

10. a) Explain any 2 categories of offset inks. 5
- b) Write down basic ink formulation for typical heat set ink. 5
- c) Name few vegetable based ink oils used for ink formulation. 2
- d) What are the characteristics of 'technical white oils' ? 3

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B. PRINT. ENGG. FINAL EXAMINATION, 2008

1st Semester

COMPARATIVE PRINTING THEORY

Time : Three hours

Full Marks : 100
(50 marks each part)

Use a separate Answer-Script for each part.

PART-I

*Answer any **three** questions.*

(2 marks for neatness)

1. a) Deduce the rheological equation for a visco-elastic substance.
- b) Differentiate between shear thinning and shear thickening substances. Mention their rheological equations.
- c) Mention the characteristics of thixotropic substance. How does it differ from false-bodied material ? 4+6+6
2. a) State the principle of co-axial cylindrical viscometer with neat sketch.
- b) Deduce the basic functional relationship when a solid circular roller of finite radius is rotating in an infinite fluid.

6+10

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(2)

3. Determine the velocity distribution when a highly dilatant type substance is flowing through a capillary tube and also show the variation of rate of deformation along the radius for the above. 16
4. Describe the principle of cone and plate type viscometer. How can you draw the rheogram of printing ink using this principle ? 16
5. a) Why dilatant substances are useless as lithographic ink ?
b) Which type of viscometer is convenient to ink manufacturer's requirement and why ?
c) Distinguish between 'poise' and 'stokes'.
d) Explain the normal stress effect of visco-elastic substances. 4x4

PART-II

Answer any **three** questions.

5 marks for 'to-the-point' answers.

6. a) Lithography falls under which category of printing and why so ? 3
b) What is the 'one-line principle' of lithographic process ? 2

(3)

- c) Demonstrate a offset lithographic press with simple diagram. Why the term 'offset' is used ? 10
7. a) Write any 3 differences between sheet-fed offset and web offset. 3
b) Explain 'blanket to blanket perfecter press' configuration with diagram. 6
c) Explain 'common impression drum press' configuration with diagram. 6
8. a) What is PS plate ? Explain the construction of PS plate and its usage. Name any 2 manufacturers of PS plates. 2+5+2
b) What is 'wipe-on' plate ? What is basic difference between 'wipe-on' and 'PS' plate ? Explain the treatment needs to be involved before using 'wipe-on' plates. 2+1+3
9. a) What is 'dot-gain' ? Explain using cross sectional view of a dot. 3
b) How is it measured using Murray-Davies Equation ? 3
c) Why 'Yule-Nielsen' equation was introduced ? How 'dot gain' is measured using 'Yule-Nielsen' equation ? 8
d) What is the general range for the value of 'n' ? 1

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