

CUET PG 2026 Food Engineering Question Paper with Solutions(Memory Based)

Time Allowed :1 Hours 30 min	Maximum Marks :300	Total Questions :75
------------------------------	--------------------	---------------------

General Instructions

1. The exam lasts 90 minutes (1 hour 30 minutes).
2. There are 75 Multiple Choice Questions (MCQs) to be answered.
3. +4 marks for every correct answer. -1 mark (negative marking) for every incorrect answer. 0 marks for unanswered or un-attempted questions.
4. For any discrepancy in questions, the English version is considered final (except for language-specific papers).
5. Click one of the four options to choose an answer.
6. You must click "Save & Next" to confirm your response. Only saved answers are considered for evaluation.
7. Use "Mark for Review & Next" to flag a question for later. You can unselect or change your answer using the "Clear Response" button.
8. All calculations must be done on the Rough Sheets provided at the centre. These must be returned to the invigilator after the exam.

1. Which law states that the energy required for size reduction is proportional to the change in surface area?

- (A) Rittinger's Law
- (B) Kick's Law
- (C) Bond's Law
- (D) Newton's Law

Correct Answer: (1) Rittinger's Law

Solution:

Concept: In size reduction (comminution) processes used in food engineering and chemical engineering, different laws describe the relationship between energy input and particle size reduction.

Step 1: Understanding Rittinger's Law.

Rittinger's Law states that the energy required for size reduction is directly proportional to the new surface area generated.

Step 2: Mathematical interpretation.

It assumes that energy is used primarily to create new surfaces; hence, finer particles require more energy.

Step 3: Comparison with other laws.

- Kick's Law: Energy depends on size reduction ratio
- Bond's Law: Intermediate theory between Kick and Rittinger
- Newton's Law: Not related to size reduction

Step 4: Conclusion.

Thus, Rittinger's Law correctly describes energy proportional to change in surface area.

Quick Tip

Rittinger's Law → Energy Increase in surface area → Fine grinding.

2. What does the acronym GRAS stand for in food safety regulations?

- (A) Generally Recognized As Safe
- (B) Government Regulated Approved Substances
- (C) Global Regulation and Safety Standards
- (D) Generally Required Approved Substances

Correct Answer: (1) Generally Recognized As Safe

Solution:

Concept: GRAS is an important classification in food safety regulations, especially under agencies like the FDA, referring to substances added to food.

Step 1: Meaning of GRAS.

GRAS stands for "Generally Recognized As Safe."

Step 2: Significance in food safety.

A substance classified as GRAS is considered safe for consumption by experts under the conditions of its intended use.

Step 3: Basis for GRAS status.

- Scientific research and evidence
- Long history of safe use in food

Step 4: Regulatory importance.

GRAS substances do not require pre-market approval, making them widely used in food processing.

Step 5: Conclusion.

Thus, GRAS stands for "Generally Recognized As Safe."

Quick Tip

GRAS = Generally Recognized As Safe → Trusted food safety classification.

3. Which instrument is primarily used to determine the plasticity of bread dough?

- (A) Farinograph
- (B) Extensograph
- (C) Amylograph
- (D) Viscometer

Correct Answer: (2) Extensograph

Solution:

Concept: In food science, especially in bakery technology, various instruments are used to measure dough properties such as elasticity, extensibility, and plasticity.

Step 1: Understanding dough plasticity.

Plasticity refers to the ability of dough to undergo deformation without breaking, which is crucial for bread-making quality.

Step 2: Role of Extensograph.

The Extensograph measures the extensibility and resistance of dough when stretched, which directly reflects its plasticity and handling properties.

Step 3: Functions of other instruments.

- Farinograph: Measures water absorption and dough mixing properties
- Amylograph: Measures starch gelatinization and enzyme activity
- Viscometer: Measures viscosity of fluids

Step 4: Conclusion.

Thus, the Extensograph is primarily used to determine the plasticity of bread dough.

Quick Tip

Extensograph → Measures dough extensibility & plasticity → Important for bread quality.

4. What is the process of using alkali treatment on cocoa called?

- (A) Fermentation
- (B) Conching
- (C) Dutching
- (D) Tempering

Correct Answer: (3) Dutching

Solution:

Concept: Cocoa processing involves several steps to improve flavor, color, and solubility. One such process involves treating cocoa with an alkaline solution.

Step 1: Understanding Dutching.

Dutching, also known as alkalization, is the process of treating cocoa with alkali (such as potassium carbonate).

