

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BVoc DEGREE EXAMINATION DECEMBER 2023
(Fourth Semester)

Branch – **FOOD PROCESSING TECHNOLOGY**

FOOD ENGINEERING

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(5 x 1 = 5)

- 1 Identify the working principle behind a vapor compression refrigeration system
 - (i) Heat is transferred through radiation
 - (ii) Heat is transferred through convection
 - (iii) Heat is absorbed during compression and released during expansion
 - (iv) Heat is absorbed during expansion and released during compression

- 2 Which type of evaporator is known for its efficient heat transfer and is often used for heat-sensitive materials due to its short residence time?
 - (i) Single-effect evaporator
 - (ii) Falling film evaporator
 - (iii) Once-through evaporator
 - (iv) Agitated film evaporator

- 3 Which of the following laws is primarily used to relate the energy required for size reduction to the size of particles produced?
 - (i) Rittinger's law
 - (ii) Bond's law
 - (iii) Kick's law
 - (iv) Newton's law

- 4 What is the purpose of a vacuum distillation process?
 - (i) To increase the boiling point of the liquid
 - (ii) To reduce the pressure in the system
 - (iii) To remove impurities from the liquid
 - (iv) To enhance color and flavor

- 5 Find out the primary component separated by filtration
 - (i) Gases from liquids
 - (ii) Liquids from solids
 - (iii) Solids from gases
 - (iv) Solids from liquids

SECTION - B (15 Marks)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks

(5 x 3 = 15)

- 6 a Explain about conduction mode of heat transfer.
OR
b Narrate on cross flow heat exchanges.

- 7 a Describe the operation of once through evaporator.
OR
b Outline the crystallization process.

- 8 a Summarize the concept of energy and power requirements in size reduction process.
OR
b Explain about cryogrinding equipment.

Cont...

- 9 a Bring out the key considerations in extraction process.
OR
b State the advantages and limitation of flash distillation.
- 10 a Bring out the primary purpose of filtration in industrial processes.
OR
b Explain the centrifugal separation process.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Differentiate between parallel flow and counter flow heat exchangers and highlight their advantages and disadvantages.
OR
b Outline the components and working principle of a vapour compression refrigeration system.
- 12 a Enumerate the fundamental principle behind falling film and rising film evaporator.
OR
b Elucidate the construction and operation of Swenson-walker vacuum crystallizers.
- 13 a Discuss about Rittinger's law for crushing.
OR
b Enumerate on rolling compression mills.
- 14 a Examine the key considerations when mixing solids, pastes and liquids.
OR
b Differentiate between steam distillation and differential distillation.
- 15 a Discuss the construction and operation of a rotary vacuum filter. What type of materials are processed using this equipment?
OR
b Outline the principle of centrifugal separations. How does it differ from sedimentation method?

Z-Z-Z

END