

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: IMSC
BRANCH: FT**

**SEMESTER: VIII
SESSION: SP/19**

SUBJECT: SAF2007 FOOD STORAGE AND TRANSPORTATION

TIME: 3 Hours

FULL MARKS: 60

INSTRUCTIONS:

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
 2. Candidates may attempt any 5 questions maximum of 60 marks.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) What is the principle behind controlled and modified atmosphere technologies? What are the major differences between controlled and modified atmosphere storage? [6]
- Q.1(b) What is logistics? Write down a case study explaining effective logistics. [6]
- Q.2(a) Define: [6]
- i. Dry ice refrigeration
 - ii. Water ice refrigeration
 - iii. Unit load device (ULD)
 - iv. TEU
 - v. Oxidation
 - vi. Hydrolysis
- Q.2(b) Discuss the criteria for designing of storage tank and piping for storage and transportation of vegetable oils. What are the different types of ships tankers used for transportation of vegetable oil? [6]
- Q.3(a) What are the seven principles of HACCP? Explain each step in detail. [6]
- Q.3(b) What is ISO? Write in brief and plot a diagram showing the relationship between GMP, GHP, HACCP, QACP, QMS and TQM. [6]
- Q.4(a) What is cold-storage loading dock? Explain why loading dock is an integral part of cold storage system. [6]
- Q.4(b) Describe following temperature measuring instruments: (i) Bimetallic thermometer, (ii) Thermistor thermometer, and (iii) Thermocouple thermometers. [6]
- Q.5(a) Why freezing is required for food stuff? Explain following freezing methods: (i) Liquid Immersion freezing, (ii) Contact freezing, and (iii) Cryogenic freezing. [6]
- Q.5(b) A central power plant, rated at 800 MW, generates steam at 600 K and discard heat to a river at 300 K. If the thermal efficiency of the plant is 70% of the maximum possible value, how much heat is discarded to the river at rated power? [6]
- Q.6(a) Write five potential beneficial effects of controlled atmosphere storage. [6]
- Q.6(b) What are the positive effects of film packaging, other than creation of MA/CA conditions? [6]
- Q.7(a) What is vapor barrier? Describe in detail why vapor barrier is necessary for a cold store. [6]
- Q.7(b) Describe the followings: (i) Silo, (ii) Palletization, (iii) Intermediate Bulk Containers (IBCs). [6]

:::29/04/2019 M:::