उपाध्येव्यायशाला, फुड टेक्नॉलॉजी, शेतकरी मंत्रा निकेतन, ... परीक्षेचा दिनांक - ४ मार्च, २०१४

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प्रश्नपुस्तिका
चाळणी परीक्षा
फुड टेक्नॉलॉजी

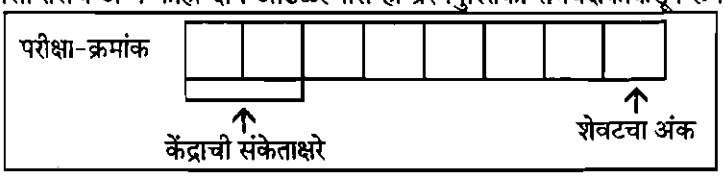
वेळ : 3 (तीन) तास

एकूण प्रश्न : 80
एकूण गुण : 200

सूचना

(1) सदर प्रश्नपुस्तिकेत 80 अनिवार्य प्रश्न आहेत. उमेदवारांनी प्रश्नांची उत्तरे लिहिण्यास सुरुवात करण्यापूर्वी या प्रश्नपुस्तिकेत सर्व प्रश्न आहेत किंवा नाहीत याची खात्री करून घ्यावी. असा तसेच अन्य काही दोष आढळल्यास ही प्रश्नपुस्तिका समवेक्षकांकडून लगेच बदलून घ्यावी.

(2) आपला परीक्षा-क्रमांक ह्या चौकोनांत **न विसरता बॉलपेनने** लिहावा.



(3) वर छापलेला प्रश्नपुस्तिका क्रमांक तुमच्या उत्तरपत्रिकेवर विशिष्ट जागी उत्तरपत्रिकेवरील सूचनेप्रमाणे **न विसरता नमूद करावा.**

(4) या प्रश्नपुस्तिकेतील प्रत्येक प्रश्नाला 4 पर्यायी उत्तरे सुचविली असून त्यांना 1, 2, 3 आणि 4 असे क्रमांक दिलेले आहेत. त्या चार उत्तरांपैकी **सर्वात** योग्य उत्तराचा क्रमांक उत्तरपत्रिकेवरील सूचनेप्रमाणे तुमच्या उत्तरपत्रिकेवर नमूद करावा. अशा प्रकारे उत्तरपत्रिकेवर उत्तरक्रमांक नमूद करताना तो संबंधित प्रश्नक्रमांकासमोर छायांकित करून दर्शविला जाईल याची काळजी घ्यावी. **ह्याकरिता फक्त काळ्या शाईचे बॉलपेन वापरावे, पेन्सिल वा शाईचे पेन वापरू नये.**

(5) सर्व प्रश्नांना समान गुण आहेत. यास्तव सर्व प्रश्नांची उत्तरे द्यावीत. घाईमुळे चुका होणार नाहीत याची दक्षता घेऊनच शक्य तितक्या वेगाने प्रश्न सोडवावेत. क्रमाने प्रश्न सोडविणे श्रेयस्कर आहे पण **एखादा प्रश्न कठीण वाटल्यास त्यावर वेळ न घालविता पुढील प्रश्नाकडे वळावे.** अशा प्रकारे शेवटच्या प्रश्नापर्यंत पोहोचल्यानंतर वेळ शिल्लक राहिल्यास कठीण म्हणून वगळलेल्या प्रश्नांकडे परतणे सोईस्कर ठरेल.

(6) उत्तरपत्रिकेत एकदा नमूद केलेले उत्तर खोडता येणार नाही. नमूद केलेले उत्तर खोडून नव्याने उत्तर दिल्यास ते तपासले जाणार नाही.

