

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) Bubble-wrap films. | 05 |
| B) Bracing and Blocking | 05 |
| C) Foam-insitu | 05 |
| D) Considerations for crate design. | 05 |

Q.2) A) Three boxes having 410x410x450mm, 410x400x390mm and 390x400x410mm are given to you. On the basis of thumb rules for cube utilization, select the best box. **10**

B) A product has dimensions 300mm x 200mm x 100mm. Give the best possible arrangement for 12 such products in a CFB shipper, provided the height of the CFB is fixed at 300mm. **10**

Q.3) A) Explain briefly any 5 causes for damage in rail transport. **10**

B) Give the formula to calculate number of straps and elaborate the factors to be considered while strapping a CFB box. **10**

Q.4) A) How does a VCI paper work? Give its applications in industrial packaging. **10**

B) An industrial weighing machine, supported by felt covered timber is enclosed in a 180µm thick polyethylene barrier. The whole enclosed in an export packing case made of tongued and grooved timber, lined with waterproof paper and with felt on the roof. All the material outside the polyethylene barrier can be ignored in calculating the quantity of desiccant required.

Given Data: **10**

Dimensions of barrier - 1000 x 1500 x 800 mm

WVTR of the barrier (at 90% RH and 38°C) = 3.0g/m².24 h

Mass of timber supports - 6000g

Mass of felt - 600g

Maximum storage - 12 months in tropical climate

Q.5) A) What are RIBC's? Give their applications in industrial packaging. **10**

B) Explain the importance of dunnage bags in the safe transport of goods with relevant examples. **10**

Q.6) A) Describe the various considerations for packaging of jewellery with examples. **10**

B) Elaborate the factors to be considered in packaging of handicrafts. **10**
