

**BACHELOR OF PRINTING ENGINEERING EXAMINATION, 2009**

(3rd Year-2nd Semester)

**INK TECHNOLOGY**

Time: Three hours

Full Marks: 100

**Answer any five questions.**

1. Differentiate between (any five): 5x4
  - (a) Pigment and Dye stuff
  - (b) Drying time and Setting time
  - (c) Liquid ink and Paste ink
  - (d) Cold set and Quickset drying
  - (e) Drying oil and Mineral oil
  - (f) Heatset and Quickset drying
  
2. (a) What are the factors that determine the choice of solvent in ink? Classify solvents with one example each 8
  - (b) What happens when rosin is heated with an oil reactive pure phenolic resin at 150°C? 4
  - (c) Define iodine value of an oil. Based on Iodine value how oils are classified? Which classes of oils are generally used to make paste ink? 4
  - (d) Write down the function of resin. What are the advantages of synthetic resin over natural resins? 4
  
3. (a) What are the stages through which a printing ink is manufactured? 2
  - (b) Briefly describe a Microflow mill. 2
  - (c) What are the advantages of 3-roll mill? 4
  - (d) Write down the advantages and disadvantages of Ball mill. 4
  - (e) Describe briefly a typical cooking cycle that takes place during the manufacture of high gloss varnish used in a lithographic ink. 8
  
4. (a) Write down the advantages of UV curing system. 4
  - (b) Why short wave IR is preferred for letterpress and lithographic ink curing system but not for flexography? 3
  - (c) Write down the advantages of IR curing system. 4
  - (d) Why longer wavelength of Infrared is not generally used in IR curing system? 3
  - (e) Write about vegetable oil based black inks used in coldest web offset. 3
  - (f) Briefly describe oxidation drying mechanism. 3
  
5. (a) What are the ink properties that are affected by particle size of pigment? How particle size of pigment can be measured? 4
  - (b) Describe how press performance test of oil ink is done? 6
  - (c) How the melting range of resin can be measured? 5
  - (d) Define drying time. What are the factors which affects drying time? 5
  
6. (a) Why flexographic and gravure inks are supplied at a higher viscosity than required for the press by the ink makers? 3
  - (b) Why dilatants inks are not suitable for letterpress and offset process? 4
  - (c) What is set off problem? What are factors which influence set off? 4
  - (d) What is picking problem and how it occurs? 4

[ Turn over

- (e) Why additives are used in printing ink? Describe the functions of wetting agents, stiffening agents and antiskinning agents. 5
7. (a) What is paste ink? Why is it used in lithography and letterpress printing? 5  
(b) Briefly describe thixotropy phenomenon of ink. 5  
(c) Write down the physical characteristics of resins and their influence on printing ink. 10
8. Write short notes on: (any five) 5x4  
(a) Cavitation mixer  
(b) Fugitive ink  
(c) Continuous inkjet inks  
(d) Disperse dyes  
(e) Plasticizer  
(f) Scumming  
(g) Chill-roller marking
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