

**IV B.Tech I Semester Regular Examinations, November 2005**  
**TECHNOLOGY OF PHARMACEUTICALS AND FINE CHEMICALS**  
**(Chemical Engineering)**

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
All Questions carry equal marks

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1. (a) Explain the principle, reaction involved and the technique of Limit test for Iron [8]  
(b) Give reasons for the followings. [2x2=4]
  - i. A small hole is made near the lower tip of the tube carrying arsine gas to mercuric chloride paper in the apparatus used for arsenic limit test
  - ii. Residual solvents are one of the common impurities in pharmaceuticals
- (c) What happens when [2x2=4]
  - i. Arsine gas is allowed to fall on a filter paper impregnated with mercuric chloride
  - ii. Dithisone is treated with lead salt
2. Discuss the manufacturing of riboflavin in brief. Enlist its important uses? [16]
3. Discuss the testing method for safe use of procaine hydrochloride. Enlist its important uses? [16]
4. Enlist important raw materials required for the production of penicillin. List various parameters and their effects on the properties of penicillin produced. [16]
5. With a flow sheet explain the manufacturing process of phthalic anhydride from naphthalene. [16]
6. Explain the sugar coating process for tablets. Comment its merits and demerits. [16]
7. By means of a neat graph discuss the general pattern of the Performance Indicators of Sterility Efficiency as a function of Temperature for different types of sterilization. [16]
8. Draw the diagram of a hot air oven. Describe the principle of its function. Describe the different cycles employed for sterilization of containers using hot air oven. [16]

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1. (a) Explain the principle, reaction involved and the technique of Limit test for Iron. [8]  
(b) Explain the principle, reaction involved and the technique of Limit test for Chloride. [8]
2. Discuss important properties and status of riboflavin in pharmaceutical industry? [16]
3. Discuss in brief manufacture of paraamino salicylic acid. Enlist important process conditions? [16]
4. Give the flowsheet for manufacture of penicillin G by Deep-Tank Fermentation method. [16]
5. With flowsheet explain the manufacturing process of benzene sulfate. [16]
6. (a) Define the term extraction. What preparations are available as extracts.  
(b) With a sketch of Soxhlet apparatus, describe the hot percolation process. [8x2=16]
7. (a) Mention the normally used terminology in describing the ACCEPTABLE standards for Sterilization Procedures. [8]  
(b) Describe the Methods of RISK connected with the sterilization processes. [8]
8. Describe with diagram, the process of sterilization by filtration. What the advantages and disadvantages of such method. [16]

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1. (a) Explain the principle, reaction involved and the technique of Limit test for sulphate [8]  
 (b) Complete the following equations [4x2=8]
  - i.  $HAsO_3 \xrightarrow{Zn/HCL}$
  - ii.  $Fe^{3+} + HS - CH_2 - CHOOH \longrightarrow$
  - iii.  $Pb^{2+} + C_6H_5N = NCSNHNHC_6H_5 \longrightarrow$
  - iv.  $Fe^{2+} + HS - CH_2 - CHOOH \xrightarrow{\text{in alkaline pH}}$
2. Discuss past, present and future status of sulfacetamide in pharmaceutical industry. Stress consumption and economic aspects? [16]
3. What is the status of procaine hydrochloride in pharmaceutical industry? Enlist its important properties? [16]
4. Give various unit operations that are involved during the manufacture of ferric ammonium citrate. List important properties of above. [16]
5. Discuss the manufacture of phthalic anhydride in brief. Enlist important reactions and process conditions. [16]
6. What are the defects identified in film coating process of tablets. State their correctional methods. [16]
7. Draw the diagram of a pressure cooker. Label the parts. Describe how it can be utilized for sterilization of food and drug products? [16]
8. Mention the different gases used for sterilization. Discuss how gaseous sterilization can be used for sterilization of premises in filling rooms and for pharmaceutical accessories. [16]

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1. (a) Give reasons for the following. [4x2=8]
  - i. Stannated hydrochloric acid is used in the Limit test for Arsenic.
  - ii. Ammonia is used in the limit test for Iron
  - iii. Barium chloride is used in Sulphate limit test.
  - iv. Silver nitrate is used in Chloride limit test.
- (b) What happens when (explain with reaction): [4x2=8]
  - i. Arsine gas is allowed to fall on a filter paper impregnated with mercuric chloride
  - ii. Hydrogen sulphide is treated with lead acetate
  - iii. Ferric ion is treated thioglycolic acid
  - iv. Dithisone is treated with lead salt
2. Compare the consumption and economical aspects of sulfacetamide and Paracetamol in pharmaceutical industry? [16]
3. Discuss the manufacture of fluorescence in brief. Enlist various parameters and process conditions and discuss in brief. [16]
4. Enlist therapeutic of aspirin and Penicillin. Give general ailments that are treated by above. Compare the status of above two in the pharmaceutical industry. [16]
5. Discuss various properties, uses and testing of phenol flourobenezene. [16]
6. Discuss the various methods involved in the manufacture of tablets. [16]
7. (a) What is meant by an aseptic technique ? [8]  
(b) What are the common sources of contamination and their effects ? [8]
8. Draw the sketch of an aseptic room for filling parenteral products. What are the essential features of such facility? How is microbial bio burden of such facility tested? [16]

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