

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL A Constituent Institution of Manipal University

VII SEMESTER B.TECH. (PRINT AND MEDIA TECHNOLOGY)

END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: PACKAGING TECHNOLOGY II [PME 413]

REVISED CREDIT SYSTEM (23/11/2016)

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 test conducted on transport package to evaluate its structural failure.
- **1B.** With a neat sketch explain the steps involved in extrusion blow moulding process.
- **1C.** With a neat sketch explain automatic application of ungummed labels.

[04+03+03]

- **2A.** With a neat sketch explain the mechanism of color change in time temperature indicators.
- **2B.** Explain the procedure involved in the following tests on package
 - i. Sand and dust test ii. Fungus resistance test
- **2C.** Which type of blow molding process is used to produce plastic container with better clarity and high barrier properties? Explain such process with a neat sketch.

[04+03+03]

- **3A.** Name and explain three atmosphere manipulation techniques in food packaging to increase shelf life.
- **3B.** Explain the permanent corrosion prevention methods in packaging.
- **3C.** Explain three common styles of sealing methods used on form, fill and seal packaging machines with neat sketches.

[04 + 03 + 03]

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- **4A.** With a neat diagram explain the process of pyrolysis for processing packaging waste.
- **4B.** With a neat sketch explain the stages involved in the manufacture of expanded polystyrene.
- **4C.** Explain the working of antimicrobial packaging with neat diagrams.

[04+03+03]

- **5A.** With a neat sketch explain the working of piston filler using automated rotary pumps.
- **5B.** With a neat diagram explain the manufacture and working of polymer based oxygen scavenging film.
- **5C.** Explain the construction and working of combined wad and membrane seal with a neat diagram.

[04+03+03]

- **6A.** With a neat sketch explain trapped-sheet, contact-heat pressure forming.
- 6B. The package testing instrument is packed using cushioning material designed with a cushion factor of 3. The package is expected to fall from height of 85 inches during its unloading. The cushioning material has an area of 98 inch². The static stress on cushioning material after its impact is 24 lb/ inch². The fragility factor of cushioning material is 40. Calculate the thickness of cushioning material and weight of the package.
- **6C.** Explain various types of sterilization agents used in aseptic packaging.

[04+03+03]