Food. Sc. & Tech.

12P/280/1 Question Booklet No. 542

(To be filled up by the candidate by blue/black ball-point pen)

Roll No. | | | | | | | | |

Roll No.
(Write the digits in words) .....

Serial No. of OMR Answer Sheet .....

Day and Date ....
(Signature of Invigilator)

INSTRUCTIONS TO CANDIDATES

(Use only **blue/black ball-point pen** in the space above and on both sides of the Answer Sheet)

1. Within 10 minutes of the issue of the Question Booklet, check the Question Booklet to ensure that it contains all the pages in correct sequence and that no page/question is missing. In case of faulty Question Booklet bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall *except the Admit Card without its envelope.*
3. A separate Answer Sheet is given. *It should not be folded or mutilated. A second Answer Sheet shall not be provided. Only the Answer Sheet will be evaluated.*
4. Write your *Roll Number and Serial Number of the Answer Sheet by pen* in the space provided above.
5. **On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.**
6. No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and also Roll No. and OMR Sheet No. on the Question Booklet.
7. Any change in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfair means.
8. Each question in this Booklet is followed by four alternative answers. *For each question, you are to record the correct option on the Answer Sheet by darkening the appropriate circle* in the corresponding row of the Answer Sheet, by ball-point pen as mentioned in the guidelines given on the first page of the Answer Sheet.
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. *Note that the answer once filled in ink cannot be changed.* If you *do not wish to attempt* a question, leave all the circles in the corresponding row blank (such question will be awarded zero mark).
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit *only the OMR Answer Sheet* at the end of the Test.
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

[उपर्युक्त निर्देश हिन्दी में अन्तिम आवरण-पृष्ठ पर दिये गए हैं]

[No. of Printed Pages : 18+2

No. of Questions/प्रश्नों की संख्या : 120

Time/समय : 2 Hours/घण्टे **Full Marks/पूर्णांक :** 360

Note/नोट : (1) Attempt as many questions as you can. Each question carries **3** marks. **One** mark will be deducted for each incorrect answer. Zero mark will be awarded for each unattempted question.

अधिकाधिक प्रश्नों को हल करने का प्रयत्न करें। प्रत्येक प्रश्न **3** अंक का है। प्रत्येक गलत उत्तर के लिए **एक** अंक काटा जाएगा। प्रत्येक अनुत्तरित प्रश्न का प्राप्तांक शून्य होगा।

(2) If more than one alternative answers seem to be approximate to the correct answer, choose the closest one.

