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# MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

*A Constituent Institution of Manipal University*

## I SEMESTER M.TECH. (PRINTING AND MEDIA TECHNOLOGY)

**END SEMESTER EXAMINATIONS, NOV 2017**

**ADVANCED PRINTING MATERIAL TECHNOLOGY [PME 5104]**

**REVISED CREDIT SYSTEM**

**(18/11/2017)**

Time: 3 Hours

MAX. MARKS: 50

### Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitable assumed.

- 1A.
  - i. What is a vinyl plastisol? Describe the dip coating method for vinyl plastisol.
  - ii. Describe the method of exposure used for a solid photopolymer plate.
- 1B.
  - i. Explain the advantages (Four) of UV curable ink.
  - ii. What do you mean by the term glazed roller? Describe the method cleaning of a glazed roller.
- 1C.
  - i. What happens when the ink absorbency of paper is too low or high? Explain.
  - ii. "Copper is the most suitable metal for the image areas of litho plates." Justify the statement.

**[ 02 + 04 + 04 ]**

- 2A.
  - i. Describe the structure of a waterless litho plate with a neat diagram.
  - ii. Explain the security features provided by:
    - a) Metameric pair ink
    - b) Photochromic ink
- 2B.
  - i. List the characteristic features of Carboset GA-33. Give their applications.
  - ii. Describe the chemical pre-treatment process carried out on plastic films as printing substrates. Mention the purpose of this process.
- 2C. What are photographic intensifiers? Explain the mechanism of their action.

**[ 02 + 04 + 04 ]**

- 3A.
  - i. Explain the effect of exposure on a positive working plate with naphthalene derivatives as light sensitive materials.
  - ii. Discuss the general formulation and performance behavior of a high gloss overprint varnish.

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- 3B.** i. Explain the effect of over exposure on positive and negative working plates.  
 ii. Explain the physical properties and chemical resistance properties of vinyl plastisol's.

**3C.** Explain how the quality of a liquid photopolymer plate can be improved?

**[ 02 + 04 + 04 ]**

- 4A.** i. What do you mean by the term direct photographic stencils? Discuss on the types of photosensitive materials used in direct photographic stencils.  
 ii. Explain the following properties of paper. How these properties can be improved?

**a)** Printing opacity                      **b)** Gloss

- 4B.** i. Explain the special factors that should be considered during printing on aluminium foils.  
 ii. Mention the various factors that should be considered during the selection of a suitable blanket.

**4C.** Describe the method of electrochemical graining of litho plates. Mention its advantages.

**[ 02 + 04 + 04 ]**

- 5A.** i. Explain the various parameters that decides the quality of a good stencil.  
 ii. Give suitable reasons: The addition of a fluorescent optical brighteners improves the brightness of paper.

- 5B.** i. Compare a positive working plate with a negative working plate.  
 ii. Define the following properties of a paper and mention the significance of each:

**a)** Porosity                      **b)** Bursting strength

**5C.** Explain the application of the following chemicals in offset printing:

- a)** Counter etching solution                      **b)** Deep etch developer  
**c)** Deep etching solution                      **d)** Deep etch lacquer

**[ 02 + 04 + 04 ]**