B.E. PRINTING ENGINEERING SECOND YEAR FIRST SEMESTER - 2023

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. Write about any 3 important aspects of packaging.   7

2. Write about PP, LDPE and PVC with the applications of those plastics in packaging.   7

3. What can be a suitable packaging material for paints and why? If the manufacturer of the paint is facing budget constraints which aspect of packaging they may compromise and why?

   3 + 4

4. Why drying of wood is important? Describe any two processes of wood drying.   3 + 4

5. Why glass is most favored packaging material for pharmaceutical packaging? Write about microbial life cycle that needs to be considered for aseptic packaging.   3 + 4

6. Write about any 2 filling process. What can be the most suitable process for filling of fruit jam and why?   5 + 2

7. What can be the suitable packaging paper for packing butter and why? Write about any other two types of packaging paper.   3 + 4

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

Answer any 5 questions   (5 X 7 = 35)

8. Why vertical FFS results side lap sealing? Justify with required diagram(s).   7

9. What is FFS process? Show a FFS process that can create cup and lid at the same process flow.   2 + 5

10. Illustrate the method of making 3-piece can.   7

11. Illustrate the process of making tall plastic bottles.   7

12. Show the reason of DWI cans have thinner body wall than that of DRD cans.   7

13. Illustrate the process of extrusion blow molding with required diagrams.   7

14. Show the HTST process flow diagram with brief description of each step.   7

[Turn over

CO 3: Calculate the packaging parameters (K3)

Answer any 3 questions (3 x 5 = 15)

15. The initial and dry weight of a wood sample is 30lbs and 28.5lbs, respectively. Calculate the MC_d and MC_w.   5

16. How many 10d box nails will be needed to make a wooden box that will be subjected to a load of 500lbs?   5

17. Explain the Taber stiffness testing method.   5

18. A glass bottle will be subjected to 50lbs/inch^2 pressure from the carbonated beverage to be packed in it. If the outer and inner radius of the bottle is 1.2inch and 1.1inch, respectively what will be the limiting hoop stress for a bottle height of 6inch?   5

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

Answer any 3 questions (3 x 5 = 15)

19. Compare between MAP and conventional packaging.   5

20. Compare between 2-pice can and 3-pice can.   5

21. Compare between steel and aluminium in the context of packaging material.   5

22. Compare between gravity filling and vacuum filling.   5