SET–"Y" (Total No. of printed pages : 17)

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

PHD-EE, November-2025

FOOD TECHNOLOGY

Sr. No. 10001

Code **A**

Time : 1¼ Hours **Total Questions : 100** **Max. Marks : 100**

Roll No. _____ (in figure) _____ (in words)

Name : _____ Date of Birth : _____

Father's Name : _____ Mother's Name : _____

Date of Examination : _____

(Signature of the candidate) (Signature of the Invigilator)

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1.	The color stability of canned peas is maintained primarily by controlling : (1) pH and blanching time (2) Sodium chloride content (3) Oxygen and vacuum sealing (4) Vitamin C concentration
2.	Hydrostatic Pressure Processing (HPP) primarily inactivates microorganisms by : (1) Rupturing cell walls mechanically (2) Creating thermal gradients (3) Altering food pH (4) Denaturation of membrane proteins
3.	Hurdle technology is based on : (1) Application of one lethal preservation method (2) Using multiple mild preservation factors synergistically (3) Employing non-thermal preservation exclusively (4) Combining physical and chemical sterilization
4.	Microfiltration and bacteriofugation are mainly applied in : (1) Dairy processing (2) Fruit juice concentration (3) Cereal milling (4) Meat tenderization
5.	In pasteurization, the key parameter to ensure microbial safety is : (1) Total solids content (2) Lethal rate (F-value) (3) Time-temperature combination (4) Viscosity of the food
6.	Thermo sonication enhance microbial inactivation by : (1) Combining moderate heat with ultrasonic cavitation (2) Increasing pH and reducing aw (3) Generating radiation energy (4) Using filtration and drying simultaneously

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7.	The most heat-resistant spoilage organism in canned foods is : (1) *Clostridium botulinum* (2) *Bacillus stearothermophilus* (3) *Aspergillus niger* (4) *Lactobacillus bulgaricus*
8.	The primary spoilage in tomato ketchup is due to : (1) Yeast fermentation (2) Lactic acid bacteria (3) Spore-forming bacteria (4) Molds and osmophilic yeasts
9.	The aleurone layer in cereals is rich in : (1) Starch (2) Protein and minerals (3) Cellulose (4) Lipids only
10.	The key enzyme in dough development affecting elasticity is : (1) Protease (2) Amylase (3) Lipase (4) Polyphenol oxidase
11.	The major edible oilseed cultivated in India by area is : (1) Soybean (2) Groundnut (3) Mustard-rapeseed (4) Sesame
12.	The major limiting amino acid in millets is : (1) Lysine (2) Methionine (3) Leucine (4) Tryptophan
13.	Steam distillation is used in spice processing mainly to obtain : (1) Oleoresins (2) Essential oils (3) Pigments (4) Resin acids
14.	The most heat-resistant enzyme in milk is : (1) Lipase (2) Catalase (3) Alkaline Phosphatase (4) Peroxidase

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15.	Browning reaction in milk occurs due to reaction between : (1) Lipid and lactose (2) Lysine and maltose (3) Glucose and maltose (4) Lysine and lactose
16.	In a refrigeration cycle, expansion of refrigerant through the expansion valve is at constant : (1) Temperature (2) Pressure (3) Enthalpy (4) Relative humidity
17.	*Trimethylamine* (TMA) is spoiled fish is produced by : (1) Protein oxidation (2) Bacterial reduction of trimethylamine oxide (3) Lipid hydrolysis (4) Maillard reaction
18.	*Tenderization* of meat by papain acts through : (1) Carbohydrate hydrolysis (2) Cleavage of connective tissue proteins (3) Oxidation of fat (4) Heat coagulation
19.	The person square calculation is related to : (1) Momentum balance (2) Energy balance (3) Mass balance (4) All of these
20.	Oil coating of eggs preserves quality by : (1) Inhibiting microbial growth by creating anaerobic conditions (2) Reducing water loss (3) Increasing air cell (4) Preventing yolk movement

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21.	Critical Control Points (CCPs) in HACCP refer to : (1) Steps where control can be applied to eliminate or reduce hazards (2) Quality parameters for sensory evaluation (3) Packaging steps (4) Equipment cleaning stages
22.	FSSAI (Food Safety and Standards Authority of India) was established under : (1) PFA Act, 1954 (2) Food Safety and Standards Act, 2006 (3) Essential Commodities Act, 1955 (4) Consumer Protection Act, 1986
23.	Energy balance in food processing is essential for : (1) Calories intake calculation (2) Determining thermal efficiency and optimizing equipment (3) Quality control studies (4) Storage design
24.	Recombinant *Saccharomyces cerevisiae* is commonly used in the production of : (1) Bioethanol (2) Vinegar (3) Antibiotics (4) Vitamins
25.	Batch fermentation is characterized by : (1) Continuous addition of substrate (2) No inflow or outflow during fermentation (3) Removal of product continuously (4) Steady-state growth

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26.	*Aspergillus oryzae* is the mold used in : (1) Soy sauce fermentation (2) Bread leavening (3) Beer brewing (4) Yogurt production
27.	Which of the following compounds contributes to the characteristic buttery flavor in dairy products ? (1) Diacetyl (2) Acetoin (3) Hexanal (4) Isoamyl accetate
28.	Which analytical technique is most widely used for identifying volatile flavor compounds ? (1) HPLC (2) GC-MS (3) IR Spectroscopy (4) UV-Vis Spectrophotometry
29.	The electronic nose (E-nose) operates on the principle of : (1) Mass spectrometry (2) Sensor array detecting volatile patterns (3) FTIR (4) Chromatographic separation
30.	Phytosterols are used in functional foods mainly to : (1) Improve taste (2) Increase sugar content (3) Enhance protein quality (4) Lower cholesterol absorption
31.	A rheogram is a graphical representation of the flow behavior, which shows the relationship between : (1) Rate constant and temperature (2) Pressure and temperature (3) Viscosity and temperature (4) Shear stress and shear rate
32.	Vitamin D_2 is also known as : (1) Cholecalciferol (2) Cobalamine (3) Ergocalciferol (4) Pyridoxine

