Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec – 2017**

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| **Code :** | **14FP2037** | **Duration :** | **3hrs** |
| **Sub. Name :** | **TECHNOLOGY OF PACKAGING** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Enlist the various environmental and biological factors affecting food quality. | CO1 | 4 |
|  | b. | Describe how food packaging counter acts the following factors from affecting food quality.  i. Water Activity ii. Oxygen iii. Light iv. Microorganisms | CO1 | 16 |
| (OR) | | | | |
| 2. |  | Describe the following two-piece can manufacturing methods, with diagrams showing the steps involved.  i. DRD Method ii. DWI Method | CO2 | 20 |
| 3. | a. | Elucidate the levels of food packaging with a simple diagram and examples. | CO1 | 8 |
|  | b. | Define the following packaging methods and point out the applications of it in food industry.  i. Vacuum Packaging ii. Nitrogen Packaging | CO1 | 12 |
| (OR) | | | | |
| 4. |  | Discuss the principle and manufacturing stages with diagrams for the following methods. Also appraise the merits of the methods.  i. Cast film process. ii. Stretch Blow molding process. | CO2 | 8+12 |
| 5. | a. | Review the process of glass manufacturing from silica and cullet with a flow chart. | CO2 | 5 |
|  | b. | Explain the stages and process involved in glass container manufacturing by blow and blow process with diagrams. | CO2 | 15 |
| (OR) | | | | |
| 6. | a. | Make a flow chart to outline the different stages of paper manufacturing from pulp. Define each stage in few words. | CO2 | 10 |
|  | b. | Define the tenter frame orientation process. Explain the method with a diagram to show the orientation in MD and TD. | CO2 | 10 |
| 7. | a. | Evaluate the types form-fill-seal machine for applications in various sectors of food industry. | CO1 | 5 |
|  | b. | Explain the construction, working and advantages of vertical form-fill-seal machine. | CO1 | 15 |
| (OR) | | | | |
| 8. | a. | Define the types of seals used for sealing of plastic films. | CO1 | 6 |
|  | b. | Elaborate the process, equipment and methodology involved in hot bar sealing of plastic films. | CO1 | 14 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Discuss the various aspects involved in maintaining freshness in active packaging of foods. | CO3 | 5 |
|  | b. | Discuss the various methods of achieving modified atmosphere in food packaging and explain the equipment used. | CO3 | 15 |

ALL THE BEST