(7) **प्रस्तुत परीक्षेच्या उत्तरपत्रिकांचे मूल्यांकन करताना उमेदवाराच्या उत्तरपत्रिकेतील योग्य उत्तरांनाच गुण दिले जातील. तसेच ''उमेदवाराने वस्तुनिष्ठ बहुपर्यायी स्वरूपाच्या प्रश्नांची दिलेल्या चार पर्यायांपैकी सर्वात योग्य उत्तरेच उत्तरपत्रिकेत नमूद करावीत. अन्यथा त्यांच्या उत्तरपत्रिकेत सोडविलेल्या प्रत्येक चार चुकीच्या उत्तरांसाठी एका प्रश्नाचे गुण वजा करण्यात येतील''.**

पर्यवेक्षकांच्या सूचनेविना हे सील उघडू नये

ताकीद

ह्या प्रश्नपत्रिकेसाठी आयोगाने विहित केलेल्ली वेळ संपेपर्यंत ही प्रश्नपुस्तिका आयोगाची मालमत्ता असून ती परीक्षाकक्षात उमेदवाराला परीक्षेसाठी वापरण्यास देण्यात येत आहे. ही वेळ संपेपर्यंत सदर प्रश्नपुस्तिकेची प्रत/प्रती, किंवा सदर प्रश्नपुस्तिकेतील काही आशय कोणत्याही स्वरूपात प्रत्यक्ष वा अप्रत्यक्षपणे कोणत्याही व्यक्तीस पुरविणे, तसेच प्रसिद्ध करणे हा गुन्हा असून अशी कृती करणाऱ्या व्यक्तीवर शासनाने जारी केलेल्या ''परीक्षांमध्ये होणाऱ्या गैरप्रकारांना प्रतिबंध करण्याबाबतचा अधिनियम-82'' यातील तरतुदीनुसार तसेच प्रचलित कायद्याच्या तरतुदीनुसार कारवाई करण्यात येईल व दोषी व्यक्ती कमाल एक वर्षाच्या कारावासाच्या आणि/किंवा रुपये एक हजार रकमेच्या दंडाच्या शिक्षेस पात्र होईल.

तसेच ह्या प्रश्नपत्रिकेसाठी विहित केलेल्ली वेळ संपण्याआधी ही प्रश्नपुस्तिका अनधिकृतपणे बाळगणे हा सुद्धा गुन्हा असून तसे करणारी व्यक्ती आयोगाच्या कर्मचारीवृंदापैकी, तसेच परीक्षेच्या पर्यवेक्षकीयवृंदापैकी असल्ली तरीही अशा व्यक्तीविरूद्ध उक्त अधिनियमानुसार कारवाई करण्यात येईल व दोषी व्यक्ती शिक्षेस पात्र होईल.

पुढील सूचना प्रश्नपुस्तिकेच्या अंतिम पृष्ठावर पहा

कच्च्या कामासाठी जागा / SPACE FOR ROUGH WORK

1. An enzyme catalyzed reaction (following Michaelis - Menten kinetics) exhibits max reaction velocity (V_m) of 75 nmol l^{-1} min^{-1}. The enzyme at a substrate concentration 1.0×10^{-4} M shows the initial reaction velocity of 60 nmol l^{-1} min^{-1}. The K_m value of the enzyme in molar concentration (M) is :

(1) 2.5×10^{-5} (2) 5.0×10^{-5} (3) 2.5×10^{-4} (4) 5.0×10^{-4}

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2. The total solid content of a milk sample is 18%. It is desired to produce 1000 kg of Sweetened Condensed Milk (SCM) having 40% sugar, 25% moisture and rest milk solids. What is the 'Sugar Ratio' (in percentage) in the SCM in terms of sugar and water content in the final product ?