Step 2: Purpose of the process.

- Reduces acidity of cocoa
- Enhances color (darker appearance)
- Improves flavor (milder taste)
- Increases solubility in liquids

Step 3: Other processes explained.

- Fermentation: Develops flavor in raw cocoa beans
- Conching: Refines texture and flavor of chocolate
- Tempering: Controls crystallization of cocoa butter

Step 4: Conclusion.

Thus, alkali treatment of cocoa is called Dutching.

Quick Tip

Dutching = Alkali treatment of cocoa → Better color, taste, and solubility.

5. Which treatment is specifically used to remove undesirable microbes from milk?

- (A) Sterilization
- (B) Pasteurization
- (C) Homogenization
- (D) Fermentation

Correct Answer: (2) Pasteurization

Solution:

Concept: Milk is highly susceptible to microbial contamination. To ensure safety and extend shelf life, specific heat treatments are applied to destroy harmful microorganisms without significantly affecting nutritional quality.

Step 1: Understanding Pasteurization.

Pasteurization is a controlled heat treatment process in which milk is heated to a specific temperature for a defined time and then rapidly cooled.

Step 2: Purpose of Pasteurization.

- Destroys pathogenic (disease-causing) microorganisms

- Reduces total microbial load
- Preserves taste and nutritional value

Step 3: Types of Pasteurization.

- LTLT (Low Temperature Long Time): 63°C for 30 minutes
- HTST (High Temperature Short Time): 72°C for 15 seconds

Step 4: Eliminating other options.

- Sterilization: Destroys all microorganisms but affects taste and nutrients
- Homogenization: Breaks fat globules, not related to microbes
- Fermentation: Uses microbes intentionally (e.g., curd)

Step 5: Conclusion.

Thus, pasteurization is the treatment used to remove undesirable microbes from milk.

Quick Tip

Pasteurization = Heat treatment to kill harmful microbes in milk while preserving quality.

6. What is the most widely used general test for identifying carbohydrates?

- (A) Biuret Test
- (B) Benedict's Test
- (C) Molisch Test
- (D) Iodine Test

Correct Answer: (3) Molisch Test

Solution:

Concept: Carbohydrates can be identified using several qualitative chemical tests. Among these, one test is considered a general test applicable to all types of carbohydrates.

Step 1: Understanding Molisch Test.

Molisch Test is a general test used to detect the presence of carbohydrates.

Step 2: Principle of the test.

Carbohydrates, when treated with concentrated sulfuric acid, undergo dehydration to form furfural or hydroxymethylfurfural, which reacts with Molisch reagent (-naphthol) to produce a violet ring.

Step 3: Observation.

Formation of a purple/violet ring at the junction of two layers indicates the presence of carbohydrates.

Step 4: Eliminating other options.

- Biuret Test: Detects proteins
- Benedict's Test: Detects reducing sugars only
- Iodine Test: Specific for starch

Step 5: Conclusion.

Thus, Molisch Test is the most widely used general test for identifying carbohydrates.

Quick Tip

Molisch Test = General test for all carbohydrates → Violet ring confirms presence.

7. Identify the natural toxin commonly found in citrus fruits like grapefruit.

- (A) Solanine
- (B) Cyanogenic glycosides
- (C) Furanocoumarins
- (D) Aflatoxins

Correct Answer: (3) Furanocoumarins

Solution:

Concept: Certain fruits naturally contain compounds that can have toxic or pharmacological effects. In citrus fruits like grapefruit, specific compounds can interfere with human metabolism.

Step 1: Understanding the toxin.

Furanocoumarins are naturally occurring chemical compounds found in grapefruit and some other citrus fruits.

Step 2: Effect on the body.

These compounds inhibit enzymes (especially CYP3A4) involved in drug metabolism, which can lead to increased concentration of certain medications in the bloodstream.

Step 3: Eliminating other options.

- Solanine: Found in potatoes
- Cyanogenic glycosides: Found in cassava and some seeds
- Aflatoxins: Produced by fungi in contaminated grains

Step 4: Conclusion.

Thus, the natural toxin found in grapefruit is furanocoumarins.

Quick Tip

Grapefruit toxin → Furanocoumarins → Affects drug metabolism.

8. Which part of an egg contains the blastodisk?

- (A) Egg white (Albumen)
- (B) Egg shell
- (C) Egg yolk
- (D) Chalaza

Correct Answer: (3) Egg yolk

Solution:

Concept: An egg consists of several structural components, each with specific biological functions. The blastodisk plays a crucial role in embryonic development.