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33.	The limit of iodine in iodized salt is : (1) 20-60 mg (2) 80-100 mg (3) 100-200 mg (4) 250-500 mg
34.	Water activity (a_w) of fruit juice concentrate is _____. (1) 0.2-0.3 (2) 0.5-0.6 (3) 0.1-0.2 (4) 0.7-0.9
35.	The ideal packaging material for high pressure processed food : (1) Metal cans (2) Flexible pouches (3) Glass (4) Rigid trays
36.	Which of the following is a non-climacteric fruit ? (1) Apple (2) Elephant apple (3) Mango (4) Papaya
37.	"Salt balance" theory was given by : (1) Samuel and Hill (2) Summer and Schultz (3) Singer and Nicholson (4) Sommer and Hart
38.	The main function of the stabilizers in ice-cream is to : (1) Improve and provide uniform whipping quality (2) Produce a drier ice-cream with smother body and texture (3) Prevent formation of ice crystals (4) None of the above
39.	White pepper is produced conventionally from : (1) Ripe berries (2) Fermented berries (3) Unripe berries (4) Discolored berries
40.	Scoville value measures the : (1) Sweetness of sugar (2) Saltiness of NaCl (3) Pungency of chilli (4) Sourness of lemon

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41.	Which of the following is/are used for lacquering ? (1) Epoxy Phenolic group lacquers (2) White vinyl lacquers (3) Organosol group (4) All of the above
42.	Bitter component present in Saffron is : (1) Safranic acid (2) Safranal (3) Safranone (4) All of the above
43.	ISO 22000 is related to : (1) QMS (2) HACCP (3) FSMS (4) TQM
44.	Which of the following is a cyanobacteria ? (1) *Nostoc* (2) *Boletus* (3) *Glomus* (4) *Amanita*
45.	With proper tempering of fat, we can avoid : (1) Rancidity (2) Fat bloom (3) Reversion (4) All of the above
46.	During the extraction of oil from oil seeds the process of removal of mucilaginous material is termed as : (1) Tempering (2) Winterizing (3) Bleaching (4) Degumming
47.	The primary amino acid (exclusively) found in tea is : (1) Theaflavin (2) Thearubigin (3) Theanine (4) Caffeine
48.	Which of the following enzyme is used as anti-staling agent in bread? (1) α amylase (2) Protease (3) Lipase (4) Ligase

Question No.	Questions
49.	Which of the following is used as anticaking agent ? (1) Tricalcium phosphate (2) Calcium silicate (3) Magnesium silicate (4) All of the above
50.	Calculate the specific heat of Orange juice concentrate having a solid content of 35% : (1) 0.72 BTU/(lb°F) (2) 0.24 BTU/(lb°F) (3) 0.48 BTU/(lb°F) (4) 0.96 BTU/(lb°F)
51.	A Completely Randomized Design (CRD) is most appropriate when : (1) Experimental units are heterogeneous (2) Experimental units are homogeneous (3) There are blocking factors (4) There are multiple treatments and replicates
52.	Factorial design allows a researcher to : (1) Test one factor at a time (2) Ignore confounding (3) Reduce sample size drastically (4) Study interaction effects between factors
53.	Sampling error arises due to : (1) Poor measurement techniques (2) Sample not representing the population (3) Data recording mistake (4) None of these
54.	In food analysis, *composite sampling* is used to : (1) Reduce analytical cost and variability (2) Increase number of analyses (3) Decrease representativeness (4) Increase variability

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55.	During data compilation, the first step is : (1) Interpretation (2) Editing and coding (3) Data collection (4) Hypothesis formulation
56.	The ANOVA (Analysis of variance) technique assumes that : (1) Samples are dependent (2) Population variances are equal (3) Error are not normally distributed (4) Treatments are independent
57.	Non-sampling errors are caused by : (1) Random variation (2) Improper sample size (3) Data recording mistake or bias (4) Using wrong population
58.	Plagiarism refers to : (1) Unintentional spelling mistakes (2) Copying another's work without credit (3) Publishing in multiple journals (4) Peer-review rejection
59.	COPE stands for : (1) Committee on Publication Ethics (2) Council of Publication Editors (3) Conference of Paper Ethics (4) Consortium of Professional Editor
60.	Which of the following is an example of publication misconduct? (1) Peer reviewing (2) Duplicate submission (3) Citation indexing (4) Data archiving

Question No.	Questions
61.	The null hypothesis (H_0) generally states that : (1) There is no significant difference (2) There is a significant difference (3) Variables are dependent (4) Data are biased
62.	The *t-test* is used to compare : (1) Variances of two samples (2) Frequencies of categories (3) Proportions of sample (4) Means of two independent samples
63.	Intellectual Property Rights (IPR) exists primarily to : (1) Prevent publication of new ideas (2) Reward plagiarism (3) Protect and encourage creator's innovation (4) Restrict public access to knowledge
64.	Patent protection in food technology is usually granted for : (1) Discovery of natural food components (2) Novel process, formulations, or packaging methods (3) New Traditional recipes (4) Public domain knowledge
65.	A Geographical Indication (GI) tag in foods refers to : (1) A patent for a regional product (2) Protection of a product's reputation based on its origin (3) A copyright of food company (4) Trademark of a company

Question No.	Questions
66.	The acceptable similarity index for a Ph.D. thesis (as per UGC norms, India) is usually : (1) Below 50% (2) Below 30% (3) Below 10-15% (excluding references and quotes) (4) Exactly 20%
67.	In research ethics, acknowledgement of funding and collaborators is necessary because : (1) It increases citation count (2) It ensures transparency and accountability (3) It is optional courtesy (4) It reduces plagiarism score
68.	Falsification refers to : (1) Deliberate manipulation of research data or methods to misrepresent results (2) Typographical errors (3) Honest mistake in analysis (4) Reuse of methodology
69.	Redundant publication occurs when : (1) A paper is co-authored by several authors (2) Review and original papers overlap (3) The same research data are published in more than one journal without acknowledgement (4) A thesis is uploaded in an institutional repository

