

**A**

**Reg. No. :**

--	--	--	--	--	--	--	--	--	--

**Question Paper Code: 59920**

B.E./B.Tech. DEGREE EXAMINATION, NOV 2018

Elective

Chemical Engineering

15UCH920 – PROCESS PLANT UTILITIES

(Steam table and Psychrometry chart is permitted)

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Soft water contains CO1- R
  - (a) Calcium (or) magnesium
  - (b) Sodium (or) potassium
  - (c) Sodium (or) magnesium
  - (d) Calcium(or) potassium
  
2. Which of the following is not a use of reverse osmosis? CO1- R
  - (a) Treatment of industrial waste water to remove heavy metal ions
  - (b) Separation of sulfites and bisulfites from paper and processing industry effluents
  - (c) Treatment of municipal water to remove inorganic salts
  - (d) Treatment of industrial effluents to decolorize it
  
3. The working pressure of boiler is CO2- R
  - (a) 25 psi
  - (b) 50 psi
  - (c) 75 psi
  - (d) 100 psi
  
4. Superheater is used to CO2- R
  - (a) reducing the condensation losses in steam
  - (b) increasing the condensation losses in steam
  - (c) both a & b
  - (d) none of these

5. One tonne of refrigeration is equal to CO3- R
- (a) 21 kJ/min                      (b) 210 kJ/min                      (c) 420 kJ/min                      (d) 620 kJ/min
6. Whichh of the following refrigerant is highly toxic and flammable? CO3- R
- (a) ammonia                      (b) carbon dioxide                      (c) sulphur dioxide                      (d) freon-12
7. The pressure of centrifugal compressor is CO4- R
- (a) 0.8 to 12 bar                      (b) 12 to 700 bar                      (c) 0.8 to 24 bar                      (d) 0.1 to 450 bar
8. For summer air conditioning, the relative humidity should not be less than CO4- R
- (a) 40%                      (b) 60%                      (c) 75%                      (d) 90%
9. Anthracite coal contains \_\_\_\_\_ % of carbon CO5- R
- (a) 75                      (b) 92                      (c) 80                      (d) 67
10. The petrol engine works on CO5- R
- (a) tto cycle                      (b) joule cycle                      (c) diesel cycle                      (d) carnot cycle

PART – B (5 x 2= 10Marks)

11. List the methods available for softening of water. CO1- R
12. What is the purpose of steam traps? CO2- R
13. Define Ton of refrigeration CO3- R
14. Classify the compressors. CO4- R
15. Compare between petrol and diesel engine. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Explain the lime- soda process for water softening. CO1-U      (16)
- Or
- (b) Explain the effects of impurities in boiler feed water. How are they removed and how is the boiler feed water prepared? CO1-U      (16)

17. (a) Explain the construction and working of the Babcock and wilcox boiler. CO2-U (16)
- Or
- (b) List the different types of accessories. Explain the pressure reducing valve with neat sketch. CO2-U (16)
18. (a) Explain the vapor- absorption refrigeration cycles with neat sketch. CO3-U (16)
- Or
- (b) Discuss the chlorofluoro carbon refrigerants and its applications. CO3-U (16)
19. (a) Explain the working of two stage air compressor and point out the merits of multistage air compressor. CO4-U (16)
- Or
- (b) Compare the performance of reciprocating & rotary compressors. CO4-U (16)
20. (a) Explain the performance of spark ignition internal combustion engines with neat sketch. CO5- U (16)
- Or
- (b) Describe the manufacture liquefied petroleum gas and producer gas. CO5- U (16)

