

**Duration: 3 Hours****Total Marks: 80****N.B.** 1) **Question 1** is compulsory.2) Attempt **Any Three** from the remaining **Five** questions.3) Figures to the right indicate **Full** marks.

4) Indicate question numbers clearly.

5) Support your answers with as many examples/illustrations as possible.

Q.1) Write short notes on:

- A) Packaging of Bulk Drugs **05**
- B) Closed Cell Cushions **05**
- C) Slotted Partitions **05**
- D) Wooden Dunnages. **05**

Q.2) A) How to identify if a silica gel dessicant is active? Explain reactivation of Silica Gel. **10**

- B) A 5 kVA generating set, squared off with plywood enclosed in a polyethylene Barrier 500 $\mu$ m thick (2 thicknesses of 250 $\mu$ m material) then floated in a cushioning Material inside a timber case. The case and cushioning material can be ignored as they are outside the barrier. Dimensions of barrier 120 x 150 x 60cm. Mass of plywood 900 g. Maximum storage 6 months in tropical climates. WVTR of 250 $\mu$  PE Barrier is 2g/m<sup>2</sup>.24h. **10**

Q.3) A) Describe the considerations for packaging of chemicals. **10**

- B) Describe the criteria for selection of strapping materials. **10**
- C) What are air bubble films? Give their properties and applications **05**

Q.4) A) Give the formula to calculate width of dunnage bags required in transportation. **10**

- B) A product has dimensions 300mm x 200mm x 150mm. Give the best possible arrangement for 12 such products in a CFB shipper, provided 300mmx200mm side forms the base with maximum stack height of 3 products. **10**

Q.5) A) Explain the types of RIBCs along with applications **10**

- B) Develop a package for a remote control car. **10**

Q.6) A) Explain any 10 causes for damage in air cargo. **10**

- B) Explain the various coatings for corrosion prevention along with their Classification. **10**

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