Question No.	Questions
70.	The ORCID (Open Researcher and Contributor ID) system is used for : (1) Checking plagiarism (2) Assigning unique identifiers to researcher to distinguish their work (3) Indexing journals (4) Measuring impact factor
71.	One-way ANOVA is used to test : (1) Relationship between two quantitative variables (2) Difference between means of two groups (3) Difference between means of *three or more groups* on a single factor (4) Correlation strength
72.	If the computed F-value>critical F-value at 5% level, then : (1) Accept H_0 (2) Reject H_0 (3) Accept H_1 (4) Both (2) and (3)
73.	Which database introduced the h-index concept ? (1) Web of Science (2) Scopus (3) Google Scholar (4) Independently by Jorge Hirsch
74.	Impact Factor is published annually in : (1) Scopus Metrics (2) Journal Citation Reports (JCR) (3) Research Gate (4) Cross Reference
75.	Which of the following is not a measure of dispersion? (1) Range (2) Variance (3) Standard Deviation (4) Mean

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76.	Scopus Author ID helps in : (1) Checking plagiarism (2) Identifying and grouping publications of the same author (3) Ranking universities (4) Creating reference lists
77.	The null hypothesis (H_0) is a statement that : (1) There is a significant relationship between variables (2) Variables are dependent (3) There is no significant difference or relationship (4) Means are unequal
78.	The Standard Error of Mean (SEM) decreases when : (1) Sample size decreases (2) Sample variance increases (3) Sample size increase (4) Mean decrease
79.	The standard deviation is the : (1) Square of variance (2) Square root of variance (3) Reciprocal of variance (4) Difference between mean and Median
80.	A correlation coefficient r=0 implies : (1) Strong positive correlation (2) Strong negative correlation (3) Non linear correlation (4) Perfect correlation
81.	The correlation coefficient (r) measures : (1) The degree of linear relationship between two variables (2) The average of two variables (3) The ratio of two variances (4) The difference between two means

Question No.	Questions
82.	In food analysis, composite sampling means : (1) Mixing several subsamples for one representative sample (2) Testing one unit only (3) Randomly ignoring outliers (4) Averaging duplicates
83.	Duplicate analysis helps in : (1) Checking precision and accuracy (2) Reducing sample size (3) Avoiding bias (4) Increasing dispersion
84.	A variable is : (1) A constant value (2) A measurable characteristic that varies (3) Experimental varied data (4) None
85.	A hypothesis is rejected when : (1) p-value<α (2) p-value>α (3) Confidence level = 1 (4) Data incomplete
86.	Web of Science is maintained by : (1) Elsevier (2) Springer (3) Clarivate Analytics (4) Scopus
87.	Scopus is owned by : (1) Elsevier (2) Clarivate (3) Wiley (4) Taylor & Francis

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88.	Google Scholar is : (1) Paid Journal (2) Peer-review system (3) University database (4) Free citation database
89.	The h-index measures : (1) Productivity and citation impact of a researcher (2) Journal quality research articles (3) Funding level (4) Experimental accuracy
90.	Authorship should be based on : (1) Supervisory role only (2) Financial support only (3) Substantial contribution to conception or analysis (4) None
91.	Citation management software examples include : (1) PowerPoint (2) Mendeley, Zotero, EndNote (3) Excel, SPSS (4) None
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95.	The term replication in experimental design refers to : (1) Repeating the experiment to estimate error (2) Randomizing samples (3) Using control group (4) Avoiding bias
96.	The most crucial feature of a scientific experiment is : (1) Subjectivity (2) Objectivity (3) Randomness (4) Cost
97.	Factorial experiments are used to : (1) Study interaction of factors simulataneously (2) Study of one factor only (3) Test unrelated factor variables (4) Control random error
98.	Documentation of data ensures : (1) Destruction of raw data (2) Confidentiality (3) Reproducibility and transparency (4) Reduction of sample size
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Sr. No. 10014

Code **B**

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52.	The *t-test* is used to compare : (1) Variances of two samples (2) Frequencies of categories (3) Proportions of sample (4) Means of two independent samples

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53.	Intellectual Property Rights (IPR) exists primarily to : (1) Prevent publication of new ideas (2) Reward plagiarism (3) Protect and encourage creator's innovation (4) Restrict public access to knowledge
54.	Patent protection in food technology is usually granted for : (1) Discovery of natural food components (2) Novel process, formulations, or packaging methods (3) New Traditional recipes (4) Public domain knowledge
55.	A Geographical Indication (GI) tag in foods refers to : (1) A patent for a regional product (2) Protection of a product's reputation based on its origin (3) A copyright of food company (4) Trademark of a company
56.	The acceptable similarity index for a Ph.D. thesis (as per UGC norms, India) is usually : (1) Below 50% (2) Below 30% (3) Below 10-15% (excluding references and quotes) (4) Exactly 20%
57.	In research ethics, acknowledgement of funding and collaborators is necessary because : (1) It increases citation count (2) It ensures transparency and accountability (3) It is optional courtesy (4) It reduces plagiarism score

