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SEAT No. \_\_\_\_\_

No. of Printed Pages : 2

# Sardar Patel University

B. Sc. (Semester – IV) Examination

Date: 7<sup>TH</sup> April, 2018, Saturday.

Time: 10:00 to 01:00pm

Industrial Chemistry Vocational

COURSE NO: US04CICV01 (PLANT UTILITIES)

Notes: Figures to the right indicate full marks.

Total marks: 70

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

1. Purest form of natural water is \_\_\_\_\_.
  - a. river water.
  - b. rain water.
  - c. sea water
  - d. lake water.
2. Purest form natural water is \_\_\_\_\_.
  - a. calcium chloride
  - b. both a & b
  - c. magnesium Chloride
  - d. none of these.
3. Temporary hardness in water can be removed by \_\_\_\_\_.
  - a. filtration
  - b. sedimentation
  - c. boiling
  - d. none of these
4. A good fuel should possess \_\_\_\_\_.
  - a. high ignition temperature
  - b. high calorific value
  - c. moderate ignition temperature
  - d. both (b) and (c)
5. Bomb calorimeter is used for determining the calorific value of \_\_\_\_\_.
  - a. solid fuel
  - b. gaseous fuel
  - c. liquid fuel
  - d. both a & b
6. Which of the following gas is used for the fire extinguishers?
  - a. Nitrogen
  - b. Oxygen
  - c. Carbon dioxide
  - d. Hydrogen
7. The Freon group of refrigerants are \_\_\_\_\_.
  - a. halo-carbon refrigerants
  - b. inorganic refrigerants
  - c. azeotrope refrigerants
  - d. hydro-carbon refrigerants
8. The refrigerant supplied to compressor must be \_\_\_\_\_.
  - a. superheated vapor refrigerant
  - b. a mixture of liquid and vapor refrigerant
  - c. dry saturated liquid refrigerant
  - d. none of these
9. The Engine which use petrol as a fuel is known as \_\_\_\_\_.
  - a. Otto engine
  - b. Diesel engine
  - c. Steam engine
  - d. Gas engine
10. Which of the following is not a fire tube boiler?
  - a. Simple vertical
  - b. Lancashire
  - c. Locomotive
  - d. Cochran

(1)

(P.T.O.)

Q.2 Answer the following short questions, (Any TEN) (20)

1. Name the chief sources of water.
2. Distinguish between hard water and soft water.
3. Why water is softened before using in boiler?
4. Define a chemical fuel.
5. Define critical temperature and critical pressure.
6. Write the industrial applications of CO<sub>2</sub> gas.
7. Enlist the classification of compressors.
8. Give the advantages of multi-stage compression over single stage compression.
9. Enlist name of any four halocarbon refrigerants.
10. Enlist the various types of fuel used in internal combustion engine.
11. Enlist the functions of boiler.
12. Give the function of safety valve in boiler.

Q.3.a. Write a note on scale formation. (05)

b. Explain about feed water conditioning. (05)

OR

Q.3. With the help of labelled diagram explain. (10)

a. Hot lime soda process

b. Zeolite process

Q.4.a. Explain advantages of solid, liquid and gaseous fuels over each other. (05)

b. Explain classification of fuel in detail. (05)

OR

Q.4.a. With the help of labelled diagram explain construction and working of bomb calorimeter. (05)

b. Explain characteristic of good fuel. (05)

Q.5. Explain with the help of neat sketch, work done by single stage, single acting reciprocating compressor without clearance volume (10)

OR

Q.5. With the help of P-V diagram explain work done by reciprocating compressor with clearance volume. (10)

Q.6.a. Explain the boiler or steam generator with its principle and function in detail. (05)

b. With the help of neat and labelled diagram explain construction and working of simple vertical boiler. (05)

OR

Q.6.a. Explain in detail classification of boilers. (05)

b. Differentiate between petrol engine and diesel engine. (05)

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