(1) 48.19 (2) 61.54 (3) 54.16 (4) 56.14

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3. Match correctly the specific food processing operations in **Group I** with their mechanism of action in **Group II** :

	Group I		**Group II**
(P)	Ball Mill	(a)	Compression and shear
(Q)	Roller Mill	(b)	Pressure bursting
(R)	Flash Peeling	(c)	Friction and shear
(S)	Abrasive Peeling	(d)	Impact and shear

	(P)	**(Q)**	**(R)**	**(S)**
(1)	(d)	(b)	(a)	(c)
(2)	(d)	(a)	(b)	(c)
(3)	(d)	(c)	(b)	(a)
(4)	(c)	(a)	(d)	(b)

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4. A radiation source used for commercial food processing is :

(1) Palladium - 23 (2) Cobalt - 60 (3) Phosphorus - 32 (4) Sodium - 24

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5. Gluten in wheat flour dough is made up of gliadin and :

(1) Albumin (2) Globulin (3) Prolamin (4) Glutenin

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6. Which micro-organism is used as indicator in water analysis ?

(1) *S. typhi* (2) *E. coli* (3) *K. pneumoniae* (4) *P. aeruginosa*

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7. 650 g of a wet food containing 405 g water is dried in a tray dryer to a final moisture content of 6.8% (dry basis). It is observed that the drying process occurs under constant rate period and it takes 8 h. What should be the initial moisture content (in percentage) of the food on wet basis ?

(1) 62.31 (2) 70.45 (3) 162.31 (4) 165.31

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P.T.O.

8. Match the following items in **Group I** and **Group II** in relation to permitted additives/preservatives in India :

	Group I		**Group II**
(P)	Jelly	(a)	Calcium propionate
(Q)	Edible oil	(b)	Monosodium glutamate
(R)	Meat flavour enhancer	(c)	Sodium benzoate
(S)	Bread	(d)	Butylated hydroxylated anisole
		(e)	Tricalcium silicate

	(P)	**(Q)**	**(R)**	**(S)**
(1)	(c)	(d)	(b)	(a)
(2)	(e)	(c)	(b)	(d)
(3)	(a)	(c)	(d)	(e)
(4)	(b)	(c)	(a)	(e)

9. In the extruder barrel, the compression is achieved by back pressure created by the die and by :
   (1) increasing pitch and decreasing diameter of the screw.
   (2) using the tapered barrel with constant pitch.
   (3) increase in the clearance between barrel surface and screw.
   (4) opening of the die.

10. The preservative having activity both in acidic as well as alkaline pH is :
   (1) Sodium benzoate (2) Sorbic acid
   (3) Parabens (4) Propionic acid

11. Thermal death of viable spores of *Bacillus subtilis* in a food sample follows a first order kinetics with a specific death rate constant of 0.23 min^{-1} at 100°C. The time (in minutes) required to kill 99% of spores in the food sample at 100°C will be :
   (1) 10 (2) 20 (3) 23 (4) 60

12. Heat flow by conduction is governed by :
   (1) Stefan's law (2) Boltzman's law (3) Fourier's law (4) Newton's law

13. Which hydrocolloid shows milk reactivity ?
   (1) Gum Arabic (2) Tragacanth
   (3) Carrageenan (4) Guar gum

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14. Saponification number of a fat is the milligrams of KOH required to saponify 1 g of fat. The correct statement on saponification is :
    (1) Fat with high amount of low molecular weight fatty acids will have high saponification number.
    (2) Butter has low saponification number.
    (3) Fatty acids with long carbon chains have high saponification number.
    (4) Fat with low *Reichert - Meissl* number has very high saponification number.

15. The pH of fruit jelly is always kept at 2.8 to 3.5 (acidic) to facilitate _____ .
    (1) improvement in flavour (2) rapid cooking
    (3) formation of stable gel (4) dissolution of more sucrose

16. Fat bloom is a defect occurring in chocolate products due to improper :
    (1) refining (2) tempering
    (3) conching (4) packaging

17. Make the correct match of the fermented food products in **Group I** with the microorganisms in **Group II** :

	Group I		**Group II**
(P)	Yoghurt	(a)	Lactobacillus acidophilus and Lactobacillus delbrueckii
(Q)	Cheese	(b)	Leuconostoc mesenteroides and Lactobacillus plantarum
(R)	Sauerkraut	(c)	Lactobacillus delbrueckii and Streptococcus thermophillus
(S)	Kefir	(d)	Lactobacillus casei and Streptococcus thermophillus

