

B.E. PRINTING ENGINEERING SECOND YEAR SECOND SEMESTER – 2019

Subject: PACKAGING TECHNIQUES-I

Time: 3Hr.

Full Marks: 100

Group A	Answer any 1 questions	Total marks 35
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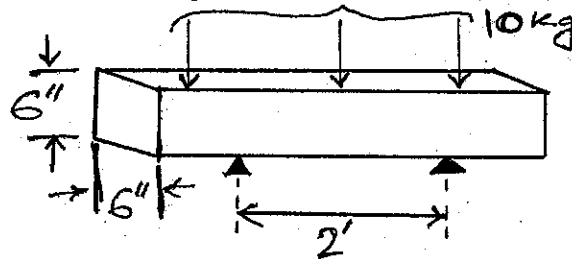
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| 1. | a) Describe different types of packaging papers with their applications. | 10 |
| | b) Describe different food preservation processes and their suitable applications. | 12 |
| | c) Describe following active packaging agents: oxygen scavengers, ethylene scavengers, moisture absorbers, ethanol emitters. | 10 |
| | d) Describe the composition of soda-lime glass and commonly used glass coloring agents in packaging applications. | 3 |
| 2. | a) Describe classification of packaging with suitable examples. | 8 |
| | b) Describe diaphragm seals commonly used in packaging and their applications. | 5 |
| | c) Describe the advantages and disadvantages of metals as packaging material. | 7 |
| | d) Describe following process of MAP: Vacuum packaging, Passive atmosphere packaging. | 6 |
| | e) Describe briefly: PP, WLCB and Kiln drying of wood. | 9 |

Group B	Answer any 1 questions	Total marks 35
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| 3. | a) Illustrate the horizontal FFS and its applications. | 15 |
| | b) Illustrate DRD can manufacturing process and its applications. | 10 |
| | c) Illustrate injection blow molding process. | 10 |
| 4. | a) Illustrate structure of corrugated board and schematic diagram of corrugated board manufacturing process. | 13 |
| | b) Illustrate any three designs of wooden box. | 12 |
| | c) Illustrate Extrusion blow molding process. | 10 |

Group C	Answer any 3 questions	Total marks 15
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| 5. | Calculate the thermal stress for a 0.4inch thick glass container where the internal product temperature is 10°C and external temperature is 30°C. | 5 |
| 6. | Calculate MOR of the wooden plank for conditions shown below. | 5 |



7. The dry weight of a paper sample is 25gm and MC_w is 80% what will be the MC_d ? 5
8. Calculate the diffusion flux for an internal and external gas concentration of 10mol/cm^3 and 80mol/cm^3 through a 2cm polymer membrane and a time-lag of 6sec. 5

Group D Answer any 1 question**Total marks 15**

9. a) Compare between wood and glass as packaging materials. 7
b) Compare and select the primary packaging material for an expensive mobile phone using SPM. 8
10. a) Compare and choose the secondary packaging material for an expensive jewelry using SPM method. 8
b) Compare between paper and plastic as packaging material. 7