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58.	Falsification refers to : (1) Deliberate manipulation of research data or methods to misrepresent results (2) Typographical errors (3) Honest mistake in analysis (4) Reuse of methodology
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60.	The ORCID (Open Researcher and Contributor ID) system is used for : (1) Checking plagiarism (2) Assigning unique identifiers to researcher to distinguish their work (3) Indexing journals (4) Measuring impact factor
61.	The correlation coefficient (r) measures : (1) The degree of linear relationship between two variables (2) The average of two variables (3) The ratio of two variances (4) The difference between two means
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63.	Duplicate analysis helps in : (1) Checking precision and accuracy (2) Reducing sample size (3) Avoiding bias (4) Increasing dispersion
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65.	A hypothesis is rejected when : (1) p-value<α (2) p-value>α (3) Confidence level = 1 (4) Data incomplete
66.	Web of Science is maintained by : (1) Elsevier (2) Springer (3) Clarivate Analytics (4) Scopus
67.	Scopus is owned by : (1) Elsevier (2) Clarivate (3) Wiley (4) Taylor & Francis
68.	Google Scholar is : (1) Paid Journal (2) Peer-review system (3) University database (4) Free citation database
69.	The h-index measures : (1) Productivity and citation impact of a researcher (2) Journal quality research articles (3) Funding level (4) Experimental accuracy

Question No.	Questions
70.	Authorship should be based on : (1) Supervisory role only (2) Financial support only (3) Substantial contribution to conception or analysis (4) None
71.	Which of the following is/are used for lacquering ? (1) Epoxy Phenolic group lacquers (2) White vinyl lacquers (3) Organosol group (4) All of the above
72.	Bitter component present in Saffron is : (1) Safranic acid (2) Safranal (3) Safranone (4) All of the above
73.	ISO 22000 is related to : (1) QMS (2) HACCP (3) FSMS (4) TQM
74.	Which of the following is a cyanobacteria ? (1) *Nostoc* (2) *Boletus* (3) *Glomus* (4) *Amanita*
75.	With proper tempering of fat, we can avoid : (1) Rancidity (2) Fat bloom (3) Reversion (4) All of the above
76.	During the extraction of oil from oil seeds the process of removal of mucilaginous material is termed as : (1) Tempering (2) Winterizing (3) Bleaching (4) Degumming

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77.	The primary amino acid (exclusively) found in tea is : (1) Theaflavin (2) Thearubigin (3) Theanine (4) Caffeine
78.	Which of the following enzyme is used as anti-staling agent in bread? (1) α amylase (2) Protease (3) Lipase (4) Ligase
79.	Which of the following is used as anticaking agent ? (1) Tricalcium phosphate (2) Calcium silicate (3) Magnesium silicate (4) All of the above
80.	Calculate the specific heat of Orange juice concentrate having a solid content of 35% : (1) 0.72 BTU/(lb°F) (2) 0.24 BTU/(lb°F) (3) 0.48 BTU/(lb°F) (4) 0.96 BTU/(lb°F)
81.	Critical Control Points (CCPs) in HACCP refer to : (1) Steps where control can be applied to eliminate or reduce hazards (2) Quality parameters for sensory evaluation (3) Packaging steps (4) Equipment cleaning stages
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Question No.	Questions
83.	Energy balance in food processing is essential for : (1) Calories intake calculation (2) Determining thermal efficiency and optimizing equipment (3) Quality control studies (4) Storage design
84.	Recombinant *Saccharomyces cerevisiae* is commonly used in the production of : (1) Bioethanol (2) Vinegar (3) Antibiotics (4) Vitamins
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88.	Which analytical technique is most widely used for identifying volatile flavor compounds ? (1) HPLC (2) GC-MS (3) IR Spectroscopy (4) UV-Vis Spectrophotometry

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89.	The electronic nose (E-nose) operates on the principle of : (1) Mass spectrometry (2) Sensor array detecting volatile patterns (3) FTIR (4) Chromatographic separation
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SET–"Y" (Total No. of printed pages : 17)

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

PHD-EE, November-2025

FOOD TECHNOLOGY

Sr. No. 10003

Code **C**

Time : 1¼ Hours **Total Questions : 100** **Max. Marks : 100**

Roll No. _____ (in figure) _____ (in words)

Name : _____ Date of Birth : _____

Father's Name : _____ Mother's Name : _____

Date of Examination : _____

(Signature of the candidate) (Signature of the Invigilator)

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3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along-with answer key of all the A,B,C and D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.
5. The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers **MUST NOT** be ticked in the Question book-let.
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7. Use only Black or Blue BALL POINT PEN of good quality in the OMR Answer-Sheet.
8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.

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31.	Citation management software examples include : (1) PowerPoint (2) Mendeley, Zotero, EndNote (3) Excel, SPSS (4) None
32.	Appeals and complaints process in journals aims to : (1) Resolve disputes fairly (2) Delay publication (3) Remove reviewers (4) Increase fees
33.	The first step in the scientific research process is : (1) Data collection (2) Defining the problem (3) Hypothesis formulation (4) Experimentation
34.	Sampling error occurs due to : (1) Mistakes in data entry (2) Random selection of samples (3) Bias in selection or inadequate sample size (4) Faults during sampling

Question No.	Questions
35.	The term replication in experimental design refers to : (1) Repeating the experiment to estimate error (2) Randomizing samples (3) Using control group (4) Avoiding bias
36.	The most crucial feature of a scientific experiment is : (1) Subjectivity (2) Objectivity (3) Randomness (4) Cost
37.	Factorial experiments are used to : (1) Study interaction of factors simulataneously (2) Study of one factor only (3) Test unrelated factor variables (4) Control random error
38.	Documentation of data ensures : (1) Destruction of raw data (2) Confidentiality (3) Reproducibility and transparency (4) Reduction of sample size
39.	When data are highly skewed, the best measure of central tendency is: (1) Mean (2) Median (3) Mode (4) Range
40.	Corresponding author is responsible for : (1) Only submitting the paper (2) Reviewing all submissions in the journal (3) Being the most senior author (4) Handling communication between journal and all co-authors, ensuring integrity and approval

