B.E. PRINTING ENGINEERING SECOND YEAR FIRST SEMESTER SUPPLEMENTARY EXAM 2024

Subject: PACKAGING TECHNIQUES-I

Time: 3 Hr. **Full Marks: 100**

Answer the questions under one CO together in one place.

CO1: Describe the different packaging aspects, materials and processes (K2) [Total Marks – 35]

1. **Answer any 5 questions**
   a) Describe protection aspect of packaging with suitable examples. 7
   b) Describe properties and packaging applications of kraft, glassine and tissue paper. 7
   c) Describe the structure of tin plated steel and ECCS. 7
   d) Describe agents of food bio degradations that are addressed in food packaging. 7
   e) Describe the composition of flint glass and anatomy of glass bottle. 7
   f) Describe the wood drying processes. 7
   g) Describe different gases used for MAP. 7

CO 2: Illustrate the methods of different package forming (K2) [Total Marks – 35]

2. **Answer any 5 questions**
   a) Illustrate the DWI can making process. 7
   b) Illustrate vertical FFS process. 7
   c) Illustrate thermoforming process. 7
   d) Illustrate any 3 standard designs of wooden boxes. 7
   e) Illustrate extrusion blow molding process. 7
   f) Illustrate corrugated board manufacturing process. 7
   g) Illustrate structure of different packaging boards. 7

CO 3: Calculate the packaging parameters (K3) [Total Marks – 15]

3. **Answer an 3 questions**
   a) Calculate the limiting hoop stress for a 0.5in thick glass bottle with internal diameter of 2in and subjected to internal pressure of 20Pa. 5
   b) Calculate the thermal stress for a 0.5inch thick glass bottle in case the internal and external temperature is 4°C and 30°C, respectively. 5
   c) Calculate the MOR for a 6ft long, 1ft wide and 1ft tall wooden plank subjected to 500lbs of load. 5

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d) Calculate the BCT for a corrugated box board of dimension 3ft×1ft×3ft (W×H× L) made with 1inch thick corrugated board and that collapses at 50lbs of load. 5

CO 4: Compare between packaging materials and processes (K4) [Total Marks – 15]

4. **Answer any 3 questions**

a) Compare between conventional packaging and MAP. 5

b) Compare between plastic and glass in context of packaging materials. 5

c) Compare between PET and PP in context of packaging materials. 5

d) Compare between horizontal FFS and vertical FFS. 5