	(P)	**(Q)**	**(R)**	**(S)**
(1)	(a)	(d)	(b)	(c)
(2)	(d)	(c)	(a)	(b)
(3)	(c)	(d)	(b)	(a)
(4)	(c)	(b)	(d)	(a)

18. Specific gravity of milk is measured by :
    (1) Salonometer (2) Ammeter (3) Lactometer (4) Hydrometer

19. Blanching influences vegetable tissues in terms of :
    (1) enzymes production.
    (2) alteration of cytoplasmic membrane.
    (3) stabilization of cytoplasmic proteins.
    (4) stabilization of nuclear proteins.

SPACE FOR ROUGH WORK

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20. The factor most responsible for making a good ice cream is :
(1) Water content (2) Homogenization
(3) Emulsifying agent (4) Mixing Index

21. A fruit jelly in which the fruit peels are suspended is called as :
(1) Concentrate (2) Pickle (3) Marmalade (4) Fruit cheese

22. The term HACCP stands for :
(1) Hygiene Associated Critical Control Point
(2) Hazard Analysis and Critical Commercial Point
(3) Hygienic and Aesthetic Concept of Critical Products
(4) Hazard Analysis and Critical Control Point

23. The weight gain (in gram) per gram protein consumed is called :
(1) Net Protein Ratio (NPR) (2) Biological Value (BV)
(3) Protein Efficiency Ratio (PER) (4) Chemical Score (CS)

24. Pick the odd pair :
(1) Pineapple - Anthocynines
(2) Tomato - Lycopene
(3) Beet - Betalins
(4) Carrot - Carotenoids

25. Which of the following statements is **NOT CORRECT** in relation to muscle proteins ?
(1) Actin and myosin interact to form actomyosin which is responsible for muscle contraction.
(2) Collagen contributes to the toughness of muscles due to its abundant presence.
(3) Elastin, a constituent of ligaments, is tougher than collagen.
(4) Actomyosin is not the main state of actin and myosin in post-mortem muscles.

26. _____ are sparkling, clarified, sweetened fruit juices from which all the pulp and other suspended particles are completely removed.
(1) Squashes (2) Syrups (3) Cordials (4) Purees

SPACE FOR ROUGH WORK

27. Among the following fatty acids, which group is known as essential fatty acids ?
(1) 9, 11- Octadecadienoic and 9, 11, 13- Octadecatrienoic
(2) 9, 12- Octadecadienoic and 9, 12, 15- Octadecatrienoic
(3) 9- Octadecenoic and 9, 11- Octadecadienoic
(4) 9, 11- Octadecadienoic and 9- Eicosenoic

28. Match the following items in **Group I** and **Group II** in relation to nutritional requirement of human body :

	Group I		**Group II**
(P)	Calcium and Phosphorus	(a)	Elements not needed in diet
(Q)	Vitamin D	(b)	Promotes absorption of iron
(R)	Manganese and Chromium	(c)	Elements that are required in small quantities
(S)	Vitamin K	(d)	Promotes the absorption of Calcium
		(e)	Essential for normal clotting of blood
		(f)	Elements that are required in large quantities

	(P)	**(Q)**	**(R)**	**(S)**
(1)	(f)	(b)	(a)	(e)
(2)	(f)	(d)	(c)	(e)
(3)	(e)	(b)	(f)	(d)
(4)	(b)	(e)	(a)	(d)

29. The primary bacterial spoilage of poultry meat at low temperature, with characteristic sliminess at outer surface, is caused by :
(1) *Pseudomonas spp.* (2) *Aspergillus spp.*
(3) *Bacillus spp.* (4) *Candida spp.*

30. The iodine number of a fat measures :
(1) its amphipathic character.
(2) the number of phosphate groups in the molecule.
(3) its degree of unsaturation.
(4) the number of hydroxyl groups present.

