

UNIVERSITY OF MYSORE

Ph.D. Entrance Examination, November - 2020



SUBJECT CODE : **27**

QUESTION BOOKLET NO.

Entrance Reg. No.

503669

QUESTION BOOKLET

(Read carefully the instructions given in the Question Booklet)

SUBJECT : **FOOD SCIENCE AND NUTRITION**

MAXIMUM MARKS : 100

MAXIMUM TIME : THREE HOURS

(Including initial 10 minutes for filling O.M.R. Answer sheet)

INSTRUCTIONS TO THE CANDIDATES

1. The sealed questions booklet containing 50 questions enclosed with O.M.R. Answer Sheet is given to you.
2. Verify whether the given question booklet is of the same subject which you have opted for examination.
3. Open the question paper seal carefully and take out the enclosed O.M.R. Answer Sheet outside the question booklet and fill up the general information in the O.M.R. Answer sheet. If you fail to fill up the details in the form of alphabet and signs as instructed, you will be personally responsible for consequences arising during scoring of your Answer Sheet.
4. During the examination:
 - a) Read each question carefully.
 - b) Determine the Most appropriate/correct answer from the four available choices given under each question.
 - c) Completely darken the relevant circle against the Question in the O.M.R. Answer Sheet. For example, in the question paper if "C" is correct answer for Question No.8, then darken against Sl. No.8 of O.M.R. Answer Sheet using Blue/Black Ball Point Pen as follows:

Question No. 8. A B C D (Only example) (Use Ball Pen only)

5. Rough work should be done only on the blank space provided in the Question Booklet. Rough work should not be done on the O.M.R. Answer Sheet.
6. If more than one circle is darkened for a given question, such answer is treated as wrong and no mark will be given. See the example in the O.M.R. Sheet.
7. The candidate and the Room Supervisor should sign in the O.M.R. Sheet at the specified place.
8. Candidate should return the original O.M.R. Answer Sheet and the university copy to the Room Supervisor after the examination.
9. Candidate can carry the question booklet and the candidate copy of the O.M.R. Sheet.
10. The calculator, pager and mobile phone are not allowed inside the examination hall.
11. **If a candidate is found committing malpractice, such a candidate shall not be considered for admission to the course and action against such candidate will be taken as per rules.**

INSTRUCTIONS TO FILL UP THE O.M.R. SHEET

1. There is only one most appropriate/correct answer for each question.
2. For each question, only one circle must be darkened with BLUE or BLACK ball point pen only. Do not try to alter it.
3. Circle should be darkened completely so that the alphabet inside it is not visible.
4. Do not make any stray marks on O.M.R. Sheet.

ಗಮನಿಸಿ : ಸೂಚನೆಗಳ ಕನ್ನಡ ಆವೃತ್ತಿಯು ಈ ಪುಸ್ತಕದ ಹಿಂಭಾಗದಲ್ಲಿ ಮುದ್ರಿಸಲ್ಪಟ್ಟಿದೆ.

PART - A

I. This part shall contains 50 multiple Choice/Objective type questions, each question carrying one mark. [50 × 1 = 50]

1) Expression of a particular gene to elicit biological response is called

- (A) Gene Knock-Out (B) Gene switch – Off
(C) Gene Up regulation (D) All

2) Monoglycerides and diglycerides are used as in a variety of foods

- (A) Color (B) Flavor
(C) Calories (D) Emulsifiers

3) Bitterness in colocasia is due to

- (A) Calcium carbonate (B) Calcium chloride
(C) Potassium oxalate (D) Calcium Oxalate

