

**BACHELOR OF PRINTING ENGINEERING EXAMINATION, 2009**

(2nd Year-2nd Semester)

**PACKAGING TECHNIQUES-I**

Time : Three hours

Full Marks : 100

Answer any *five* questions.

1.
  - a) Define packaging. 2
  - b) What are the different functions of packaging? 3
  - c) What are the different influences that affect packaging? 2
  - c) Briefly describe different mechanical influences that affect packages. 6
  - e) What is meant by 'returnable packaging'? Explain life cycle of 'returnable packaging' with necessary block diagram 1+6
  
2.
  - a) What are the different materials used for packaging? Name any two packaging materials used for flexible packaging. 2
  - b) Describe the packaging material selection process with a block diagram. Explain the different aspects for packaging material selection in brief. 10
  - c) What are the different methods applied for packaging material selection. 1
  - d) Explain SPM method in brief with example. 6
  - e) Name the defects generally found in timber. 1
  
3.
  - a) Why paper is so much used in packaging industry? 3
  - b) What are the major disadvantages of paper as packaging material? 2
  - c) Give a brief description of different types of paper used in packaging industry. 5
  - d) Write short notes on 'Duplex paper board', 'Chipboard and newsboard' and 'Solid fiberboard' 5
  - e) What is corrugated paper board? What are the advantages of corrugated paperboard over normal paperboard? 4
  - f) What are the different types of paperboards normally used in packaging? 1
  
4.
  - a) Describe the construction of a corrugated paperboard and the different flutes commonly used. 5
  - b) What are the advantages and disadvantages of wood as packaging material? 5
  - c) Why wood is dried prior to use? What are the major parameters that affect wood drying speed? What are the different processes of wood drying? 5 + 1 + 1
  - d) Why is cork not so much in use now-a-days? 2
  - e) Give examples of softwood and hardwood. 1

[ Turn over

5. a) What is plywood? Why is it so popular now-a-days? What is 'lay-up'? 1 + 3 + 1  
b) What are common dimensions of plywood used for packaging purposes? 2  
c) What is the typical composition of 'soda-lime glasses'? 4  
d) Describe construction of a glass bottle with required illustration. 4  
e) Name different chemicals used as colorant during glass manufacturing. 1  
f) What are the disadvantages of glass as packaging material? 3  
g) What is basic difference between glass jars and glass bottles? 1
6. a) Briefly describe manufacturing of a glass bottle with required illustrations. 5  
b) What are the most commonly used metals in packaging industry? What are the advantages and disadvantages of metals as packaging material? 6  
c) Write short notes on 'Aluminum foil and trays' and 'Steel drums and pails'. 4  
d) What is meant by plastic? Why is it so much in use as packaging material? What is the main disadvantage of plastic? 1+3+1
7. a) Write short notes on following.  
LLDPE, PVC, PET, Cellophane, HDPE, Nylon 6X3 = 18  
b) What is meant by 'heat-sealing property' of plastic? Name 2 plastics that have very good 'heat-sealing property'. 2
8. a) What are the different adhesives used in packaging industry? Briefly describe 'synthetic water-based adhesives'. 1+2  
b) What are the different label materials? What is meant by 'smart labels'? 1+3  
c) Write short notes on 'Desiccants', 'Edible films' and 'Inks' 6  
d) What are the environmental profiles of materials need to be considered for packaging material comparison? Compare paper, glass, PET, Aluminum and corrugated board against those profiles. 2 + 5
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