

Total No. of Printed Pages: 06

No. of Questions : 50

**Dr. Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar**  
**PET 2024 (9013) Doctor of Philosophy(Food Technology)**

(To be filled by the Candidate)

Candidate Seat Number  
(As per Admit card)

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OMR Sheet Number

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Invigilator's signature with Date

Candidate's Seat No. in Words : \_\_\_\_\_

Name of the Center : \_\_\_\_\_

Paper Code & Name of Examination : **9013 - Doctor of Philosophy(Food Technology)**Date: **03/10/2024****PET 2024 - EXAMINATION**Time: **One Hours**Total Marks: **100****Important Instructions for the candidate**

- Write your seat number and OMR Sheet number on the question paper in the earmarked space
- This question paper carries Fifty (50) Multiple-choice type questions and each question carries 2 Marks
- At the commencement of examination, the question paper will be given to the student.
- Each question has four alternative responses marked (A) (B) (C) and (D). You have to darken the circle as indicated below on the correct response against each question  
Example: where (C) is correct answer

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- Your responses to the answer are to be indicated in the OMR Sheet. If you mark at any place other than in the circle in the OMR Sheet it will not be evaluated.
- Rough work is to be done at the end of this question paper.
- You have to return OMR answer sheet and question paper to the invigilator at the end of examination compulsorily and must not carry with you outside the examination hall.
- Use only Black / Blue ball point pen
- Use of any type of calculator or log table etc. is prohibited.
- There is no negative marking for incorrect answers

**विद्यार्थ्यांसाठी महत्त्वाच्या सूचना**

- परीक्षार्थींनी आपला आसन क्रमांक या पृष्ठावरील वरच्या कोपऱ्यात तसेच आपणास दिलेल्या उत्तर पत्रिकेचा क्रमांक त्याखाली लिहावा.
- या प्रश्नपत्रिकेतील सर्व प्रश्न सोडवणे अनिवार्य आहे.
- परीक्षा सुरू झाल्यावर विद्यार्थ्यांला प्रश्नपत्रिका दिली जाईल.
- प्रत्येक प्रश्नासाठी (A) (B) (C) (D) अशी चार विकल्प उत्तरे दिली आहेत, त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळा निळा करावा.  
उदा: जर (C) हे उत्तर योग्य असेल तर

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- या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे ओएमआर उत्तर पत्रिकेतच दर्शवावीत इतर ठिकाणी लिहिलेली उत्तरे तपासली जाणार नाहीत.
- प्रश्नपत्रिकाच्या शेवटी कोऱ्या जागेवरच कच्चे काम करावे
- परीक्षा संपल्यानंतर विद्यार्थ्यांनी मूळ ओ. एम. आर उत्तरपत्रिका पर्यवेक्षकाकडे परत करणे आवश्यक आहे तथापि प्रश्नपत्रिका व ओ. एम. आर. उत्तरपत्रिका आपल्याबरोबर नेण्यास विद्यार्थ्यांला परवानगी नाही.
- फक्त काळ्या किंवा निळ्या बॉलपेनचाच वापर करावा
- कॅल्क्युलेटर किंवा लॉग टेबल वापरण्यास परवानगी नाही
- चुकीच्या उत्तरासाठी गुण कपात केली जाणार नाही

- | Q. No. | Question  |
|--------|---|
| 1.     | Research problem is selected from the standpoint of<br>(A) Social relevance<br>(B) Financial support<br>(C) Researcher's interest<br>(D) Availability of relevant literature  |
| 2.     | Which one is called non-probability sampling?<br>(A) Cluster sampling<br>(B) Quota sampling<br>(C) Systematic sampling<br>(D) Stratified random sampling  |
| 3.     | What are the conditions in which Type-I error occurs?<br>(A) The null hypotheses get accepted even if it is false<br>(B) The null hypotheses get rejected even if it is true<br>(C) Both the null hypotheses as well as alternative hypotheses are rejected<br>(D) Both the null as well as alternative hypothesis are accepted       |
| 4.     | Which of the following features are considered as critical in qualitative research?<br>(A) Collecting data with the help of standardized research tools.<br>(B) Design sampling with probability sample techniques.<br>(C) Collecting data with bottom-up empirical evidence.<br>(D) Gathering data with top-down schematic evidence. |
| 5.     | Which one is called non-probability sampling?<br>(A) Cluster sampling<br>(B) Quota sampling<br>(C) Systematic sampling<br>(D) Stratified random sampling  |
| 6.     | The experimental study is based on<br>(A) The manipulation of variables<br>(B) Conceptual parameters<br>(C) Replication of research<br>(D) Survey of literature   |
| 7.     | When a research problem is related to heterogeneous population, the most suitable sampling method is:<br>(A) Cluster Sampling<br>(B) Stratified Sampling<br>(C) Convenient Sampling<br>(D) Lottery Method   |
| 8.     | Factorial Analysis is used to<br>(A) Know the relationship between two variables<br>(B) Test the Hypothesis<br>(C) Know the difference between two variables<br>(D) Know the difference among the many variables  |
| 9.     | Which of the following is the first step in starting the research process?<br>(A) Searching sources of information to locate the problem.<br>(B) Survey of related literature<br>(C) Identification of the problem<br>(D) Searching for solutions to the problem  |
| 10.    | A null hypothesis is<br>(A) Subjective in nature<br>(B) Objective in nature<br>(C) When there is no difference between the variables<br>(D) When there is huge difference between the variables   |

