

Ex/PT 31B/34/2006

B. PRINTING ENGG. PART-I EXAMINATION, 2006

(1st Semester)

MATERIAL TESTING

Time : Three hours

Full Marks : 100

(50 marks for each part)

Use a separate answer-script for each part.

PART—I

Answer question no. 1 and any *two* from the rest.

1. Differentiate between (any *five*): 2 × 5=10
 - (a) Short term ink testing and Long term ink testing
 - (b) Quickset and Heatset inks
 - (c) Mechanical dot gain and Optical dot gain
 - (d) Hue error and grayness
 - (e) Pigment and dyestuff
 - (f) Blocking and Set-off
 - (g) Slurring and Doubling.

2. What are the properties tested by following instruments and how these are measured ? 5 × 4=20
 - (a) Hegmann Gauge
 - (b) Prafbau Lithomat
 - (c) Inkometer
 - (d) Duke Tester.

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3. (i) Define 2×5= 10
- (a) Ink misting
 - (b) Thixotropy
 - (c) Set-off
 - (d) Print Contrast
 - (e) Dot gain.
- (ii) What happens when 2×5=10
- (a) Film-to-film frictional co-efficient is too low.
 - (b) Offset papers are kept in too damp atmosphere
 - (c) Offset papers contain water soluble material
 - (d) pH of water-based ink is too high
 - (e) A glass rod is first immersed in a solution containing epoxy resin and is streaked on to a filter paper.
4. (a) A gravure ink has the following ingredients :
Carbon Black, Acrylic Resin, Wax, Plasticiser.
Describe how the ingredients can be separated and
quantified by ink extraction scheme. 10
- (b) How falling bar viscometer is used to measure
viscosity of paste inks ? What are the factors on
which ink misting depends ? 6 + 4=10
5. (a) How cylinder wear is measured for gravure ink ?
- (b) How the drying time of litho ink is measured ?
 - (c) What are the factors on which drying time of litho
ink depends ?

(3)

- (d) How slip or static co-efficient of film-to-film is measured ?
- (e) How can you identify ROSIN ?
- (f) What will be the hue error and grayness of a cyan print whose $D_r = 1.46$, $D_a = 0.25$ and $D_b = 0.09$.

4+2+4 + 4+2 + 4=20

PART—II

Answer question no. 6 and any *two* from the rest.

- 6. (a) What tests are done by the following instruments :
 - (i) Disc centrifuge
 - (ii) Grind gauge
 - (iii) Abel apparatus
 - (iv) Aniline point tester. 4
 - (b) What is bleach technique used in pigment testing ? 2
 - (c) How is viscosity of ink measured ? 2
 - (d) If the colour of oil or varnish darkens, what does it indicate ? 2
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- 7. (a) What is smoothness of paper ? What factors affect smoothness ? How is it measured ? 9
 - (b) Differentiate between iodine value and diene value. 4
 - (c) Why melting range of resin is measured and How is it measured ? 7

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(4)

8. (a) How is acid value of a resin tested ? 4
- (b) Write a note on IR spectroscopy. 6
- (c) What are the characteristics needed in online instruments for measurements of paper properties ?
What properties are tested online ? 10
9. (a) Define :
- (i) Bursting strength of paper
- (ii) Viscosity of ink. 8
- (b) How are the following properties measured online
- (i) Moisture content of paper
- (ii) Grammage. 6
- (c) What is refractive index of a solvent ? How is it measured ? 6
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