

Reg. No.



Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



I SEMESTER M.TECH (PRINTING AND MEDIA TECHNOLOGY)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: PRINTING MATERIAL TECHNOLOGY [PME 505]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ANY FIVE FULL** questions.
- ❖ Missing data may be suitable assumed.

- 1A.** i) Explain the action of hydrogen peroxide in the bleaching of pulp. **3**
ii) Give suitable reasons: A finished positive plate is usually applied with a prebake solution and then baked.
- 1B.** Give the advantages (any six) of a compressible blanket over a conventional blanket. **3**
- 1C.** i) Explain the following properties of paper and mention their importance. **2**
a) Bursting strength b) Porosity **+**
ii) Explain the basic requirements of a pigment to be used in printing inks. **2**
- 2A.** Explain the steps involved in the exposure and processing of solid photopolymer plates. **3**
- 2B.** Discuss on: **3**
a) Effect of refining on paper properties b) Internal sizing of paper using rosin
- 2C.** i. Explain the following with reference to the recycling of paper: **2**
a) Alkali darkening b) Acid shock **+**
ii. Mention the specific functions of the following as ink additives **2**
a) Surfactants b) Plasticizers c) Antioxidants d) Lubricants
- 3A.** Explain the soft and hard calendering process. Discuss the influence of calendering on paper properties. **3**
- 3B.** What do you mean by the term 'Indirect photographic stencils'? Discuss on the types and method of preparation of indirect photographic stencils. **3**

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- 3C.** i. Explain the significance of the following end use properties of ink: **2**
a) Rub-resistance **b)** Fastness to light & chemicals **+**
- ii. Discuss the structure and the special features of liquid photopolymer plates **2**
- 4A.** Describe the effect of exposure on **3**
a) Negative plates with Photo-insolubilisation coating **b)** Positive plates
- 4B.** What are the different ways by which the following properties of paper can be improved? Explain: **3**
a) Opacity **b)** Brightness
- 4C.** i. Explain the developing process used in the case of silver based photographic film. **2**
+
- ii. Discuss the security features shown by **2**
a) Bleeding ink **b)** Photochromic ink
- 5A.** Explain the mechanism of drying of ink by: **3**
a) Cold setting **b)** Precipitation
- 5B.** What is the purpose of bleaching of wood pulp? Describe the multi-stage bleaching used in the case of sulfate wood pulp. **3**
- 5C.** i. With a neat diagram explain the working principle of an organic photoconductor. **2**
+
- ii. Write the essential requirements (eight) of the surface layer of a blanket. **2**
- 6A.** i. Mention the problems that occur during printing on aluminium foils. Explain the suitable remedies to avoid these problems. **3**
- ii. Give suitable reasons: Anodized aluminium is widely used in place of aluminium for litho plate making.
- 6B.** Discuss the structure of a waterless litho plate and give the function of each layer. **3**
- 6C.** i. Explain the advantages of the chemical pulping process over mechanical pulping process. **2**
+
- ii. Explain the following blanket characteristics and mention their importance. **2**
a) Release property **b)** Hardness