Step 1: Understanding blastodisk.

The blastodisk is a small, circular, whitish spot present on the surface of the yolk. It is the site where fertilization occurs and from which the embryo develops.

Step 2: Location of blastodisk.

It is located on the egg yolk, not in the albumen or shell.

Step 3: Functions of other parts.

- Albumen: Provides water and protein to the embryo
- Egg shell: Protective outer covering
- Chalaza: Holds the yolk in position

Step 4: Conclusion.

Thus, the blastodisk is present in the egg yolk.

Quick Tip

Blastodisk → Present on yolk → Site of embryo development.

9. What is the sensory outcome resulting from the decomposition of fats in milk?

- (A) Sweet taste
- (B) Rancidity
- (C) Bitterness
- (D) Sourness

Correct Answer: (2) Rancidity

Solution:

Concept: Fats in milk can undergo decomposition due to enzymatic or oxidative reactions. This breakdown leads to noticeable changes in flavor and odor, affecting the sensory quality of milk.

Step 1: Understanding fat decomposition.

Milk fats break down into free fatty acids through lipolysis or oxidation.

Step 2: Sensory impact.

The release of free fatty acids produces an unpleasant odor and taste, commonly described as rancid.

Step 3: Types of rancidity.

- Hydrolytic rancidity: Caused by enzyme action (lipase)
- Oxidative rancidity: Caused by reaction with oxygen

Step 4: Eliminating other options.

- Sweet taste: Due to sugars
- Bitterness: May occur due to protein breakdown
- Sourness: Due to lactic acid formation (fermentation)

Step 5: Conclusion.

Thus, decomposition of fats in milk leads to rancidity.

Quick Tip

Fat breakdown in milk → Free fatty acids → Rancidity (bad smell & taste).

10. Which parameter can be affected by nozzle pressure during spray drying?

- (A) Moisture content
- (B) Particle size
- (C) pH value
- (D) Color only

Correct Answer: (2) Particle size

Solution:

Concept: Spray drying is a process used to convert liquid food into powder by atomizing it into fine droplets and drying them rapidly with hot air. The characteristics of the final powder depend on process parameters.

Step 1: Role of nozzle pressure.

Nozzle pressure determines how finely the liquid is atomized into droplets.

Step 2: Effect on particle size.

- High nozzle pressure → Smaller droplets → Finer particles
- Low nozzle pressure → Larger droplets → Coarser particles

Step 3: Impact on final product.

Particle size influences solubility, flow properties, and texture of the powder.

Step 4: Eliminating other options.

- Moisture content: Mainly affected by temperature and airflow
- pH value: Not influenced by nozzle pressure
- Color only: Not the primary parameter affected

Step 5: Conclusion.

Thus, nozzle pressure primarily affects the particle size in spray drying.

Quick Tip

Spray drying: Nozzle pressure \uparrow \rightarrow Smaller droplets \rightarrow Smaller particle size.

11. What is the full form of NOEL in toxicological studies?

- (A) No Observed Effect Level
- (B) Normal Observed Exposure Limit
- (C) National Organic Exposure Level
- (D) Non-Operational Exposure Limit

Correct Answer: (1) No Observed Effect Level

Solution:

Concept: In toxicology, safety assessment of chemicals and food additives is based on dose-response relationships. Certain benchmark levels are defined to determine safe exposure limits.

Step 1: Understanding NOEL.

NOEL stands for **No Observed Effect Level**, which is the highest dose of a substance at which no observable adverse or biological effect is detected in test organisms.

Step 2: Importance in toxicology.

- Used to establish safe exposure limits
- Helps in determining Acceptable Daily Intake (ADI)
- Ensures consumer safety in food and drug regulations

Step 3: Distinction from related terms.

- NOAEL: No Observed Adverse Effect Level (focuses only on harmful effects)
- LOAEL: Lowest Observed Adverse Effect Level

Step 4: Eliminating other options.

The remaining options are incorrect expansions and not recognized toxicological terms.

Step 5: Conclusion.

Thus, NOEL correctly stands for No Observed Effect Level.

Quick Tip

NOEL = Highest dose with no observable effect → Basis for safety limits.

12. "Arka Rakshak" is a triple-resistant variety of which commonly processed vegetable?