31. The phenomenon of spontaneous exudation of fluid from a gel is called :
(1) Crystallization (2) Weeping of jelly
(3) Premature gelatin (4) None of the above

SPACE FOR ROUGH WORK

P.T.O.

32. Saponifiable lipids are those which :
(1) yield a fatty acid upon basic hydrolysis.
(2) are broken down by soaps.
(3) are hydrophilic.
(4) are derived solely from dietary intake.

33. Which one of the micro-organisms given below is **NOT RESPONSIBLE** for ropy or stringy fermentation of milk ?
(1) *Alcaligenes viscolactis* (2) *Enterobacter aerogenes*
(3) *Streptococcus cremoris* (4) *Streptococcus lactis*

34. Hydrogenation of oils decreases their nutritional quality by :
(1) increasing unsaturation of fatty acids.
(2) decreasing level of essential fatty acids.
(3) decreasing saturation of fatty acids.
(4) formation of trans-fatty acids.

35. Match the food items in **Group I** with the type of colloidal dispersion given in **Group II** :

	Group I		**Group II**
(P)	Mayonnaise	(a)	Sol
(Q)	Tomato ketchup	(b)	Emulsion
(R)	Cake	(c)	Gel
(S)	Curd	(d)	Solid foam

	(P)	**(Q)**	**(R)**	**(S)**
(1)	(d)	(a)	(b)	(c)
(2)	(c)	(a)	(b)	(d)
(3)	(b)	(c)	(d)	(a)
(4)	(b)	(a)	(d)	(c)

36. Thermal death time (TDT) of Clostridium botulinum at 121°C is 2.78 minutes with a z-value of 10°C. The TDT of the micro-organism at 116°C (in minutes) is :
(1) 5.270 (2) 8.791
(3) 1.390 (4) 0.712

37. The Basal Metabolic Rate (BMR) is the energy needed by a resting individual. The factor with the least effect on the BMR is the :
(1) sex of an individual.
(2) age of the subject.
(3) body composition of an individual.
(4) mental activity of the subject.

SPACE FOR ROUGH WORK

38. Which one of the following is **NOT A CORRECT** statement ?

(1) Meatiness is the taste produced by compounds such as glutamate in products like chee soy sauce.

(2) Astringency is a dry mouth feel in the oral cavity that is most associated with phenolic compounds.

(3) Saltiness is a taste that is mainly produced by chloride ions.

(4) Sourness is related to acidity and is sensed by hydrogen ion channels in the human tongue.

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39. _____ , a phenolic constituent present in strawberries has been shown to be effective antimutagen.

(1) Tannin (2) Ellagic acid (3) Citric acid (4) Anthocyanin

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40. Lysine is limiting amino acid in _____ .

(1) Wheat (2) Rice (3) Corn (4) All the above

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41. Match the products in **Group I** with the enzymes used for their preparation given in **Group II** :

	Group I		**Group II**
(P)	Aspartame	(a)	Lipase
(Q)	Cocoa butter substitute	(b)	Glucose isomerase
(R)	High fructose corn syrup	(c)	Thermolysin
(S)	Lactose free milk	(d)	Invertase
		(e)	Beta galactosidase

	(P)	**(Q)**	**(R)**	**(S)**
(1)	(b)	(a)	(d)	(c)
(2)	(c)	(a)	(b)	(e)
(3)	(a)	(c)	(b)	(d)
(4)	(a)	(b)	(d)	(e)

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42. The important role of carotenoids in the human diet is their ability to serve as precursors of :

(1) Vitamin C (2) Vitamin D

(3) Vitamin A (4) Vitamin K

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43. An effective and safe method employed in the decontamination of spices is :

(1) fumigation (2) irradiation

(3) heat sterilization (4) encapsulation

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44. A mild heat treatment of foods that destroys pathogens and extends its shelf life is cal

(1) Baking (2) Blanching

(3) Sterilization (4) Pasteurization

45. Synthetic sweetners are commonly used as sweetening agents in food because :

(1) they are easily available.