यदि एकाधिक वैकल्पिक उत्तर सही उत्तर के निकट प्रतीत हों, तो निकटतम सही उत्तर दें।

1. Asepsis refers to

(1) treatment with chemicals (2) treatment with heat

(3) treatment in packaged foods (4) keeping out of micro-organisms

2. Browning in fruits and vegetables is due to

(1) formation of melanoidin pigment (2) formation of ketone

(3) formation of aldehyde (4) combination of aldehyde and ketone

3. Climacteric and non-climacteric fruits differ

(1) response to moisture content

(2) response to ethylene production

(3) response to tropical and sub-tropical nature

(4) response to different maturity time

4. Whey is rich source of

(1) proteins (2) fats (3) lactose (4) vitamins

5. The ideal temperature for separation of cream in cream separator is

(1) 60-70 °C (2) 90-100 °C (3) 20-30 °C (4) 40-45 °C

6. The optimum churning temperature for churning of cream into butter is

(1) 5-7 °C (2) 2-3 °C (3) 15-20 °C (4) 9-11 °C

7. As per PFA specifications, ice-cream should contain fat not less than

(1) 15% (2) 10% (3) 5% (4) 20%

8. Ethylene at the concentration is most optimum for ripening in fruits

(1) 1-10 μ l/L (2) 0·1-1 μ l/ml

(3) 10-20 μ l/ml (4) 100-1000 μ l/ml

9. Endosperm of food grains is rich in

(1) vitamin (2) fat (3) starch (4) protein

10. Whey contains total solids to the level of

(1) 5-7% (2) 1-2% (3) 7-9% (4) 10-12%

11. Dry milling of corn kernel is conditioned to the moisture content of

(1) 5-7% (2) 18-20% (3) 2-4% (4) 10-12%

12. The sweetness in corn sugar is due to

(1) sucrose (2) maltose (3) glucose (4) fructose

13. Hard wheat is suitable for

(1) cake (2) pastry (3) bread (4) pizza base

14. Marmalade is jelly like structure which contains

(1) fruit pulp (2) fruit peel (3) fruit juice (4) whole fruit

15. Jelly sets at the temperature of

(1) 100 °C (2) 105 °C (3) 110 °C (4) 115 °C

16. Fruit squash contains minimum fruit juice as per PFA requirement

(1) 15% (2) 25% (3) 45% (4) 5%

17. Dry legume seeds contain protein to the level of

(1) 5-10% (2) 10-20% (3) 50-60% (4) 20-40%

18. Soy protein concentrate contains protein

(1) 10% (2) 30% (3) 50% (4) 70%

19. Fruits and vegetables are generally rich in

(1) vitamin A (2) vitamin K

(3) vitamin B complex (4) vitamin C

20. Roasting in beans is carried out at the temperature of

(1) 100 °C (2) 150 °C (3) 200 °C (4) 250 °C

21. Tomato contains red pigment

(1) anthocyanin (2) carotenoids (3) lycopene (4) flavonoids

22. Inversion in sugar syrup is carried out by

(1) heat treatment (2) acid treatment

(3) alkali treatment (4) enzyme treatment

23. Fat bloom defect in cocoa butter is due to

(1) uncontrolled sugar crystallization (2) controlled sugar crystallization

(3) uncontrolled fat crystallization (4) controlled fat crystallization

24. Conching in chocolate is carried out at

(1) 15 °C for 4-5 days (2) 35 °C for 4-5 days

(3) 55 °C for 4-5 days (4) 75 °C for 4-5 days

25. The density of milk after fat separation

(1) is unchanged (2) is increased

(3) is decreased (4) varies with factors

26. The most acceptable method for inactivation of enzymes is

(1) lime treatment
(2) treatment with common salt
(3) heat treatment
(4) lye treatment

27. Fruit Product Order was passed in the year

(1) 1942 (2) 1947 (3) 1955 (4) 1965

28. Pectin is

(1) carbohydrate
(2) protein
(3) mixture of carbohydrate and protein
(4) mineral mixture

29. Respiratory activity continues after harvest in

(1) cereal grains
(2) oil seeds
(3) legumes
(4) fruits and vegetables

30. The current vegetable production in India is

(1) 80 million tonnes
(2) 100 million tonnes
(3) 160 million tonnes
(4) 130 million tonnes

