



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: ADVANCED PRINTED PACKAGING TECHNOLOGY [PME 502] REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ANY FIVE FULL questions.
- Missing data may be suitable assumed.
- **1A.** With a neat sketch explain the working of screw type injection molding machine **04**
- **1B.** With a neat sketch explain blow and blow glass manufacturing process. **03**
- 1C. Which printing process is preferred to decorate drawn and ironed metal cans? 03Explain such process with neat sketch.
- 2A. Which process is used to manufacture carbonated beverage cans that require 04 thin and long side walls? Explain such process with neat diagram.
- 2B. List the applications of various combinations of Biaxially Oriented 03 Polypropylene.
- 2C. Briefly explain the considerations in developing package for pharmacy 03 products.
- **3A.** Explain the procedure involved in designing a cushioning material. **04**
- **3B.** With neat diagram explain impact extrusion process of manufacturing metal **03** collapsible tube used in cosmetic packaging.
- **3C.** What is Modified Atmosphere Packaging (MAP)? Explain the dynamic gaseous **03** exchange in MAP.





Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



INSPIRED BY LIFE

- 4A. Derive an equation for cushion factor and energy absorbed by expanded 04 polystyrene as a cushioning material for packaging the electronic item for a laboratory requirement.
- 03 **4B.** Name the testing equipment used to evaluate the overall durability of Transport package. Explain its working with neat diagram.
- **4C.** Explain the working of three types of Time Temperature Indicators used in 03 smart packaging systems.
- **5A.** With a neat sketch explain the working of aerosol metal can used in pesticides 04 packaging.
- 5B. What is Environmental Stress Crack Resistance (ESCR) of packaging 03 polymers? Explain the procedure involved in testing ESCR.
- 5C. Explain the methods of labeling and decorating the glass containers. 03
- **6A.** A solar cell manufacturer requires a corrugated box of dimension 460 x 375 x 04 375 mm to carry a gross weight of 25 kg for shipping purpose. The height of one full stack of boxes are 490 cm. All the flutes are made from 130 GSM kraft paper with 1.9 KN/m. All the liners are made from same paper with equal GSM. Which of the following box will be cheaper for given specifications? Take Factor of Safety = 3.

i. 3 ply, B flute box.

ii. 5 ply, B&C combination flute box.

Note: Use two decimal place correction for ECT and RCT values.

- **6B.** Explain the various methods of disposal of package to minimize its 03 Implications on environment.
- **6C.** With a neat sketch explain the stages involved in pressure bubble vacuum 03 forming for shaping plastics.