11. The complete fulfilment of the objectives in the dissertation can be precisely visualized in  
 (A) Conclusion (B) Results  
 (C) Discussion (D) Materials & methods
12. The heart of any research is  
 (A) Results & discussion (B) Work plan  
 (C) Aim & objectives (D) Gap in existing research
13. The empirical research is all about  
 (A) Proposing the solutions (B) Testing of feasibility of solution  
 (C) Identifying and defining the problems (D) Testing the theories
14. The Chi-Square test is used to compare the  
 (A) Mean (B) Standard deviation  
 (C) Standard error (D) Observed and expected results
15. The F-test is used to compare the  
 (A) Mean (B) Median  
 (C) Variance (D) Mode
16. When an independent-samples t-test does not meet the assumption of normality, what is an appropriate alternative test?  
 (A) Sign test (B) Mann-Whitney U test  
 (C) Levene's test (D) Dependent-samples t-test
17. Which of the following tests would be used to test the mean of a continuous variable to a population mean?  
 (A) One-sample t-test  
 (B) Independent-samples t-test  
 (C) Chi-squared t-test  
 (D) Dependent-samples t-test
18. Which of the following statements is true about the arithmetic mean of two regression coefficients?  
 (A) It is less than the correlation coefficient  
 (B) It is equal to the correlation coefficient  
 (C) It is greater than or equal to the correlation coefficient  
 (D) It is greater than the correlation coefficient
19. While testing a hypothesis, if the level of significance is not mentioned then it is considered to be  
 (A) 2 % (B) 1%  
 (C) 0.5% (D) 0.1%
20. Larger values of  $r^2$  ( $R^2$ ) imply that the observations are more closely grouped about the  
 (A) Average value of the independent variables (B) Average value of the dependent variable  
 (C) Least squares line (D) Origin
21. When the error terms have a constant variance, a plot of the residuals versus the independent variable  $x$  has a pattern that  
 (A) Fans out (B) Funnels in  
 (C) Fans out, but then funnels in (D) Forms a horizontal band pattern

22. If the correlation coefficient is a positive value, then the slope of the regression line  
 (A) Must also be positive (B) Can be either negative or positive  
 (C) Can be zero (D) Cannot be zero
23. If two dice are thrown together, what is the probability of getting a total of 8?  
 (A) 1/4 (B) 1/6  
 (C) 1/12 (D) 5/36
24. If  $P(A) = 0.4$  and  $P(B) = 0.5$ , what is the probability of both A and B occurring?  
 (A) 0.9 (B) 0.2  
 (C) 0.3 (D) 0.8
25. If  $P(E) = 0.07$ , then what is the probability of 'not E'?  
 (A) 0.93 (B) 0.95  
 (C) 0.89 (D) 0.90
26. What is substandard food?  
 (A) An article of food shall be deemed to be sub-standard if it does not meet the specified regulations but does not render the food unsafe.  
 (B) An article of food shall be deemed to be sub-standard if it does not meet the specified standards but does not render the food unsafe.  
 (C) An article of food shall be deemed to be sub-standard if it does meet the specified standards but does not render the adulteration.  
 (D) An article of food shall be deemed to be sub-standard if it meets the specified standards but render the food unsafe.
27. The weight gain (in gram) per gram protein consumed is called\_\_\_\_\_  
 (A) Net Protein Ratio (NPR)  
 (B) Biological Value (BV)  
 (C) Protein Efficiency Ratio (PER)  
 (D) Chemical Score (CS)
28. The brown colour of bread crust during baking is due to Maillard reaction between  
 (A) Aldehyde groups of sugars and amino groups of proteins  
 (B) Aldehyde groups of sugars and vitamins  
 (C) Aldehyde groups of sugars and salt  
 (D) Starch and yeast
29. Which is true objective in case of ISO 22000?  
 (A) To ensure that products do not cause adverse health effects  
 (B) To establish a food safety management system  
 (C) To demonstrate compliance with external safety requirements  
 (D) To minimize the cost of safe food production
30. The aseptic processing of milk is typically conducted at \_\_\_\_ and it works on the preservation mechanism of \_\_\_\_  
 (A) 138 °C/2-3 sec, inactivation & restriction of microorganism  
 (B) 138 °C/2-3 sec, inhibition of microbial growth & restriction of microorganism  
 (C) 72 °C/15 sec, inactivation & restriction of microorganism  
 (D) 72 °C/15 sec, inhibition of microbial growth & restriction of microorganism

