

**M. Tech in Printing Engineering and Graphic Communication Examination, 2024**  
**(1<sup>st</sup> Year - 1<sup>st</sup> Semester)**

**Printing and Packaging Material Technology**

Time : Three hours    **Use separate answer script for this part**

Full Marks : 100

**Answer 50 marks**

**Part - I**

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

1. (a) Write short notes on (i) Cast coated paper (ii) Book wove paper (iii) Neutral sized paper (iv) MF Paper. 12  
(b) Describe the construction of FBB with proper diagram. Explain its usage in packaging. 4  
(c) What is bleached mechanical paper? What are their specific uses? What is the other alternative of this kind of paper? 4
2. (a) Packaging must meet the needs of society in a sustainable way –How? 5  
(b) Write down the negative aspects of combining paper with other materials? How the issues can be resolved? 5
3. (a) Write about the functional packaging requirements. Write about the factors based on which packaging requirements can be identified. 5  
(b) Write about the protective functions of foil coatings. Name one heat seal coating used in foils. 5
4. (a) 'Sustainable development can be thought of as three legged stool' –Explain. 3  
(b) Write two examples of Styrene copolymers. Write their usage in packaging industry. 4  
(c) Write the advantages and disadvantages of bio-based polymers used in packaging industry with examples. 3
5. (a) Describe the configuration and processing of solid-sheet photopolymer flexographic plates. 7  
(b) What does organic recycling mean? 3

**M.TECH. PRINTING ENGINEERING AND GRAPHIC COMMUNICATION FIRST  
YEAR FIRST SEMESTER – 2024**

**PRINTING AND PACKAGING MATERIAL TECHNOLOGY**

Time : Three hours

Full Marks : 100

Use separate answer-script for each Part.

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

**PART - II**

1.a) Determine the footage of a roll of substance 55 book, with caliper 0.003 inch and a roll diameter of 36 inches, that is wound on a 3-inch metal core. 3

b) Determine the quantity of each colour of ink that prints 14,000 copies of a 16-page booklet on a lithographic offset press. Type page size is 5 inches x 8 inches. All 16 pages will print with black ink at 35 percent coverage, 8 pages will print with a second colour, magenta, at 25 percent coverage, and 6 more pages will run in cyan at 20 percent coverage. Add 3 percent per colour for ink waste and also consider ink mileage 375,000 square inches per pound of ink for black, 325,000 square inches per pound of ink for magenta, and 310,000 square inches per pound of ink for cyan. 7

2.a) Which basic factors should one keep in mind during impact printing ink formulation? Discuss briefly. 2+9=11

b) Explain the quickset drying mechanism for lithographic inks. 6

c) Why finest ink film thickness is produced in offset lithography in comparison to other printing processes? 3

3.a) Which features are important for pigments & dyes, resins and solvents in gravure inks?

4+3+3=10

b) What are the main ingredients of flexographic ink? Write down the formulation of flexographic paper ink.

1+4=5

c) Explain the salient features of screen printing ink.

5

4. Write short notes on the following.

5x4=20

a) Metallic ink

b) Security ink

c) Phosphorescent ink

d) Thermochromic ink