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Sardar Patel University

B. Sc. (Semester III) Examination

Date: 5-01-2021, Tuesday

Time: 2:00 – 4:00 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)

1. Temporary hardness in water can be removed by.....

A. Filtration	C. Sedimentation
B. Boiling	D. None of these
2. Scale formation in boilers causes...

A. No loss of heat	C. Increase in efficiency
B. Wastage of heat	D. None of Above
3. Blow-down operation causes removal of....

A. Scales	C. Both (a) & (b)
B. Sodium carbonate	D. Hot water only
4. The work requirement for a reciprocating compressor is minimum when the Compression process is....

A. Isothermal	C. Polytropic
B. Isentropic	D. Adiabatic
5. The heat removing capacity of one tone refrigerator is equal to.....

A. 21 kJ/min	C. 420 kJ/min
B. 210kJ/min	D. 620 kJ/min
6. The coefficient of performance is always.....one.

A. Equal to one	C. Greater than
B. Less than	D. None of these
7. What do we denote Nitric ratio as?

A. N	C. R
B. n	D. r
8. Amination by reduction involves the synthesis of what by reductive methods?

A. Toluene	C. Amines
B. Phenols	D. Alkyl
9. Which of the following is used as a catalyst in preparation of monochloroacetic acid?

A. Phosphorous trichloride	C. AlCl ₃
B. FeCl ₃	D. None of these
10. Benzoyl peroxide is obtained by reacting a.....

A. 2C ₆ H ₅ COCl + Na ₂ O ₂
B. 2C ₆ H ₅ CH ₂ COCl + Na ₂ O ₂
C. 2C ₆ H ₅ CH ₂ Cl + Na ₂ O ₂
D. 2SO ₂ Cl + Na ₂ O ₂

[1]

[P.T.O.]

Q.2 Are the following statements true or false? (All are compulsory) (08)

1. In the bathing hard water doesn't leather freely with soft solution.
2. In the major boiler troubles due to high steam velocity and high-water level.
3. Heat is constant throughout the system is called as adiabatic condition.
4. Compressors are used for to decrement in pressure in gases.
5. Batch process is more efficient labor user than continuous process?
6. Does wall jacket, provide control of temperature in a reactor?
7. Oxygen is more electropositive than carbon.
8. Hydrolysis involves both oxidation and reduction.

Q.3 Answer the following short questions (Attempt Any 10 out of 12) (20)

1. Name any two Coagulants.
2. Name the impurities present in natural water.
3. Name the gases dissolved in water that cause corrosion.
4. Enlist inorganic refrigerants
5. Enlist name of any four halocarbon refrigerants
6. Enlist name of any four azeotrope refrigerants
7. Define term Nitration and give its mechanism.
8. Outline the function of H_2SO_4 in mixed acid
9. Enlist the effects of nitrous acid on nitration.
10. Define term transesterification.
11. Enlist various examples of hydrolysis reactions.
12. Give mechanism of hydrolysis type BAC2.

Q.4 Answer the following Long questions (Attempt Any 04 out of 08) (32)

1. Explain characteristic of good fuel
2. With the help of labelled diagram explain construction and working of bomb calorimeter.
3. Write note on "Power required to drive single stage reciprocating compressor".
4. Explain in detail simple vertical Boiler.
5. Write note on "Oxy-nitration".
6. Write note on "Biazzi nitrator".
7. Discuss the commercial manufacturing of Benzene sulfonic acid.
8. Giving flow diagram discuss the manufacturing of Ethyl acetate.

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