

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL A Constituent Institution of Manibal University

# VII SEMESTER B.TECH. (PRINT AND MEDIA TECHNOLOGY) END SEMESTER MAKE-UP EXAMINATIONS, DEC/JAN 2016-17

SUBJECT: PACKAGING TECHNOLOGY II [PME 413]

REVISED CREDIT SYSTEM (26/12/2016)

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 the effects of shunting shock.
- **1B.** Explain the working and applications of Modified Atmosphere Packaging (MAP) and Controlled Atmosphere Packaging (CAP).
- **1C.** What are the factors in the choice of printing process to produce a pre-printed label? Explain each factor.

### [04+03+03]

- **2A.** With a neat sketch explain the working of screw type injection blow molding machine.
- **2B.** With a neat sketch explain the stages involved in the manufacture of Thermocol used for packaging applications.
- **2C.** It is desirable to process the product at very high temperature without burn-on in aseptic packaging system. The organization also has the future expansion plans and hence it is recommended to have an option for adding surface area. What type of heat exchanger would you prefer? Draw a neat labeled diagram of such heat exchanger and explain its working.

## [04+03+03]

- 3A. Name the type of smart packaging technology used for trace and track mechanism.Explain the working of such smart technology with a neat sketch.
- **3B.** With a neat diagram explain pressure bubble vacuum snapback forming.
- **3C.** What are the factors to be considered when selecting filling machines? Explain each factor with suitable example.

### [04+03+03]

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- **4A.** What are the various packaging laws and regulations for food products? What are the salient features of each?
- **4B.** Explain various cushion characteristics with suitable examples.
- **4C.** Differentiate between Universal Product Code (UPC) and Electronic Product Code (EPC). Explain the components of EPC used in RFID systems with a neat sketch.

## [ 04 + 03 + 03 ]

- 5A. The package testing instrument is packed using cushioning material designed with a cushion factor of 3.2. The package is expected to fall from height of 90 inches during its unloading. The cushioning material has an area of 95 inch<sup>2</sup>. The static stress on cushioning material after its impact is 25 lb/ inch<sup>2</sup>. The fragility factor of cushioning material is 40. Calculate the thickness of cushioning material and weight of the package.
- **5B.** With neat diagrams explain the layout options for self-adhesive labels.
- 5C. Explain various deteriorative reactions in foods from food packaging perspective.

## [04+03+03]

- **6A.** Derive an equation for cushion factor and energy absorbed by expanded polystyrene as a cushioning material.
- **6B.** Explain the process of transfer molding with a neat sketch.
- **6C.** Explain the operation of a vertical form, fill and seal machine with a neat sketch.

[04+03+03]