions (Attempt Any 04 out of 08)

(32)

1. Explain about feed water conditioning.
2. Define term fuel. Explain classification of fuel in detail.
3. What is multi-stage compressor? Give its advantages.
4. What is difference between heat engine, refrigerator and heat pump?
5. With the help of diagram, discuss Nitrobenzene manufacturing by continuous process.
6. Discuss the commercial manufacturing of Aniline.
7. Write note on "Hydrolysis reaction".
8. Discuss the commercial manufacture of Monochloroacetic acid.

— x —

(2)