31. *Clostridium botulinum* is most effective at optimum pH of

(1) 3·5 (2) 4·6 (3) 5·5 (4) 6·5

32. Fruits and vegetables processing in India is carried out to the level of

(1) less than 2% (2) 2% (3) 5% (4) 10%

33. As per FPO specification, jam should contain minimum fruit level of

(1) 25% (2) 35% (3) 45% (4) 65%

34. Tomato ketchup should contain minimum tomato solids as per FPO specification

(1) 10% (2) 12% (3) 26% (4) 5%

35. Sauerkraut refers to the fermentation of

(1) cabbage (2) cauliflower (3) cucumber (4) radish

36. Fruit juice squash is preserved with potassium metabisulphite to the maximum permissible limit of

(1) 50 ppm (2) 100 ppm (3) 250 ppm (4) 350 ppm

37. Vegetables are preferably dried at the temperature of

(1) 35-45 °C (2) 45-55 °C (3) 55-65 °C (4) 65-75 °C

38. The most preferred test for testing the pectin quality in fruits is

(1) alcohol test (2) jelmeter test

(3) hand refractometer (4) Abbe's refractometer

39. The flatulence defect in soyabean milk is attributed due to

(1) monosaccharides (2) disaccharides

(3) oligosaccharides (4) polysaccharides

40. The most acceptable coagulant in manufacture of tofu is

(1) citric acid (2) calcium nitrate

(3) lactic acid (4) calcium sulphate

41. Malted milk food as per PFA contains solubility level not less than

(1) 65% (2) 75% (3) 85% (4) 95%

42. The total number of permitted synthetic food colours under PFA is

(1) 11 (2) 15 (3) 6 (4) 8

43. Thermocouples in canning process help in

(1) determination of salt content

(2) determination of temperature at coldest region

(3) determination of quality of products

(4) determination of viscosity of products

44. The type of heating pattern in liquid canned products is

(1) conduction type

(2) convection type

(3) broken heating curves

(4) combination of conduction and convection types

45. Exhausting process during canning is carried out for

(1) removal of air

(2) assessing the quality of the product

(3) removal of undesirable gases

(4) the combination of all the above factors

46. Lye peeling refers to the treatment of fruits and vegetables with

(1) hydrochloric acid (2) calcium hydroxide

(3) sodium hydroxide (4) ammonium hydroxide

47. Pasteurization in milk is employed for destruction of

(1) *Clostridium botulinum* (2) *Coxiella burnetti*

(3) *Aspergillus niger* (4) *Bacillus cereus*

48. Commercial storage temperature in butter is

(1) 2-3 °C (2) 0 °C (3) -23- - 29 °C (4) -35- -45 °C

49. Ice-cream mix is maintained with milk solids not fat to the level of

(1) 15-16% (2) 18-20% (3) 5-7% (4) 10-11%

50. Fruits and vegetables after harvest are stored for longer shelf life at the temperature of

(1) frozen storage (2) 5-7 °C (3) 8-10 °C (4) 15-20 °C

51. Fish during storage at -1 to 5 °C results in the considerable denaturation of

(1) fat (2) protein (3) vitamin (4) carbohydrate

52. Protective nutrients are

(1) proteins (2) vitamins (3) fats (4) carbohydrates

53. The maximum energy source of nutrients in human body is

(1) protein (2) fat (3) carbohydrate (4) vitamins

54. Bacteriological quality of milk is referred as very good with SPC/ml of

(1) not exceeding 10000 (2) not exceeding 100000

(3) not exceeding 200000 (4) not exceeding 2000000

55. The shelf life of pasteurized milk under refrigerated storage is expected

(1) one day (2) two days (3) three days (4) four days

56. The acidity of whey as compared to milk should be

(1) less (2) more

(3) vary depending on source of milk (4) unchanged

57. Tri process in market milk industry performs

(1) the removal of bacteria, off flavour and foreign weeds

(2) clarification, separation and standardization

(3) chilling, heating and separation

(4) the platform tests, judging the quality of milk and manufacture of quality dairy products

58. The fat globules in homogenized milk is subdivided to less than

(1) 1 micron (2) 2 microns (3) 4 microns (4) 8 microns

59. The fat level in flavoured milk should be

(1) less than 1% (2) less than 2%

(3) less than 3% (4) less than 4%

60. The acceptable acidity in butter milk should be

(1) 0·25-0·35% (2) 0·45-0·55% (3) 0·65-0·75% (4) 0·75-0·85%

61. PFA specification for double toned milk is

(1) 1·5% fat and 8·5% SNF (2) 1·5% fat and 9% SNF

(3) 1·5% fat and 9·5% SNF (4) 1·5% fat and 10% SNF

62. Table cream contains milk fat

(1) 10-15% (2) 20-25% (3) 35-45% (4) 65-75%

63. Whipping quality in cream refers to

(1) incorporation of milk solids (2) refers to incorporation of lactose

(3) refers to mixing of cream (4) refers to production of foam

64. The skim milk should contain fat not more than

(1) 1·0% (2) 0·5% (3) 0·25% (4) 0·05%

65. The moisture content in butter should not exceed as per PFA requirement

(1) 5% (2) 25% (3) 16% (4) 10%

66. Cream for the manufacture of butter should be standardized to the fat percentage of

(1) 25-30 (2) 30-35 (3) 40-45 (4) 55-65

67. Cheddar cheese should contain minimum fat as per PFA requirement

(1) 30% (2) 52% (3) 65% (4) 42%

68. Rennet is added at the temperature during the manufacture of cheddar cheese

(1) 10 °C (2) 20 °C (3) 30 °C (4) 40 °C

69. Curing of cheddar cheese refers to

(1) rubbing with salt
(2) dipping in paraffin wax
(3) storage at 4-5 °C
(4) treating with smoke wood

70. Processed cheese is manufactured by

(1) blending of unripened cheeses
(2) blending of ripened cheeses of similar period
(3) blending of ripened cheeses of different periods
(4) blending of cottage cheeses with cheddar cheese