Question No.	Questions
41.	The null hypothesis (H_0) generally states that : (1) There is no significant difference (2) There is a significant difference (3) Variables are dependent (4) Data are biased
42.	The *t-test* is used to compare : (1) Variances of two samples (2) Frequencies of categories (3) Proportions of sample (4) Means of two independent samples
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51.	A rheogram is a graphical representation of the flow behavior, which shows the relationship between : (1) Rate constant and temperature (2) Pressure and temperature (3) Viscosity and temperature (4) Shear stress and shear rate
52.	Vitamin D_2 is also known as : (1) Cholecalciferol (2) Cobalamine (3) Ergocalciferol (4) Pyridoxine
53.	The limit of iodine in iodized salt is : (1) 20-60 mg (2) 80-100 mg (3) 100-200 mg (4) 250-500 mg
54.	Water activity (a_w) of fruit juice concentrate is _____. (1) 0.2-0.3 (2) 0.5-0.6 (3) 0.1-0.2 (4) 0.7-0.9
55.	The ideal packaging material for high pressure processed food : (1) Metal cans (2) Flexible pouches (3) Glass (4) Rigid trays
56.	Which of the following is a non-climacteric fruit ? (1) Apple (2) Elephant apple (3) Mango (4) Papaya
57.	"Salt balance" theory was given by : (1) Samuel and Hill (2) Summer and Schultz (3) Singer and Nicholson (4) Sommer and Hart

Question No.	Questions
58.	The main function of the stabilizers in ice-cream is to : (1) Improve and provide uniform whipping quality (2) Produce a drier ice-cream with smother body and texture (3) Prevent formation of ice crystals (4) None of the above
59.	White pepper is produced conventionally from : (1) Ripe berries (2) Fermented berries (3) Unripe berries (4) Discolored berries
60.	Scoville value measures the : (1) Sweetness of sugar (2) Saltiness of NaCl (3) Pungency of chilli (4) Sourness of lemon
61.	One-way ANOVA is used to test : (1) Relationship between two quantitative variables (2) Difference between means of two groups (3) Difference between means of *three or more groups* on a single factor (4) Correlation strength
62.	If the computed F-value>critical F-value at 5% level, then : (1) Accept H_0 (2) Reject H_0 (3) Accept H_1 (4) Both (2) and (3)
63.	Which database introduced the h-index concept ? (1) Web of Science (2) Scopus (3) Google Scholar (4) Independently by Jorge Hirsch
64.	Impact Factor is published annually in : (1) Scopus Metrics (2) Journal Citation Reports (JCR) (3) Research Gate (4) Cross Reference

Question No.	Questions
65.	Which of the following is not a measure of dispersion? (1) Range (2) Variance (3) Standard Deviation (4) Mean
66.	Scopus Author ID helps in : (1) Checking plagiarism (2) Identifying and grouping publications of the same author (3) Ranking universities (4) Creating reference lists
67.	The null hypothesis (H_0) is a statement that : (1) There is a significant relationship between variables (2) Variables are dependent (3) There is no significant difference or relationship (4) Means are unequal
68.	The Standard Error of Mean (SEM) decreases when : (1) Sample size decreases (2) Sample variance increases (3) Sample size increase (4) Mean decrease
69.	The standard deviation is the : (1) Square of variance (2) Square root of variance (3) Reciprocal of variance (4) Difference between mean and Median
70.	A correlation coefficient r=0 implies : (1) Strong positive correlation (2) Strong negative correlation (3) Non linear correlation (4) Perfect correlation

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81.	The major edible oilseed cultivated in India by area is : (1) Soybean (2) Groundnut (3) Mustard-rapeseed (4) Sesame
82.	The major limiting amino acid in millets is : (1) Lysine (2) Methionine (3) Leucine (4) Tryptophan
83.	Steam distillation is used in spice processing mainly to obtain : (1) Oleoresins (2) Essential oils (3) Pigments (4) Resin acids

Question No.	Questions
84.	The most heat-resistant enzyme in milk is : (1) Lipase (2) Catalase (3) Alkaline Phosphatase (4) Peroxidase
85.	Browning reaction in milk occurs due to reaction between : (1) Lipid and lactose (2) Lysine and maltose (3) Glucose and maltose (4) Lysine and lactose
86.	In a refrigeration cycle, expansion of refrigerant through the expansion valve is at constant : (1) Temperature (2) Pressure (3) Enthalpy (4) Relative humidity
87.	*Trimethylamine* (TMA) is spoiled fish is produced by : (1) Protein oxidation (2) Bacterial reduction of trimethylamine oxide (3) Lipid hydrolysis (4) Maillard reaction
88.	*Tenderization* of meat by papain acts through : (1) Carbohydrate hydrolysis (2) Cleavage of connective tissue proteins (3) Oxidation of fat (4) Heat coagulation
89.	The person square calculation is related to : (1) Momentum balance (2) Energy balance (3) Mass balance (4) All of these

Question No.	Questions
90.	Oil coating of eggs preserves quality by : (1) Inhibiting microbial growth by creating anaerobic conditions (2) Reducing water loss (3) Increasing air cell (4) Preventing yolk movement
91.	A Completely Randomized Design (CRD) is most appropriate when : (1) Experimental units are heterogeneous (2) Experimental units are homogeneous (3) There are blocking factors (4) There are multiple treatments and replicates
92.	Factorial design allows a researcher to : (1) Test one factor at a time (2) Ignore confounding (3) Reduce sample size drastically (4) Study interaction effects between factors
93.	Sampling error arises due to : (1) Poor measurement techniques (2) Sample not representing the population (3) Data recording mistake (4) None of these
94.	In food analysis, *composite sampling* is used to : (1) Reduce analytical cost and variability (2) Increase number of analyses (3) Decrease representativeness (4) Increase variability

Question No.	Questions
95.	During data compilation, the first step is : (1) Interpretation (2) Editing and coding (3) Data collection (4) Hypothesis formulation
96.	The ANOVA (Analysis of variance) technique assumes that : (1) Samples are dependent (2) Population variances are equal (3) Error are not normally distributed (4) Treatments are independent
97.	Non-sampling errors are caused by : (1) Random variation (2) Improper sample size (3) Data recording mistake or bias (4) Using wrong population
98.	Plagiarism refers to : (1) Unintentional spelling mistakes (2) Copying another's work without credit (3) Publishing in multiple journals (4) Peer-review rejection
99.	COPE stands for : (1) Committee on Publication Ethics (2) Council of Publication Editors (3) Conference of Paper Ethics (4) Consortium of Professional Editor
100.	Which of the following is an example of publication misconduct? (1) Peer reviewing (2) Duplicate submission (3) Citation indexing (4) Data archiving

