

**M.TECH. PRINTING ENGINEERING AND GRAPHIC COMMUNICATION FIRST
YEAR FIRST SEMESTER – 2025**

PRINT PROCESS ENGINEERING

Time : Three hours

Full Marks : 100

Use separate answer-script for each part.

Answer *question no. 1* and **one** from each group.

PART - I

Group – A

- 1.a) Mention the main sections of screen printing machine. 3
- b) Explain the principles of flexographic printing process with necessary sketches. 4
- c) What are the characteristics of prints produced from gravure printing? 3

Group – B

- 2.a) How will you prepare flexographic plates by laser engraving method? 10
- b) Describe the process sequence for the preparation of copper cylinder. 6
- c) Write notes on screen fabrics used for stencil preparation. 4

OR

- 3.a) How are screen printing and ink-jet printing being combined to create more cost-effective and efficient manufacturing solutions? 10
- b) With increasing demand for eco-friendly packaging, what technological advancements in flexographic printing can enhance sustainability? 5
- c) How can real-time ink viscosity monitoring systems improve gravure printing efficiency and reduce defects? 5

[Turn over

Group – C

- 4.a) What are the three major differences between water based and plastisol inks in screen printing in terms of durability, eco-friendliness and drying requirements? 3
- b) Explain the various considerations to be made while selecting suitable anilox rollers. 5
- c) Describe the working principles and functioning of gravure solvent recovery system. 7
- d) Explain carousel printing machine. 5

OR

- 5.a) What are the challenges in multi-colour registration in screen printing and how they can be minimized? 5
- b) How do modern in-line inspection systems contribute to reducing defects in flexographic printing? 5
- c) What are the biggest limitations of flexographic printing in the packaging industry and how can they be overcome? 5
- d) Discuss how replacing chrome-plated cylinders with nano-coated cylinders impacts print quality and cylinder durability. 5

M. Tech in Printing Engineering and Graphic Communication Examination, 2025

(1st Year - 1st Semester)

Print Process Engineering

Use separate answer script for this part

Answer 50 marks

Part - II

Answer question no. 3 and any three from the rest.

1. (a) 'There are special techniques available to the printer to produce unique effects on fabric' – Explain any three of them stating their technique with pros and cons. 6
 (b) What is the best practical way to measure the plate exposure? Explain in details. 4

2. (a) 'The success of Inkjet printing in the field of printed electronics is attributed to functional, printable inks' – Explain with example. 6
 (b) 'Surface water greatly decreases ink tack' – Explain. 4

3. (a) 'Electrical conductivity of dampening solution normally increases during the press run' – Explain the situation comparing ideal and increased conditions? 5
 (b) Write down the effect of pH and relative humidity on ink drying on coated and uncoated paper. 5
 (c) What is ink trapping? What are the ways by which ink trap values can be calculated? Suppose a four color process reproduction was printed in a MCYK sequence. The trap value of the blue overprint would have to be determined using red densitometer filter values. If these red filter values are blue 1.09, cyan 1.29 and magenta 0.12. Calculate Ink trap value using preucil method. 10

4. (a) Write down the operating procedure of offset inking system with adjustment of the relevant components. 6
 (b) Make a comparative study between resist printing and discharge printing applied for textile printing. 4

5. (a) 'When working with variable data documents, there are special layout considerations' - Explain with their advantages and challenges. 4
 (b) What is PPML? Classify. Explain each classification with their pros and cons. 6