71. Sweetened condensed milk as per PFA specification contains

(1) not less than 9% milk fat and 31% total milk solids
(2) not less than 15% milk fat and 35% total milk solids
(3) not less than 20% milk fat and 31% total milk solids
(4) not less than 8% milk fat and 26% total milk solids

72. Alcohol test is carried out to assess the milk suitable for sweetened condensed milk

(1) salt balance
(2) acid development
(3) judging the quality of milk
(4) checking the adulteration in milk

73. Lactose powder for crystallization in sweetened condensed milk should be of the size of

(1) 100 mesh size (2) 150 mesh size

(3) 200 mesh size (4) 300 mesh size

74. Whole milk powder should have maximum solubility index as PFA

(1) 2 (2) 10 (3) 15 (4) 85

75. Pantoon sweets is preferred from type of khoa

(1) Pindi (2) Dhap (3) Daniedar (4) All of the above

76. The shelf life of paneer during refrigerated (7-10 °C) storage temperature is

(1) 7 days (2) 10 days (3) 3 days (4) 15 days

77. The compression ratio of petrol engine is

(1) 4 to 8 : 1 (2) 4 to 10 : 1 (3) 8 to 15 : 1 (4) 14 to 20 : 1

78. A pair of bullock develops power equivalent to

(1) 0·5 hp (2) 1·0 hp (3) 1·5 hp (4) 2·0 hp

79. Two wind mills are equivalent to

(1) 1·0 hp (2) 1·25 hp (3) 1·5 hp (4) 2·0 hp

80. The diesel engine used on tractors is

(1) one-stroke engine (2) two-stroke engine

(3) four-stroke engine (4) None of the above

81. The compression pressure of petrol engine inside the cylinder varies from

(1) 6-10 kg/cm^2 (2) 10-15 kg/cm^2

(3) 8-12 kg/cm^2 (4) 12-15 kg/cm^2

82. The efficiency of external combustion engine ranges from

(1) 10-15% (2) 15-20% (3) 20-30% (4) 30-40%

83. The work of crankshaft is to

(1) power the piston (2) turn the flywheel

(3) operate valves (4) All of the above

84. The specific gravity of high speed diesel is

(1) 0·73 (2) 0·87 (3) 0·92 (4) 0·95

85. Constant speed governor is used in

(1) petrol engine (2) stationary engine

(3) tractor engine (4) All of the above

86. Black smoke indicates

(1) burning of lubricants in the cylinder

(2) presence of water in the fuel

(3) engine is overloaded

(4) adulteration in the lubricants

87. Vapour lock is associated with

(1) ignition system (2) cooling system

(3) fuel supply system (4) None of the above

88. The function of carburetor is

(1) to mix the air and fuel

(2) to regulate air-fuel ratio at different speed

(3) to supply correct amount of mixture

(4) All of the above

89. For petrol engine, the maximum power obtained from one kg of fuel is

(1) 10·5-13·8 kg (2) 11-15 kg (3) 12-16 kg (4) 15-20 kg

90. Thermostat valve widely opens at about

(1) 78 °C (2) 80 °C (3) 85 °C (4) 90 °C

91. Adventitious roots grow from

(1) radicle

(2) plumule

(3) hypophysis

(4) any part of the plant body other than radicle

92. A male genotype in angiosperms contains

(1) one gamete only

(2) two male gametes only

(3) two male gametes and one tube nucleus

(4) one male gamete and one tube nucleus

93. A plant with $2n = 20$ will have how many linkage group?

(1) 20 (2) 10 (3) 40 (4) 5

94. At the stage of fully turgid cell, the suction pressure will be

(1) equal to wall pressure (2) zero

(3) equal to osmotic pressure (4) maximum

95. Albinism in plants is associated with

(1) epistasis (2) recessive lethal

(3) dominant lethal (4) chromosome duplication

96. Callus is

(1) an undifferentiated mass of cells (2) a gamete

(3) a tissue (4) a modification of leaf

97. Conifers are abundant in

(1) tropical zone (2) alpine zone

(3) temperate zone (4) subtropical zone

98. Formation of new genes takes place due to

(1) inversion (2) transduction (3) transversion (4) mutation

99. Generally embryo sac is

(1) monosporic (2) bisporic (3) tetrasporic (4) octosporic

100. Female reproductive organ in the flower is

(1) Calyx (2) Corolla (3) Stamens (4) Carpels

101. The optimum C : N ratio for maximum microbiological activities in biogas is

(1) 10 : 1 (2) 15 : 1 (3) 25 : 1 (4) 30 : 1

102. Ammonium sulphate contains