SET–"Y" (Total No. of printed pages : 17)

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PHD-EE, November-2025

FOOD TECHNOLOGY

10016

Code **D**

Sr. No._____

Time : 1¼ Hours **Total Questions : 100** **Max. Marks : 100**

Roll No._____ (in figure)_____ (in words)

Name : _____ Date of Birth : _____

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6. **There will be negative marking and a deduction of 0.25 marks for each wrong answers. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.**
7. Use only Black or Blue **BALL POINT PEN** of good quality in the OMR Answer-Sheet.
8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.

Question No.	Questions
1.	The major edible oilseed cultivated in India by area is : (1) Soybean (2) Groundnut (3) Mustard-rapeseed (4) Sesame
2.	The major limiting amino acid in millets is : (1) Lysine (2) Methionine (3) Leucine (4) Tryptophan
3.	Steam distillation is used in spice processing mainly to obtain : (1) Oleoresins (2) Essential oils (3) Pigments (4) Resin acids
4.	The most heat-resistant enzyme in milk is : (1) Lipase (2) Catalase (3) Alkaline Phosphatase (4) Peroxidase
5.	Browning reaction in milk occurs due to reaction between : (1) Lipid and lactose (2) Lysine and maltose (3) Glucose and maltose (4) Lysine and lactose
6.	In a refrigeration cycle, expansion of refrigerant through the expansion valve is at constant : (1) Temperature (2) Pressure (3) Enthalpy (4) Relative humidity
7.	*Trimethylamine* (TMA) is spoiled fish is produced by : (1) Protein oxidation (2) Bacterial reduction of trimethylamine oxide (3) Lipid hydrolysis (4) Maillard reaction

Question No.	Questions
8.	*Tenderization* of meat by papain acts through : (1) Carbohydrate hydrolysis (2) Cleavage of connective tissue proteins (3) Oxidation of fat (4) Heat coagulation
9.	The person square calculation is related to : (1) Momentum balance (2) Energy balance (3) Mass balance (4) All of these
10.	Oil coating of eggs preserves quality by : (1) Inhibiting microbial growth by creating anaerobic conditions (2) Reducing water loss (3) Increasing air cell (4) Preventing yolk movement
11.	Citation management software examples include : (1) PowerPoint (2) Mendeley, Zotero, EndNote (3) Excel, SPSS (4) None
12.	Appeals and complaints process in journals aims to : (1) Resolve disputes fairly (2) Delay publication (3) Remove reviewers (4) Increase fees
13.	The first step in the scientific research process is : (1) Data collection (2) Defining the problem (3) Hypothesis formulation (4) Experimentation
14.	Sampling error occurs due to : (1) Mistakes in data entry (2) Random selection of samples (3) Bias in selection or inadequate sample size (4) Faults during sampling

Question No.	Questions
15.	The term replication in experimental design refers to : (1) Repeating the experiment to estimate error (2) Randomizing samples (3) Using control group (4) Avoiding bias
16.	The most crucial feature of a scientific experiment is : (1) Subjectivity (2) Objectivity (3) Randomness (4) Cost
17.	Factorial experiments are used to : (1) Study interaction of factors simulataneously (2) Study of one factor only (3) Test unrelated factor variables (4) Control random error
18.	Documentation of data ensures : (1) Destruction of raw data (2) Confidentiality (3) Reproducibility and transparency (4) Reduction of sample size
19.	When data are highly skewed, the best measure of central tendency is: (1) Mean (2) Median (3) Mode (4) Range
20.	Corresponding author is responsible for : (1) Only submitting the paper (2) Reviewing all submissions in the journal (3) Being the most senior author (4) Handling communication between journal and all co-authors, ensuring integrity and approval

Question No.	Questions
21.	One-way ANOVA is used to test : (1) Relationship between two quantitative variables (2) Difference between means of two groups (3) Difference between means of *three or more groups* on a single factor (4) Correlation strength
22.	If the computed F-value>critical F-value at 5% level, then : (1) Accept H_0 (2) Reject H_0 (3) Accept H_1 (4) Both (2) and (3)
23.	Which database introduced the h-index concept ? (1) Web of Science (2) Scopus (3) Google Scholar (4) Independently by Jorge Hirsch
24.	Impact Factor is published annually in : (1) Scopus Metrics (2) Journal Citation Reports (JCR) (3) Research Gate (4) Cross Reference
25.	Which of the following is not a measure of dispersion? (1) Range (2) Variance (3) Standard Deviation (4) Mean
26.	Scopus Author ID helps in : (1) Checking plagiarism (2) Identifying and grouping publications of the same author (3) Ranking universities (4) Creating reference lists

Question No.	Questions
27.	The null hypothesis (H_0) is a statement that : (1) There is a significant relationship between variables (2) Variables are dependent (3) There is no significant difference or relationship (4) Means are unequal
28.	The Standard Error of Mean (SEM) decreases when : (1) Sample size decreases (2) Sample variance increases (3) Sample size increase (4) Mean decrease
29.	The standard deviation is the : (1) Square of variance (2) Square root of variance (3) Reciprocal of variance (4) Difference between mean and Median
30.	A correlation coefficient r=0 implies : (1) Strong positive correlation (2) Strong negative correlation (3) Non linear correlation (4) Perfect correlation
31.	A Completely Randomized Design (CRD) is most appropriate when : (1) Experimental units are heterogeneous (2) Experimental units are homogeneous (3) There are blocking factors (4) There are multiple treatments and replicates
32.	Factorial design allows a researcher to : (1) Test one factor at a time (2) Ignore confounding (3) Reduce sample size drastically (4) Study interaction effects between factors