(2) the sweetness response is faster.

(3) they have long shelf life.

(4) they have low calorific value of per unit of sweetness.

46. Which of the following is the locomotory organ of bacteria ?

(1) Sexpilli (2) Fimbriae (3) Flagella (4) Cilia

47. **Assertion (A)** : In the presence of sucrose, the temperature and time for gelatinization of starch increases.

Reason (R) : Sucrose, due to its hygroscopic nature, competes with starch for water needed for gelatinization.

(1) Both **(A)** and **(R)** are true and **(R)** is the correct reason for **(A)**.

(2) Both **(A)** and **(R)** are true but **(R)** is not the correct reason for **(A)**.

(3) Both **(A)** and **(R)** are false.

(4) **(A)** is true but **(R)** is false.

48. Thermal destruction of micro-organisms follows a kinetics of :

(1) Zero order (2) First order

(3) Second order (4) Fractional order

49. In commercial cold storage, the butter is stored at _____ .

(1) 0°C (2) $-20°C$ (3) 4°C (4) $-4°C$

50. Enzyme involved in conversion of sugar into glucose and fructose :

(1) maltase (2) zymase (3) invertase (4) diastase

SPACE FOR ROUGH WORK

51. Match the toxicants of plant foods in **Group I** with their main plant source give **Group II** :

	Group I		**Group II**
(P)	Gossypol	(a)	Khesari Dahl (Lathyrus sativus)
(Q)	Vicine	(b)	Cotton seeds
(R)	Glucosinolates	(c)	Fava beans
(S)	BOAA (Beta-N-Oxalyl Amino L-Alanine)	(d)	Rapeseeds

	(P)	**(Q)**	**(R)**	**(S)**
(1)	(b)	(c)	(d)	(a)
(2)	(b)	(d)	(c)	(a)
(3)	(c)	(a)	(b)	(d)
(4)	(d)	(c)	(a)	(b)

52. Kawashiorkar disease is caused due to the deficiency of :

(1) Lysine (2) Essential fatty acids
(3) Vitamin K (4) Protein

53. Which of the following statements is **TRUE** in case of oxidative rancidity of vegetable oils and fats ?

(1) It is caused by the reaction of saturated fatty acids and oxygen.
(2) It is caused by oxidative enzymes.
(3) It is caused by the reaction of unsaturated fatty acids with oxygen.
(4) All the above.

54. The outermost layer of most cereal grains which is rich in proteins and which is removed during milling is called :

(1) aleurone (2) mesocarp
(3) germ (4) endosperm

55. Lactose intolerance in infants may result from :

(1) a lack of the enzyme galactose 1 -phosphate uridyltransferase.
(2) an excess of sucrose in the diet.
(3) a lack of galactose in the diet.
(4) a lack of the enzyme beta-galactosidase.

56. Which one of the following minerals regulates the acid - base balance of the body ?

(1) Ca (2) Na (3) K (4) Fe

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57. Which of the following may be responsible for lowering the freezing point ?
(1) Protein (2) Fat (3) Proponic acid (4) Salt

58. The food borne disease, Q fever is caused by the organism :
(1) *Clostridium perfringens* (2) *Coxiella burnetti*
(3) *Bacillus cereus* (4) *Staphylococcus aureus*

59. Preparation of sweet coated breakfast cereals like corn flakes includes several major processing steps, like :
(P) Soaking in water followed by steaming of corn grits
(Q) Coating of sugar followed by drying of flakes
(R) Breaking the whole corn into large grits
(S) Flaking of cooked grits
(T) Packaging of finished products
(U) Toasting of flakes
(V) Cleaning of whole corn
The correct sequence for the preparation of sugar coated corn flakes is :
(1) V → U → Q → P → S → R → T
(2) V → R → S → P → U → Q → T
(3) V → U → P → Q → S → R → T
(4) V → R → P → S → U → Q → T

60. At their isoelectric point proteins have :
(1) no ionized groups.
(2) no positively charged groups.
(3) no negatively charged groups.
(4) equal numbers of positively and negatively charged groups.