4) Gene associated with milk production in buffaloes is

- (A) G6PD gene (B) HNF4 α
(C) PRL gene (D) IGFBP-1

5) Tocopherol is an example of

- (A) Anticaking agent (B) Flavoring agent
(C) Antioxidant (D) None of these

6) Folic acid deficiency hamperinf DNA methylation is rich in

- (A) Cereal grains (B) Mustard
(C) Egg Yolk (D) Banana

- 7) Which of the following is correct?
- (A) Sucrose is made of galactose and glucose
 - (B) Lactose is made up of glucose and fructose
 - (C) Lactose is made up of galactose and fructose
 - (D) Sucrose is made up of glucose and fructose
- 8) The first synthetic sweetening agent used was
- (A) Saccharin
 - (B) Cylamates
 - (C) Aspartame
 - (D) Sucralose
- 9) Transcription factor family that functions as global regulator of lipid synthesis is
- (A) SCAP
 - (B) INSIG-1
 - (C) SREBP-1
 - (D) None of the above
- 10) Which of the following deals with how food is adjudged by the consumer
- (A) Food microbiology
 - (B) Sensory analysis
 - (C) Food product development
 - (D) Food physics
- 11) Thermophiles grow at
- (A) 8 to 45°C
 - (B) 25 to 30°C
 - (C) 0 to 20°C
 - (D) 50 to 60°C
- 12) Types of yeast used for alcoholic fermentation is
- (A) *Saccharomyces cerevisiae*
 - (B) *Streptococcus thermophiles*
 - (C) *Acetobacter acceti*
 - (D) *Clostridium botulinum*

- 13) In bread making alcoholic fermentation is carried out by
- (A) *Streptococcus thermophilus*
 - (B) *Saccharomyces cerevisiae*
 - (C) *S.carlsbergensis*
 - (D) *Lactobacillus bulgaricus*
- 14) The growth of aerobic foods spoilage and pathogenic microorganism can be suppressed by
- (A) Humectants
 - (B) Exhausting
 - (C) Both A and B
 - (D) None of the above.
- 15) Formation of abscission layer is maturity index of
- (A) Tomato
 - (B) Leafy vegetables
 - (C) Onion
 - (D) Melons
- 16) In onion pink colour is due to
- (A) Anthocyanin
 - (B) Carotene
 - (C) Xanthophyll
 - (D) Quercitin
- 17) Which types of fermentation is used to produce yogurt
- (A) Mesophilic
 - (B) Thermophilic
 - (C) Therapeutic
 - (D) Yeast- Lactic fermentation
- 18) In fruit processing which salt (concentration below 0.1%) is used
- (A) Sodium
 - (B) Magnesium
 - (C) Calcium
 - (D) Potassium

19) This carbohydrate is used during intense exercising. Which among the following is it?

- (A) Starch
- (B) Sucrose
- (C) Fructose
- (D) Glycogen

20) Which of the following is a function of insoluble fiber only?

- (A) Regulating blood sugar
- (B) Regulating the pH of the body
- (C) Adding bulk to stool
- (D) Lowering cholesterol

21) Reena is a diabetic patient. One day she was tempted to eat junk food. Which is a relatively a better food product to eat-pasta or candy? Why?

- (A) Pasta- contains primary carbohydrates which increases blood sugar level comparatively slowly and to a lesser level.
- (B) Pasta-contains secondary carbohydrates which increases blood sugar level comparatively slowly and to a lesser level.
- (C) Candy- contains primary carbohydrates which increases blood sugar level comparatively slowly and to a lesser level.
- (D) Candy-contains secondary carbohydrates which increases blood sugar level comparatively slowly and to a lesser level.

22) What is the main action of dietary fibers?

- (A) To ensure proper functioning of the liver
- (B) To secrete hormones
- (C) To maintain pH
- (D) To make changes to how nutrients and chemicals are absorbed

- 23) Which of the following is true?
- (A) Fats naturally occurring unless mentioned otherwise are trans in nature
 - (B) Trans fats are essential and needed for the human body
 - (C) LC-PUFA stands for long chain poly saturated fatty acids
 - (D) SC-PUFA stands for long chain poly unsaturated fatty acids
- 24) Which of the following is NOT a culinary use of oil in the food industry?
- (A) Flavor
 - (B) Texture
 - (C) Softening
 - (D) Shortening
- 25) Which of the following is incorrect?
- (A) Controlled cheese ripening is controlling some protein break down
 - (B) Proteins form films
 - (C) Egg white cannot be whipped
 - (D) If proteins are over-whipped, the film breaks, foam collapses
- 26) The storage of prepared food in ___ areas in the ___ of oxygen creates conditions for ____ Which option best fits the above sentence?
- (A) Cold, presence, Purification
 - (B) Warm, absence, Putrefaction
 - (C) Cold, presence, Putrefaction
 - (D) Warm, absence, Purification
- 27) Statement 1: Foreign objects entering food is called physical contamination of food. Statement 2: Controlling moisture is the only precaution to be taken to prevent food contamination.
- (A) True, False
 - (B) True, True
 - (C) False, False
 - (D) False, True

28) A substance intentionally added that preserves flavour and improves taste is called _____

- (A) Food additive (B) Food adulterant
(C) Food contaminant (D) Food material

29) Statement 1: Stabilizers, Emulsifiers are certain examples of food additives.
Statement 2: Antioxidant is a class of food additive.