Question No.	Questions
33.	Sampling error arises due to : (1) Poor measurement techniques (2) Sample not representing the population (3) Data recording mistake (4) None of these
34.	In food analysis, *composite sampling* is used to : (1) Reduce analytical cost and variability (2) Increase number of analyses (3) Decrease representativeness (4) Increase variability
35.	During data compilation, the first step is : (1) Interpretation (2) Editing and coding (3) Data collection (4) Hypothesis formulation
36.	The ANOVA (Analysis of variance) technique assumes that : (1) Samples are dependent (2) Population variances are equal (3) Error are not normally distributed (4) Treatments are independent
37.	Non-sampling errors are caused by : (1) Random variation (2) Improper sample size (3) Data recording mistake or bias (4) Using wrong population
38.	Plagiarism refers to : (1) Unintentional spelling mistakes (2) Copying another's work without credit (3) Publishing in multiple journals (4) Peer-review rejection

Question No.	Questions
39.	COPE stands for : (1) Committee on Publication Ethics (2) Council of Publication Editors (3) Conference of Paper Ethics (4) Consortium of Professional Editor
40.	Which of the following is an example of publication misconduct? (1) Peer reviewing (2) Duplicate submission (3) Citation indexing (4) Data archiving
41.	A rheogram is a graphical representation of the flow behavior, which shows the relationship between : (1) Rate constant and temperature (2) Pressure and temperature (3) Viscosity and temperature (4) Shear stress and shear rate
42.	Vitamin D_2 is also known as : (1) Cholecalciferol (2) Cobalamine (3) Ergocalciferol (4) Pyridoxine
43.	The limit of iodine in iodized salt is : (1) 20-60 mg (2) 80-100 mg (3) 100-200 mg (4) 250-500 mg
44.	Water activity (a_w) of fruit juice concentrate is _____. (1) 0.2-0.3 (2) 0.5-0.6 (3) 0.1-0.2 (4) 0.7-0.9
45.	The ideal packaging material for high pressure processed food : (1) Metal cans (2) Flexible pouches (3) Glass (4) Rigid trays
46.	Which of the following is a non-climacteric fruit ? (1) Apple (2) Elephant apple (3) Mango (4) Papaya

Question No.	Questions
47.	"Salt balance" theory was given by : (1) Samuel and Hill (2) Summer and Schultz (3) Singer and Nicholson (4) Sommer and Hart
48.	The main function of the stabilizers in ice-cream is to : (1) Improve and provide uniform whipping quality (2) Produce a drier ice-cream with smother body and texture (3) Prevent formation of ice crystals (4) None of the above
49.	White pepper is produced conventionally from : (1) Ripe berries (2) Fermented berries (3) Unripe berries (4) Discolored berries
50.	Scoville value measures the : (1) Sweetness of sugar (2) Saltiness of NaCl (3) Pungency of chilli (4) Sourness of lemon
51.	Critical Control Points (CCPs) in HACCP refer to : (1) Steps where control can be applied to eliminate or reduce hazards (2) Quality parameters for sensory evaluation (3) Packaging steps (4) Equipment cleaning stages
52.	FSSAI (Food Safety and Standards Authority of India) was established under : (1) PFA Act, 1954 (2) Food Safety and Standards Act, 2006 (3) Essential Commodities Act, 1955 (4) Consumer Protection Act, 1986

Question No.	Questions
53.	Energy balance in food processing is essential for : (1) Calories intake calculation (2) Determining thermal efficiency and optimizing equipment (3) Quality control studies (4) Storage design
54.	Recombinant *Saccharomyces cerevisiae* is commonly used in the production of : (1) Bioethanol (2) Vinegar (3) Antibiotics (4) Vitamins
55.	Batch fermentation is characterized by : (1) Continuous addition of substrate (2) No inflow or outflow during fermentation (3) Removal of product continuously (4) Steady-state growth
56.	*Aspergillus oryzae* is the mold used in : (1) Soy sauce fermentation (2) Bread leavening (3) Beer brewing (4) Yogurt production
57.	Which of the following compounds contributes to the characteristic buttery flavor in dairy products ? (1) Diacetyl (2) Acetoin (3) Hexanal (4) Isoamyl accetate
58.	Which analytical technique is most widely used for identifying volatile flavor compounds ? (1) HPLC (2) GC-MS (3) IR Spectroscopy (4) UV-Vis Spectrophotometry

Question No.	Questions
59.	The electronic nose (E-nose) operates on the principle of : (1) Mass spectrometry (2) Sensor array detecting volatile patterns (3) FTIR (4) Chromatographic separation
60.	Phytosterols are used in functional foods mainly to : (1) Improve taste (2) Increase sugar content (3) Enhance protein quality (4) Lower cholesterol absorption
61.	Which of the following is/are used for lacquering ? (1) Epoxy Phenolic group lacquers (2) White vinyl lacquers (3) Organosol group (4) All of the above
62.	Bitter component present in Saffron is : (1) Safranic acid (2) Safranal (3) Safranone (4) All of the above
63.	ISO 22000 is related to : (1) QMS (2) HACCP (3) FSMS (4) TQM
64.	Which of the following is a cyanobacteria ? (1) *Nostoc* (2) *Boletus* (3) *Glomus* (4) *Amanita*
65.	With proper tempering of fat, we can avoid : (1) Rancidity (2) Fat bloom (3) Reversion (4) All of the above
66.	During the extraction of oil from oil seeds the process of removal of mucilaginous material is termed as : (1) Tempering (2) Winterizing (3) Bleaching (4) Degumming