- (A) Potato
- (B) Tomato
- (C) Onion
- (D) Brinjal

Correct Answer: (2) Tomato

Solution:

Concept: Improved crop varieties are developed to enhance resistance against diseases, increase yield, and improve processing quality. "Arka Rakshak" is one such hybrid developed in India.

Step 1: Understanding Arka Rakshak.

Arka Rakshak is a hybrid variety developed by the Indian Institute of Horticultural Research (IIHR).

Step 2: Type of crop.

It is a variety of **tomato**, widely used in processing industries.

Step 3: Resistance characteristics.

It is known as a triple-resistant variety because it shows resistance to:

- Bacterial wilt
- Early blight
- Leaf curl virus

Step 4: Importance.

- High yield
- Suitable for processing (sauces, ketchup, puree)
- Improved disease resistance reduces crop loss

Step 5: Eliminating other options.

Arka Rakshak is specifically associated with tomato and not with potato, onion, or brinjal.

Step 6: Conclusion.

Thus, Arka Rakshak is a triple-resistant variety of tomato.

Quick Tip

Arka Rakshak → Tomato hybrid → Resistant to 3 major diseases.

13. Which preservative is typically used at a concentration of 4-5% in commercial vinegar?

- (A) Citric acid
- (B) Acetic acid
- (C) Lactic acid
- (D) Benzoic acid

Correct Answer: (2) Acetic acid

Solution:

Concept: Vinegar is a widely used food preservative and condiment. Its preservative action is primarily due to the presence of a specific organic acid.

Step 1: Understanding vinegar composition.

Commercial vinegar typically contains about 4–5% acetic acid diluted in water.

Step 2: Role of acetic acid.

- Inhibits growth of spoilage microorganisms
- Lowers pH, creating an unfavorable environment for bacteria
- Enhances flavor and shelf life

Step 3: Comparison with other acids.

- Citric acid: Used in fruits and beverages
- Lactic acid: Produced during fermentation (e.g., curd)
- Benzoic acid: Used as a preservative but not the main component of vinegar

Step 4: Conclusion.

Thus, acetic acid is the preservative present at 4–5% concentration in commercial vinegar.

Quick Tip

Vinegar = 4–5% Acetic Acid → Preserves food by lowering pH.

14. In food engineering, what does a Farinograph measure?

- (A) Dough extensibility
- (B) Dough mixing properties
- (C) Starch gelatinization
- (D) Viscosity of liquids

Correct Answer: (2) Dough mixing properties

Solution:

Concept: In bakery science, instruments are used to evaluate flour quality and dough behavior during processing. The Farinograph is one of the most important tools in this regard.

Step 1: Understanding Farinograph.

A Farinograph is an instrument that measures the resistance of dough to mixing, thereby providing information about its mixing characteristics.

Step 2: Parameters measured.

- Water absorption capacity
- Dough development time
- Dough stability
- Mixing tolerance

Step 3: Importance in food engineering.

These parameters help determine the suitability of flour for bread-making and other baked products.

Step 4: Eliminating other options.

- Dough extensibility: Measured by Extensograph
- Starch gelatinization: Measured by Amylograph
- Viscosity: Measured by Viscometer

Step 5: Conclusion.

Thus, the Farinograph measures dough mixing properties.

Quick Tip

Farinograph → Measures dough mixing behavior (water absorption, stability).

15. Which antinutritional toxic constituent is associated with *Aspergillus flavus* in groundnuts?

- (A) Solanine
- (B) Aflatoxin
- (C) Oxalate
- (D) Phytate

Correct Answer: (2) Aflatoxin

Solution:

Concept: Certain fungi contaminate food commodities and produce toxic secondary metabolites known as mycotoxins. These toxins pose serious health risks and are considered major food safety hazards.

Step 1: Understanding the organism.

Aspergillus flavus is a fungus commonly found in improperly stored food products such as groundnuts (peanuts), maize, and other oilseeds.

Step 2: Toxin produced.

This fungus produces **aflatoxins**, which are highly toxic and carcinogenic compounds.

Step 3: Effects of aflatoxin.

- Liver damage (hepatotoxicity)
- Carcinogenic (especially liver cancer)
- Suppression of immune system

Step 4: Eliminating other options.

- Solanine: Found in potatoes
- Oxalate: Found in leafy vegetables
- Phytate: Common antinutrient in cereals and legumes

Step 5: Conclusion.

Thus, the toxic constituent associated with *Aspergillus flavus* in groundnuts is aflatoxin.

Quick Tip

Aspergillus flavus → Produces Aflatoxin → Highly toxic & carcinogenic.