

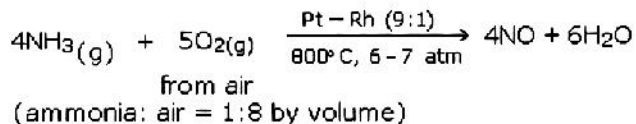
BACHELOR OF CHEMICAL ENGINEERING EXAMINATION, 2017**(3rd Year, 1st Semester)****CHEMICAL TECHNOLOGY - I**

Time: Three hours

Full Marks: 100
(50 marks for each part)**Use a separate Answer-script for each part****Part I**Answer ***any ten*** questions

10×5

1. Process water is DM water but need not be de-aerated. Justify.
2. What are the advantages and disadvantages of using recovered condensate as boiler-feed water?
3. How the presence of oil and grease create problems in boiler-feed water? Wherefrom oil and grease come into boiler-feed water?
4. Is it necessary to filter exit gases from sulphur burner? Why?
- 5.



For the above reaction air is added in far higher proportion than needed by stoichiometry. Why?

6. Mention the steps to produce dry fertilizer from the solution in which it was produced in the fertilizer plant.
7. The same catalyst is used for both primary/secondary reformer and methanation reactions in the steam reforming process whereas the reactions are just the opposite, How is it possible?
8. Briefly discuss the ammonia synthesis loop which produces ammonia from stoichiometric proportions of nitrogen and hydrogen.
9. In Ammonium phosphate manufacture generally three neutralizers are used in series each being separately fed with liquid ammonia and fresh phosphoric acid along with the effluent of the previous neutralizer. Why?
10. Briefly discuss the Leaching process for the manufacture of potassium chloride fertilizer.
11. In paint formulation, the vehicle can act as a binder but a binder will not act as vehicle. Comment.

PART – II (50 marks)**Use separate answer script for each part****Answer ALL the questions****All question carry equal marks**

1. Describe the process along with neat flowsheet of production of Sulfuric acid by Contact process.
 2. a) Explain the fundamental steps of ammonia oxidation process for production of nitric acid.
b) Draw a neat flowsheet for the production of urea from ammonia and CO_2 .
 3. What do you mean by Triple superphosphate. Describe the production of Triple superphosphate using a process flow diagram.
 4. a) Describe the advantages and disadvantages of Kraft process to produce paper from pulp.
b) What is lignin? Explain the effects of presence of lignin in paper making process.
c) What do you mean by 'Cooking process' in paper manufacturing?
 5. What is cement? What is the difference between hydraulic and non-hydraulic cements? Explain the chemistry of hydraulic cements used in construction.
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