31. Stabilizers in ice-cream \_\_\_\_ the viscosity and \_\_\_\_ the melting rate.  
 (A) Increase, increase (B) Decrease, decrease  
 (C) Increase, decrease (D) Decrease, increase
32. Which of the following is the method of long term preservation of fruits and vegetables?  
 (A) Pasteurization (B) Blanching  
 (C) Canning (D) Exclusion of moisture
33. Which one of the following food spoilage microorganism is the most heat resistant?  
 (A) Bacillus stearothermophilus (B) Clostridium botulinum  
 (C) Clostridium thermosaccharolyticum (D) Coxiella burnettii
34. The major objectives of Codex Alimentarius Commission [CAC] are :  
 (A) To protect the health of the consumers and ensure fair practices in the food trade as well as to facilitate national trade in food.  
 (B) To protect the health of the country and ensure fair practices in the food trade as well as to facilitate international trade in food.  
 (C) To protect the wealth of the consumers and ensure fair practices in the food trade as well as to facilitate international trade in food.  
 (D) To protect the health of the consumers and ensure fair practices in the food trade as well as to facilitate international trade in food.
35. Which one of the following statements is INCORRECT with respect to Controlled Atmosphere Package (CAP) and Modified Atmosphere Package (MAP) of perishables?  
 (A) CAP implies a greater degree of precision than MAP in maintaining specific levels of the gas composition.  
 (B) CAP and MAP limit microbial as well as biochemical activities.  
 (C) Gas composition inside a MAP during the storage is continuously monitored and regulated.  
 (D) Modification of the atmosphere inside a MAP is achieved by natural interplay between respiration of products and permeation of gases through the packaging film.
36. The addition of nitrite in meat products leads to the formation of \_\_\_\_ which retains the red color of cured meat.  
 (A) Oxy-myoglobin (B) Met-haemoglobin  
 (C) Met-myoglobin (D) Nitroso-haemoglobin
37. Food Safety and Standards Act-2006 operationized on\_\_\_\_\_.  
 (A) 5<sup>th</sup> August, 2006 (B) 5<sup>th</sup> August, 2010  
 (C) 5<sup>th</sup> August, 2011 (D) 5<sup>th</sup> August, 2012
38. Aspergillus niger is used for production of \_\_\_\_\_.  
 (A) Citric acid (B) Lactic acid  
 (C) Acetic acid (D) Butyric acid
39. Which of the followings is NOT a fermented food product?  
 (A) Tempeh (B) Tofu  
 (C) Sauerkraut (D) Vinegar
40. Most commonly used refrigerant in direct immersion freezing of food is \_\_\_\_\_.  
 (A) Monochlorodifluoromethane (B) Dichlorodifluoromethane  
 (C) Liquid nitrogen (D) Freon

41. The parboiling of paddy results into \_\_\_\_\_.  
 (A) Increase in the milling losses (B) Decrease in the nutritional value of rice  
 (C) Increase in the broken rice percentage (D) Increase in the head rice recovery
42. Which among the followings is NOT an essential amino acid?  
 (A) Phenylalanine (B) Valine  
 (C) Arginine (D) Lysine
43. Which of the following Gram +ve bacteria responsible for causing food borne diseases?  
 (A) Campylobacter jejuni (B) Clostridium botulinum  
 (C) Vibrio cholerae (D) Salmonella typhi
44. In crystallization\_\_\_\_\_  
 (A) Mass transfer occurs from solid to liquid phase  
 (B) Mass transfer occurs from solid to solid phase  
 (C) Mass transfer occurs from liquid to liquid phase  
 (D) Mass transfer occurs from liquid to solid phase
45. By using a Pearson Square method, calculate the amounts of orange juice (10 % sugar content) and sugar syrup (60 % sugar content) needed to produce 50 kg of fruit squash containing 15 % sugar.  
 (A) 5 Kg of orange juice & 45 Kg of Sugar Syrup  
 (B) 45 Kg of orange juice & 5 Kg of Sugar Syrup  
 (C) 40 Kg of orange juice & 10 Kg of Sugar Syrup  
 (D) 10 Kg of orange juice & 40 Kg of Sugar Syrup
46. The FAO/IAEO/WHO Joint Expert Committee on wholesomeness of irradiated food permitted an overall average radiation dose \_\_\_\_\_ in food commodities.  
 (A) 1 kGy (B) 10 kGy  
 (C) 1 Gy (D) 10 Gy
47. Hydrogenation of oils decreases their nutritional quality by \_\_\_\_\_.  
 (A) Increasing unsaturation of fatty acids  
 (B) Decreasing saturation of fatty acids  
 (C) Decreasing level of essential fatty acids  
 (D) Formation of trans-fatty acids
48. Which of the following product is the best example of Bingham plastic fluid?  
 (A) Tomato ketchup (B) Concentrated fruit juice  
 (C) Liquid Chocolate (D) Whipping cream
49. Heat transfer occurs by natural convection because change in temperature causes differences in \_\_\_\_\_.  
 (A) Viscosity (B) Density  
 (C) Thermal conductivity (D) Heat capacity
50. The time required for stipulated destruction of a microbial population at a given temperature is \_\_\_\_\_.  
 (A) F-value (B) D-value  
 (C) Z-value (D) Value

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