

Reg. No.

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



II SEMESTER M.TECH (PRINTING AND MEDIA TECHNOLOGY)

END SEMESTER EXAMINATIONS, MAY 2016

SUBJECT: PROGRAMME ELECTIVE II ENVIRONMENT MANAGEMENT FOR PRINTING INDUSTRY [PME 530]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

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

- 1A.** Explain the steps involved in the assessment phase of P₂ Program. **3**
- 1B.** Describe the method of recycling of waste ink. **3**
- 1C.** Explain any four possible ways to reduce waste generation by **2+2**
- i. Modification of process in Photo processing unit
 - ii. Mechanical modification in printing unit
- 2A.** What do you mean by the term 'Characteristic hazardous wastes'? Explain **3**
their features.
- 2B.** Explain the pollution prevention strategies (four each) for the following **3**
potential P₂ areas in Press:
- i) Paper ii) Fountain solution iii) Press wash
- 2C.** Explain the advantages (four) of the following as alternative inks in controlling **2+2**
pollution from Printing Industry.
- i) UV ink ii) Water based ink
- 3A.** Illustrate the following benefits of implementation of ISO 14000 EMS **3**
- i) Increased profit ii) Marketing benefits iii) Social benefits
- 3B.** Explain the following and mention the importance of each: **3**
- i) Emergency preparedness and response ii) EMS audit
- 3C.** Discuss on **2+2**
- i. Trickling Filter method for industrial waste water treatment
 - ii. Greenhouse effect- causes & adverse effects

- 4A.** **a)** Define the term 'Environmental Management System' (EMS). What are the potential problem areas that need to be considered in implementing EMS? **2+1**
- b)** Discuss on the causes and adverse effects of 'Acid Rain'
- 4B.** Discuss the stages involved in the life cycle concept of a product. **3**
- 4C.** Discuss on: **i)** Drivers of P₂ program **ii)** Waste stream analysis **2+2**
- 5A.** **a)** Discuss on the constitution and importance of the different segments of an environment. **2+1**
- b)** 'Recycling plays an important role in any printer's waste management program'. Justify this statement.
- 5B.** **a)** List all the possible wastes given out from a flexographic printing process and indicate the hazardous wastes. **2+1**
- b)** Discuss the principle and advantages of reverse osmosis process for silver recovery from photo processing waste.
- 5C.** **a)** Explain the following with example: **2+2**
- i)** Environmental aspects **ii)** Environmental impact
- b)** Explain the strategies for prevention and control of VOC emissions from Printing Industry as mentioned in the EHS guidelines.
- 6A.** Discuss on the types of chemical hazards in Printing Industry **3**
- 6B.** **a)** Explain the two fundamental approaches to control air pollution. **2+1**
- b)** Mention any four P₂ Strategies that would help in reducing waste from finishing process.
- 6C.** **a)** Define the term 'Environmental policy' and explain the criteria for defining the Environmental policy. **2+2**
- b)** Explain the role of the following in controlling pollution from Printing Industry: **i)** Job planning **ii)** Material handling and storage