Question No.	Questions
67.	The primary amino acid (exclusively) found in tea is : (1) Theaflavin (2) Thearubigin (3) Theanine (4) Caffeine
68.	Which of the following enzyme is used as anti-staling agent in bread? (1) α amylase (2) Protease (3) Lipase (4) Ligase
69.	Which of the following is used as anticaking agent ? (1) Tricalcium phosphate (2) Calcium silicate (3) Magnesium silicate (4) All of the above
70.	Calculate the specific heat of Orange juice concentrate having a solid content of 35% : (1) 0.72 BTU/(lb°F) (2) 0.24 BTU/(lb°F) (3) 0.48 BTU/(lb°F) (4) 0.96 BTU/(lb°F)
71.	The null hypothesis (H_0) generally states that : (1) There is no significant difference (2) There is a significant difference (3) Variables are dependent (4) Data are biased
72.	The *t-test* is used to compare : (1) Variances of two samples (2) Frequencies of categories (3) Proportions of sample (4) Means of two independent samples

Question No.	Questions
73.	Intellectual Property Rights (IPR) exists primarily to : (1) Prevent publication of new ideas (2) Reward plagiarism (3) Protect and encourage creator's innovation (4) Restrict public access to knowledge
74.	Patent protection in food technology is usually granted for : (1) Discovery of natural food components (2) Novel process, formulations, or packaging methods (3) New Traditional recipes (4) Public domain knowledge
75.	A Geographical Indication (GI) tag in foods refers to : (1) A patent for a regional product (2) Protection of a product's reputation based on its origin (3) A copyright of food company (4) Trademark of a company
76.	The acceptable similarity index for a Ph.D. thesis (as per UGC norms, India) is usually : (1) Below 50% (2) Below 30% (3) Below 10-15% (excluding references and quotes) (4) Exactly 20%
77.	In research ethics, acknowledgement of funding and collaborators is necessary because : (1) It increases citation count (2) It ensures transparency and accountability (3) It is optional courtesy (4) It reduces plagiarism score

Question No.	Questions
78.	Falsification refers to : (1) Deliberate manipulation of research data or methods to misrepresent results (2) Typographical errors (3) Honest mistake in analysis (4) Reuse of methodology
79.	Redundant publication occurs when : (1) A paper is co-authored by several authors (2) Review and original papers overlap (3) The same research data are published in more than one journal without acknowledgement (4) A thesis is uploaded in an institutional repository
80.	The ORCID (Open Researcher and Contributor ID) system is used for : (1) Checking plagiarism (2) Assigning unique identifiers to researcher to distinguish their work (3) Indexing journals (4) Measuring impact factor
81.	The color stability of canned peas is maintained primarily by controlling : (1) pH and blanching time (2) Sodium chloride content (3) Oxygen and vacuum sealing (4) Vitamin C concentration
82.	Hydrostatic Pressure Processing (HPP) primarily inactivates microorganisms by : (1) Rupturing cell walls mechanically (2) Creating thermal gradients (3) Altering food pH (4) Denaturation of membrane proteins

Question No.	Questions
83.	Hurdle technology is based on : (1) Application of one lethal preservation method (2) Using multiple mild preservation factors synergistically (3) Employing non-thermal preservation exclusively (4) Combining physical and chemical sterilization
84.	Microfiltration and bacteriofugation are mainly applied in : (1) Dairy processing (2) Fruit juice concentration (3) Cereal milling (4) Meat tenderization
85.	In pasteurization, the key parameter to ensure microbial safety is : (1) Total solids content (2) Lethal rate (F-value) (3) Time-temperature combination (4) Viscosity of the food
86.	Thermo sonication enhance microbial inactivation by : (1) Combining moderate heat with ultrasonic cavitation (2) Increasing pH and reducing aw (3) Generating radiation energy (4) Using filtration and drying simultaneously
87.	The most heat-resistant spoilage organism in canned foods is : (1) *Clostridium botulinum* (2) *Bacillus stearothermophilus* (3) *Aspergillus niger* (4) *Lactobacillus bulgaricus*
88.	The primary spoilage in tomato ketchup is due to : (1) Yeast fermentation (2) Lactic acid bacteria (3) Spore-forming bacteria (4) Molds and osmophilic yeasts
89.	The aleurone layer in cereals is rich in : (1) Starch (2) Protein and minerals (3) Cellulose (4) Lipids only

Question No.	Questions
90.	The key enzyme in dough development affecting elasticity is : (1) Protease (2) Amylase (3) Lipase (4) Polyphenol oxidase
91.	The correlation coefficient (r) measures : (1) The degree of linear relationship between two variables (2) The average of two variables (3) The ratio of two variances (4) The difference between two means
92.	In food analysis, composite sampling means : (1) Mixing several subsamples for one representative sample (2) Testing one unit only (3) Randomly ignoring outliers (4) Averaging duplicates
93.	Duplicate analysis helps in : (1) Checking precision and accuracy (2) Reducing sample size (3) Avoiding bias (4) Increasing dispersion
94.	A variable is : (1) A constant value (2) A measurable characteristic that varies (3) Experimental varied data (4) None
95.	A hypothesis is rejected when : (1) p-value$<\alpha$ (2) p-value$>\alpha$ (3) Confidence level = 1 (4) Data incomplete

Question No.	Questions
96.	Web of Science is maintained by : (1) Elsevier (2) Springer (3) Clarivate Analytics (4) Scopus
97.	Scopus is owned by : (1) Elsevier (2) Clarivate (3) Wiley (4) Taylor & Francis
98.	Google Scholar is : (1) Paid Journal (2) Peer-review system (3) University database (4) Free citation database
99.	The h-index measures : (1) Productivity and citation impact of a researcher (2) Journal quality research articles (3) Funding level (4) Experimental accuracy
100.	Authorship should be based on : (1) Supervisory role only (2) Financial support only (3) Substantial contribution to conception or analysis (4) None

ANSWER KEY FOR PH.D. FOOD TECHNOLOGY NOV 2025				
Q NO	SET A	SET B	SET C	SET D
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2	4	4	2	1
3	2	4	3	2
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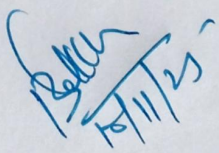

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