(1) 20% sulphur (2) 26% sulphur (3) 16% sulphur (4) 24% sulphur

103. The most effective wavelength of visible light in photosynthesis is in the region of

(1) red (2) yellow (3) violet (4) green

104. Photosynthesis is a/an

(1) reductive, endergonic, catabolic process

(2) reductive, endergonic, anabolic process

(3) reductive, exergonic, anabolic process

(4) oxidative, exergonic, catabolic process

105. Which one of the following is a long-day plant?

(1) Wheat (2) Jowar (3) Bajra (4) Soyabean

106. The most common free ion in the cell is

(1) phosphorus (2) potassium (3) sulphur (4) iron

107. Ketosis is caused due to the faulty utilization of

(1) sugar (2) calcium (3) protein (4) magnesium

108. Rinderpest is caused by

(1) Bacteria (2) Protozoa (3) Virus (4) Fungi

109. Arka Chandan is a variety of

(1) round melon (2) pumpkin (3) bottle gourd (4) bitter gourd

110. Bulk population breeding is suitable for

(1) fruit crops (2) vegetable crops

(3) small grain crops (4) flower crops

111. Bunchy top in sugarcane is caused by

(1) root borer (2) stock borer

(3) internode borer (4) top shoot borer

112. Cabbage is cross-pollinated owing to

(1) floral morphology (2) protandry

(3) protogyny (4) self-incompatibility

113. Bud necrosis of groundnut is transmitted by

(1) thrips (2) white fly (3) aphids (4) white bug

114. Abscisic acid is a/an

(1) gibberellin (2) auxin (3) retardant (4) inhibitor

115. Arrowing is known as

(1) tillering of sugarcane

(2) emergence of inflorescence in sugarcane

(3) arrow like shape of sugarcane leaf

(4) All of the above

116. Decomposition of organic matter in submerged soil is carried out by

(1) bacteria (2) actinomyces (3) fungi (4) earthworm

117. Foundation seed is obtained from

(1) certified seed (2) registered seed

(3) farmer's seed (4) breeder seed

118. Karnal bunt is caused by

(1) *Neovossia indica* (2) *Neovossia horrida*

(3) *Tilletia caries* (4) *Tilletia foetida*

119. One molecule of glucose on complete oxidation yields

(1) 30 ATP (2) 32 ATP (3) 36 ATP (4) 38 ATP

120. Onion variety suitable for Kharif crop is

(1) Pusa red (2) Pusa ratnar

(3) Agrifound dark red (4) Agrifound light red

★★★

अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण-पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली या काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 10 मिनट के अन्दर ही देख लें कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष-निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर लें।

2. परीक्षा भवन में *लिफाफा रहित प्रवेश-पत्र के अतिरिक्त,* लिखा या सादा कोई भी खुला कागज साथ में न लायें।

3. उत्तर-पत्र अलग से दिया गया है। ***इसे न तो मोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा, केवल उत्तर-पत्र का ही मूल्यांकन किया जायेगा।***

4. अपना *अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन* से निर्धारित स्थान पर लिखें।

5. **उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें। जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।**

6. ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्न-पुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्न-पुस्तिका पर अनुक्रमांक सं० और ओ० एम० आर० पत्र सं० की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।

7. उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।

8. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। ***प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिये आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।***

9. प्रत्येक प्रश्न के उत्तर के लिये केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।

10. ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का ***उत्तर नहीं देना चाहते हैं,*** तो सम्बन्धित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।

11. रफ़ कार्य के लिये प्रश्न-पुस्तिका के मुखपृष्ठ के अन्दर वाले पृष्ठ तथा अंतिम पृष्ठ का प्रयोग करें।

12. परीक्षा के उपरान्त केवल ***ओ०एम०आर० उत्तर-पत्र*** परीक्षा भवन में जमा कर दें।

13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।

14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की, भागी होगा/होगी।