61. The brown colour of bread crust during baking is due to Maillard reaction between :
(1) aldehyde groups of sugars and amino groups of proteins.
(2) aldehyde groups of sugars and vitamins.
(3) aldehyde groups of sugars and salt.
(4) starch and yeast.

62. Considering sweetness of sucrose as 100, relative sweetness of lactose is :
(1) 20 (2) 40 (3) 60 (4) 80

63. Which one of the following micro-organisms is used in the preparation of bread ?
(1) *Candida utilis* (2) *Saccharomyces cerevisiae*
(3) *Saccharomyces cevarum* (4) *Aspergilus niger*

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64. In crystallization :

(1) mass transfer occurs from solid to liquid phase.

(2) mass transfer occurs from solid to solid phase.

(3) mass transfer occurs from liquid to liquid phase.

(4) mass transfer occurs from liquid to solid phase.

---

65. A bacterial strain isolated from meat is inoculated in a growth medium at a cell density of 2×10^5 cells/ml. Then, 0.2 ml of the culture broth is withdrawn immediately and mixed with 0.8 ml of sterile saline. This sample is diluted by mixing 0.1 ml of it with 99.9 ml sterile water. Then 0.1 ml of this diluted solution is spread on appropriate nutrient agar plate. The number of colonies expected on the agar plate are :

(1) 4 (2) 40 (3) 400 (4) 4000

---

66. Which of the following carbohydrates is **NOT** classified as dietary fibre ?

(1) Agar (2) Pectin

(3) Sodium alginate (4) Tapioca starch

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67. Which of the following tocopherols has highest antioxidant property ?

(1) α - tocopherol (2) β - tocopherol (3) γ - tocopherol (4) κ - tocopherol

---

68. Sucrose is composed of :

(1) two residues of D-glucose.

(2) one residue each of D-glucose and D-fructose.

(3) one residue each of D-glucose and D-galactose.

(4) one residue each of D-galactose and D-fructose.

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69. Vitamin D prevents :

(1) Rickets (2) Osteomalacia (3) Osteoporosis (4) All the above

---

70. The key enzyme involved in enzymatic browning of fruits or vegetables is :

(1) Peroxidase (2) Polyphenol Oxidase

(3) Catalase (4) Cholesterol Oxidase

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71. Match the following organelle or cellular components of a bacterium **Group I** with the constituents and functionalities in **Group II** :

	Group I		**Group II**
(P)	Cytoplasmic membrane	(a)	Protein synthesis
(Q)	Flagellum	(b)	Peptidoglycan
(R)	Cell wall	(c)	Phospholipid bilayer
(S)	Ribosome	(d)	Motility of cell

	(P)	**(Q)**	**(R)**	**(S)**
(1)	(c)	(b)	(d)	(a)
(2)	(d)	(b)	(a)	(c)
(3)	(c)	(d)	(b)	(a)
(4)	(b)	(c)	(d)	(a)

---

72. Which of the following is the definition of K_m (The Michaelis constant) ?

(1) The half maximal velocity.

(2) The velocity when substrate and product are at 1 molal concentrations.

(3) The concentration of substrate required to give half maximal velocity.

(4) The velocity at saturating concentrations of substrate.

---

73. Which of the following is an emulsifier ?

(1) Casein (2) Lactose (3) Lecithin (4) Palmitic Acid

---

74. A liquid flows in a pipe at a velocity of 5.47 ft/s. Determine its velocity in m/min.

(1) 60 (2) 80 (3) 100 (4) 120

---

75. Which of the following preservatives is used for preservation of Volatile oils ?

(1) Sodium benzoate (2) KMS

(3) Sorbic acid (4) Alcohol

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76. Make the correct match of the food constituents in **Group I** with their nature gi
Group II :

