



### II SEMESTER M.TECH. (PRINTING AND MEDIA TECHNOLOGY)

END SEMESTER EXAMINATIONS, APRIL 2018

ADVANCED PRINTED PACKAGING TECHNOLOGY [PME 5201]

REVISED CREDIT SYSTEM  
(17/04/2018)

Time: 3 Hours

MAX. MARKS: 50

#### Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitable assumed.

- 1A. Explain six guidelines for using Paper and Board for food contact as per Federal Institute for Risk Assessment XXXVI.
- 1B. With a neat diagram explain the process of manufacturing narrow-necked bottles.
- 1C. Explain the specifications and advantages of three materials used in the packaging of hazardous fertilizers.

[ 04 + 03 + 03 ]

- 2A. Explain the working of different types of Time Temperature Indicators with suitable examples.
- 2B. Discuss six steps in the development of packages for containing beverage products.
- 2C. It is desirable to print and die cut a multicolor duplex board for carton production. The production is required to be carried out on a large scale. The customer is mainly interested in high degree of production accuracy and uniformity in carton dimension. This being the scenario, which kind of die would you prefer? Explain the steps involved in making such die with a sketch.

[ 04 + 03 + 03 ]

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- 3A.** It is required to test the corrugated box for increasing its stacking strength. Which mechanical package test would you suggest? Explain such test procedure with a neat sketch.
- 3B.** Explain the packaging life cycle for fast moving consumer goods with a neat sketch.
- 3C.** Some crisps, sealed in a bag made from 25  $\mu\text{m}$  low density polythene, gained 1.5g in nine days, and 8.7 altogether when the bag was cut open and re-exposed. What type of wrapping would be required to give a shelf life of 97 days under the same conditions, assuming that a total gain of 3.95 g could be tolerated without loss of texture?

[ 04 + 03 + 03 ]

- 4A.** What are the four types of simulants used in food packaging as per EC directives 85/572/EEC? Explain.
- 4B.** Which property of packaging board is important for deciding weight carrying capacity of a carton? Explain the procedure involved in testing such property.
- 4C.** Explain the color changing mechanism in Time Temperature Indicators for smart packaging.

[ 04 + 03 + 03 ]

- 5A.** A retailer needs a corrugated box of height 290 mm to carry 24 Kg of milk powder. The boxes are expected to stack up to 14 high. The length, width and height of the corrugated box are respectively to be in the ratio 2:2:1. The fluting medium is of 140 GSM with RCT of 1.5 KN/m and all the liners are made from same paper with equal GSM. Which of the following corrugated box is economical for the given specifications?
- Three ply box with C flute.
  - Five ply box with B & C combination flutes.
- 5B.** Discuss the four possibilities of mutual influences between oral pharmaceutical products and package with suitable examples.
- 5C.** Explain the properties of three types of commonly used materials in the packaging of cosmetics.

[ 04 + 03 + 03 ]