B.E. PRINTING ENGINEERING SECOND YEAR FIRST SEMESTER - 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)

Answer any 5 questions (5 X 7 = 35)

1.

A. Describe different levels of packaging with their purpose and suitable examples. 7

B. Describe any 3 types of packaging paper with their application examples. 7

C. Describe the importance of MAP and any 3 ways to attain MAP. 7

D. Describe different sterilization process used in aseptic packaging in brief. 7

E. Describe the advantages and disadvantages of glass as packaging material and general composition of packaging glasses. 4 + 3

F. Describe different metals commonly used in packaging. 7

G. Describe the reason why plastic packaging should be avoided and how edible film can be helpful to address such limitations of plastic packaging. 7

CO 2: Illustrate the methods of different package forming (K2)

Answer any 5 questions (5 X 7 = 35)

2.

A. Illustrate the horizontal FFS process. 7

B. Illustrate the DRD can making process. 7

C. Illustrate any 3 types of wooden box design. 7

D. Illustrate the process of corrugated board manufacturing. 7

E. Illustrate the injection blow molding process. 7

F. Illustrate the classes of bio-based polymers used in packaging. 7

G. Illustrate the process of plastic tube manufacturing. 7

CO 3: Calculate the packaging parameters (K3)

Answer any 3 questions (3 x 5 = 15)

3. Calculate the MOR and MOE for a 3ft long (between support), 6inch wide and 6inch tall wooden plank subjected to 200lb of load. 5
4. Calculate the thermal stress for a 0.5inch thick glass bottle in case the internal and external temperatures are 40°C and 300°C, respectively. 5
5. Calculate the stiffness of a 1.5inch wide 0.2inch thick paperboard sample subjected to Taber tester where degree of deflection is 150 and value of Gurley stiffness units is 5,000. 5
6. Calculate the maximum load that can be carried by the 10cm tall and 50cm wide wooden box made with 5cm thick wooden plank and fastened using 8 6d common nails. 5

CO 4: Compare between packaging materials and processes (K4)

Answer any 3 questions (3 x 5 = 15)

7. Compare between DRD and DWI cans. 5
8. Compare between auger filling and pressure filling. 5
9. Compare between wood and plywood in the context of packaging material. 5
10. Compare between LDPE and PET. 5

----------XXXXXXXXXXXXXXXXXXXX----------