	Group I		**Group II**
(P)	Ascorbic acid	(a)	Sugar
(Q)	Phenyl alanine	(b)	Chelate
(R)	Dextrose	(c)	Amino Acid
(S)	Haemoglobin	(d)	Antioxidant

	(P)	**(Q)**	**(R)**	**(S)**
(1)	(d)	(c)	(a)	(b)
(2)	(d)	(a)	(c)	(b)
(3)	(c)	(d)	(b)	(a)
(4)	(d)	(b)	(a)	(c)

77. Reassociation of amylose and formation of crystalline structure upon cooling of cooked starch solution is termed as :

(1) Synersis (2) Gelatinization
(3) Retrogradation (4) Denaturation

78. How much skim milk (in kg) containing 0.1% fat should be added to 500 kg of cream containing 50% fat to produce standardized cream containing 36% fat ?

(1) 140 (2) 165 (3) 195 (4) 210

79. Cellulose, the structural polysaccharide of plant, is a polymer of :

(1) β-D-Glucose (2) α-D-Glucose
(3) β-D-Galactose (4) α-D-Galcturonic acid

80. The most common and least expensive plastic film used for packaging of solid food materials is :

(1) Polyethylene (2) Polystyrene
(3) Polypropylene (4) Polyvinylchloride

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सूचना — (पृष्ठ 1 वरून पुढे....)

(8) प्रश्नपुस्तिकेमध्ये विहित केलेल्या विशिष्ट जागीच कच्चे काम (रफ वर्क) करावे. प्रश्नपुस्तिकेव्यतिरिक्त उत्तरपत्रिकेवर वा इतर कागदावर कच्चे काम केल्यास ते कॉपी करण्याच्या उद्देशाने केले आहे, असे मानले जाईल व त्यानुसार उमेदवारावर शासनाने जारी केलेल्या "परीक्षांमध्ये होणाऱ्या गैरप्रकारांना प्रतिबंध करण्याबाबतचे अधिनियम-82" यातील तरतुदीनुसार कारवाई करण्यात येईल व दोषी व्यक्ती कमाल एक वर्षाच्या कारावासाच्या आणि/किंवा रुपये एक हजार रकमेच्या दंडाच्या शिक्षेस पात्र होईल.

(9) सदर प्रश्नपत्रिकेसाठी आयोगाने विहित केलेली वेळ संपल्यानंतर उमेदवाराला ही प्रश्नपुस्तिका स्वत:बरोबर परीक्षाकक्षाबाहेर घेऊन जाण्यास परवानगी आहे. **मात्र परीक्षा कक्षाबाहेर जाण्यापूर्वी उमेदवाराने आपल्या उत्तरपत्रिकेचा भाग-1 समवेक्षकाकडे न विसरता परत करणे आवश्यक आहे.**

नमुना प्रश्न

Pick out the correct word to fill in the blank :

Q. No. 201. I congratulate you _____ your grand success.

(1) for (2) at (3) on (4) about

ह्या प्रश्नाचे योग्य उत्तर "(3) on" असे आहे. त्यामुळे या प्रश्नाचे उत्तर "(3)" होईल. यास्तव **खालीलप्रमाणे** प्रश्न क्र. 201 समोरील उत्तर-क्रमांक "③" हे वर्तुळ पूर्णपणे छायांकित करून दाखविणे आवश्यक आहे.

प्र. क्र. 201. ① ② ● ④

अशा पद्धतीने प्रस्तुत प्रश्नपुस्तिकेतील प्रत्येक प्रश्नाचा तुमचा उत्तरक्रमांक हा तुम्हाला स्वतंत्ररीत्या पुरविलेल्या उत्तरपत्रिकेवरील त्या त्या प्रश्नक्रमांकासमोरील संबंधित वर्तुळ पूर्णपणे छायांकित करून दाखवावा. **ह्याकरिता फक्त काळ्या शाईचे बॉलपेन वापरावे, पेन्सिल वा शाईचे पेन वापरू नये.**

कच्च्या कामासाठी जागा /SPACE FOR ROUGH WORK