- (A) True, False (B) True, True
(C) False, False (D) False, True

30) What are Sequestrants?

- (A) They are added to keep the food stable
(B) Form a complex ion with metals like copper, iron etc
(C) Added for color
(D) They keep the food oxidized

31) Statement 1: Preservatives are food additives.

Statement 2: Sweeteners consist of calorie, low-calorie and non-calorie sweeteners.

- (A) True, False (B) True, True
(C) False, False (D) False, True

32) Which sentence is untrue?

- (A) GRAS stands for 'generally recognized as safe'
(B) Boric acid has been banned
(C) High levels of MSG leads to 'Chinese Restaurant Syndrome'
(D) Food additives need not be numbered or label

- 33) The coffee that is prepared by forcing an atomized spray of very strong coffee extract through a jet of hot air is
- (A) Instant (B) Decaffeinated
(C) Black (D) Espresso
- 34) Which of the following are NOT key constraints of the food processing industry?
- (A) Inadequate quality control
(B) High packaging cost
(C) Low demand
(D) Poor infrastructure as in no cold storage, warehouse etc
- 35) Statement 1: A lot of changes take place in meat on storing at a chilled temperature. These change muscle to meat.
Statement 2: The above process is called ageing or conditioning.
- (A) True, False (B) True, True
(C) False, False (D) False, True
- 36) When meat is passed through a coarse grinder plate it is called ____.
- (A) Chunking
(B) Flaking
(C) Restructured meat product
(D) Restructured meat product and Chunking
- 37) Stripping Solvent off a meal is called _____
- (A) Toasting
(B) Buttering
(C) Jamming
(D) Milling

38) Lack of vitamin B may result in

- (A) Poor eye sight (B) Dull skin
(C) Tooth decay (D) Poor cellular respiration

39) Which of the following statement is true

- (A) Dehydrogenation of fatty acids are the cause of oxidative rancidity
(B) Oxidative rancidity is not possible in plant fats
(C) Animal fats undergo rapid oxidative rancidity than vegetable fat
(D) Plant fats undergo rapid oxidative rancidity than animal fats.

40) _____ is the measure of the degree of unsaturation of lipid.

- (A) Reichert Meissil number (B) Polenske number
(C) Iodine number (D) Saponification number

41) The principle ingredients of candies ,including chocolate is the

- (A) Milk (B) Eggs
(C) Sweetener (D) Butter

42) Number of milligrams of KOH required to neutralize fatty acid present in 1g of fat is called

- (A) Iodine number (B) Potassium number
(C) Acid number (D) Saponification number

43) Specific gravity of lipid is

- (A) 0.8 (B) 0.2
(C) 1.0 (D) 1.5

- 44) Lactic acid bacterial include
- (A) Lactococcus lactis (B) Bifidobacterium
(C) Lactococcus cremoris (D) All of the above
- 45) Which factor is responsible for inhibition enzymatic process during feedback?
- (A) Enzymes (B) End product
(C) Temperature (D) Substrate
- 46) The major ingredient in carbonated soft drinks
- (A) Corn syrup (B) Water
(C) Caffeine (D) Flavoring
- 47) When the amount of chocolate liquor is greater than ____ percent, the product is Bitter sweet chocolate
- (A) 20 (B) 35
(C) 15 (D) 10
- 48) For convenience, chocolate is frequently shipped as a ____ when intended for use by other food manufactures.
- (A) Gas (B) Solid
(C) Frozen (D) Liquid
- 49) One of the most physical tests performed on fat is a determination of the ____ point
- (A) Boiling (B) Melting
(C) Cooling (D) Separating
- 50) Based on the density, size and shape ____ can be achieved through
- (A) Separation (B) Clarification
(C) Quality analysis (D) Quantity analysis

PART - B

II. This Part shall contains five questions, each question carrying ten marks.
[5 × 10 = 50]

- 1) Detail how water balance regulate the absorption of micronutrients and trace elements. Correlate the influence of food intake and basal metabolism.
- 2) Elucidate the role of nutrition in pregnancy and geriatric subjects.
- 3) Discuss the nutritional epidemiology of a typical infectious disease.
- 4) Detail the types of food spoilage and explain the HACCP in processing of foods
- 5) Detail the various processing technologies used in retaining the bio-efficacy of the nutraceuticals in food system.



ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

1. ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಹಾಳೆಯ ಜೊತೆಗೆ 50 ಪ್ರಶ್ನೆಗಳನ್ನು ಹೊಂದಿರುವ ಮೊಹರು ಮಾಡಿದ ಪ್ರಶ್ನೆ ಪುಸ್ತಕವನ್ನು ನಿಮಗೆ ನೀಡಲಾಗಿದೆ.
2. ಕೊಟ್ಟಿರುವ ಪ್ರಶ್ನೆ ಪುಸ್ತಕವು, ನೀವು ಪರೀಕ್ಷೆಗೆ ಆಯ್ಕೆ ಮಾಡಿಕೊಂಡಿರುವ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದ್ದೇ ಎಂಬುದನ್ನು ಪರಿಶೀಲಿಸಿರಿ.
3. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಮೊಹರು ಜಾಗ್ರತೆಯಿಂದ ತೆರೆಯಿರಿ ಮತ್ತು ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯಿಂದ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಹಾಳೆಯನ್ನು ಹೊರಗೆ ತೆಗೆದು, ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಸಾಮಾನ್ಯ ಮಾಹಿತಿಯನ್ನು ತುಂಬಿರಿ. ಕೊಟ್ಟಿರುವ ಸೂಚನೆಯಂತೆ ನೀವು ನಮೂನೆಯಲ್ಲಿನ ವಿವರಗಳನ್ನು ತುಂಬಲು ವಿಫಲರಾದರೆ, ನಿಮ್ಮ ಉತ್ತರ ಹಾಳೆಯ ಮೌಲ್ಯಮಾಪನ ಸಮಯದಲ್ಲಿ ಉಂಟಾಗುವ ಪರಿಣಾಮಗಳಿಗೆ ವೈಯಕ್ತಿಕವಾಗಿ ನೀವೇ ಜವಾಬ್ದಾರಾಗಿರುತ್ತೀರಿ.
4. ಪರೀಕ್ಷೆಯ ಸಮಯದಲ್ಲಿ:
 - a) ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಯನ್ನು ಜಾಗ್ರತೆಯಿಂದ ಓದಿರಿ.
 - b) ಪ್ರತಿ ಪ್ರಶ್ನೆಯ ಕೆಳಗೆ ನೀಡಿರುವ ನಾಲ್ಕು ಲಭ್ಯ ಆಯ್ಕೆಗಳಲ್ಲಿ ಅತ್ಯಂತ ಸರಿಯಾದ/ ಸೂಕ್ತವಾದ ಉತ್ತರವನ್ನು ನಿರ್ಧರಿಸಿ.
 - c) ಓ.ಎಂ.ಆರ್. ಹಾಳೆಯಲ್ಲಿನ ಸಂಬಂಧಿಸಿದ ಪ್ರಶ್ನೆಯ ವೃತ್ತಾಕಾರವನ್ನು ಸಂಪೂರ್ಣವಾಗಿ ತುಂಬಿರಿ. ಉದಾಹರಣೆಗೆ, ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯಲ್ಲಿ ಪ್ರಶ್ನೆ ಸಂಖ್ಯೆ 8ಕ್ಕೆ "C" ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದರೆ, ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಬಳಸಿ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಹಾಳೆಯ ಕ್ರಮ ಸಂಖ್ಯೆ 8ರ ಮುಂದೆ ಈ ಕೆಳಗಿನಂತೆ ತುಂಬಿರಿ:
 ಪ್ರಶ್ನೆ ಸಂಖ್ಯೆ 8(A) (B) (C) (D) (ಉದಾಹರಣೆ ಮಾತ್ರ) (ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರ ಉಪಯೋಗಿಸಿ)
5. ಉತ್ತರದ ಪೂರ್ವಸಿದ್ಧತೆಯ ಬರವಣಿಗೆಯನ್ನು (ಚಿತ್ತು ಕೆಲಸ) ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯಲ್ಲಿ ಒದಗಿಸಿದ ಖಾಲಿ ಜಾಗದಲ್ಲಿ ಮಾತ್ರವೇ ಮಾಡಬೇಕು (ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಮಾಡಬಾರದು).
6. ಒಂದು ನಿರ್ದಿಷ್ಟ ಪ್ರಶ್ನೆಗೆ ಒಂದಕ್ಕಿಂತ ಹೆಚ್ಚು ವೃತ್ತಾಕಾರವನ್ನು ಗುರುತಿಸಲಾಗಿದ್ದರೆ, ಅಂತಹ ