*Seat No.: _____* *Enrolment No._____*

# *GUJARAT TECHNOLOGICAL UNIVERSITY*

**M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014**

**Subject code: 1724001** **Date: 16-06-2014**

**Subject Name: Rubber Bonding and Its Technology**

**Time: 02:30 pm - 05:00 pm** **Total Marks: 70**

**Instructions:**

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full mark.**

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|---|---|---|---|
| **Q.1** | **(a)** | Discuss the advantages of Wet Blast Phosphating Plant. | **7** |
| | **(b)** | Justify the importance of Primers for the Plastics substrate for vulcanization bonding. Also explain the characteristics of polymer required for vulcanization bonding. | **7** |
| **Q.2** | **(a)** | Explain the factors for the selection of adhesive use in particular bonding situation. | **7** |
| | **(b)** | List the Bond System Characteristics. Explain any one in detail. | **7** |
| | | OR | |
| | **(b)** | Describe the functions of the metal activation Step for bonding purpose. | **7** |
| **Q.3** | **(a)** | Write about choice of bonding agent, rubber and metal substrate preparation and applications for post vulcanization bonding. | **7** |
| | **(b)** | ñEnvironmentally the use of the organic solvent system is not acceptable.ò Justify the statement. | **7** |
| | | OR | |
| **Q.3** | **(a)** | Short note on ñTesting on bonding agent.ò | **7** |
| | **(b)** | Answer the following. | |
| | **(i)** | Give the comparison between Structure of Organic Solvent ï based bonding system and Structure of Water borne bonding system. | **4** |
| | **(ii)** | List the advantages of Water borne bonding agents. | **3** |
| **Q.4** | **(a)** | How the effects of surface roughness, blooming and plasticizers influencing rubber to rubber bonding? | **7** |
| | **(b)** | Answer the following. | |
| | **(i)** | Write the significance of metallic coagents for peroxide vulcanization bonding system. | **3** |
| | **(ii)** | Discuss the importance of metallic coagents in rubber to metal bonding with suitable example. | **4** |
| | | OR | |
| **Q.4** | **(a)** | Answer the following. | |
| | **(i)** | Write about the types of test geometry used for testing of autohesion levels. | **3** |
| | **(ii)** | Discuss the Urethane Adhesive Systems. | **4** |
| | **(b)** | Define the term óMetallic Coagent.ôDiscuss the effect of metallic coagents on scorch safety, tensile properties and tear strength of rubber. | **7** |
| **Q.5** | **(a)** | Explain the important bonding concepts for Silicone rubber. | **7** |
| | **(b)** | List the main area of bond inconsistencies and failure in rubber bonding to substrates. Explain any two in detail. | **7** |
| | | OR | |
| **Q.5** | **(a)** | Discuss in brief about alternatives of injection moulding technique for bonding of silicone rubber to various substrates. | **7** |
| | **(b)** | What is Fixing? Explain in detail about factors affecting fixing. | **7** |

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