

210]

Seat No.: _____



No of Printed Pages: 2

SARDAR PATEL UNIVERSITY

Bachelor of Science (Semester 3) Examination 2022

US03CICV21: Chemical Plant auxiliaries & Manufacturing

Date: 19-11-2022 (Saturday)

Total: 70 Marks

Time: 10:00 A.M to 01:00 P.M

Note: Figures to the right indicate full marks.

Q.1 Answer the following MCQs (All are compulsory).

[10]

- The process which converts Hard water to soft water is named as.....
 - Limestone Process
 - Ion exchange process
 - Calgon Process
 - Rock salt Process
- Scale formation in boilers causes...
 - No loss of heat
 - Wastage of heat
 - Increase in efficiency
 - None of (a, b, & c)
- Which of the following gas is used for the fire extinguishers?
 - Nitrogen
 - Oxygen
 - Carbon dioxide
 - Hydrogen
- The work requirement for a reciprocating compressor is minimum when the Compression process is....
 - Isothermal process
 - Isentropic Process
 - Polytropic Process
 - Adiabatic Process
- The pressure at the inlet of a refrigerant compressor is named as.....
 - Suction pressure
 - Discharge pressure
 - Critical pressure
 - Back pressure
- The coefficient of performance is always.....
 - Equal to one
 - Less than one
 - Greater than one
 - None of (a, b & c)
- A vortex type of agitation is done in.....process.
 - Schmid nitration
 - Biazzi nitration
 - Electrolysis
 - None of (a, b & c)
- Which of the following is used as a catalyst in preparation of monochloroacetic acid?
 - Phosphorous trichloride
 - $AlCl_3$
 - $FeCl_3$
 - None of (a, b & c)
- Which catalyst is the most commonly used catalyst in oil hardening?
 - Ni
 - Al
 - Cu
 - Co
- Which of the following is not a hydrolysis agent?
 - Benzene
 - Water
 - Water & Acid
 - Water & Alkali

Q.2 Answer the following short question (Any 10 out of 12).

(20)

- Define Hardness of water. Write units of hardness.
- Write the name any two Coagulants.

[1]

(P.T.O.)

3. Define the term calorific value. Write units of Calorific value.
4. Name the gases dissolved in water which are responsible for corrosion.
5. Distinguish between diesel engine and petrol engine.
6. Enlist name of any four halocarbons used as refrigerants.
7. Write the function of H_2SO_4 in mixed acid.
8. Write the mechanism of Nitration.
9. Write the uses of Sulfonates and sulphates.
10. Define term esterification and write suitable examples.
11. Why chromic acid is used as a oxidizing agent?
12. Enlist various examples of hydrolysis reactions.

Q.3 Answer the following long question.

[10]

[A]. Describe the comparison between solid, liquid and gaseous fuels.

[B]. With the help of labelled diagram explain construction of bomb calorimeter.

Or

[A]. Write a note on bomb calorimeter.

[B]. Explain ideal characteristic of good fuel.

Q.4 Answer the following long question.

[10]

[A]. Explain about single stage single acting reciprocating compressor with suitable diagram.

[B]. Write a note on simple vertical Boiler.

Or

[A]. Write classification of Boilers.

[B]. Write note on "power required to drive single stage reciprocating compressor".

Q.5 Answer the following long question.

[10]

[A]. Write down manufacturing process for aniline by Bechamp reduction.

[B]. Write note on "Oxy-nitration".

Or

[A]. Write manufacturing of nitrobenzene by continuous process using fortified spent acid.

[B]. Write note on "Biazzinitrator".

Q.6 Answer the following long question.

[10]

[A]. Write a note on types of oxidative reactions.

[B]. With the help of process flow diagram. Explain the manufacturing of Ethyl acetate.

Or

[A]. Discuss the manufacturing of Ethyl acetate with suitable flow diagram.

[B]. Discuss the commercial manufacturing of Benzene sulfonic acid.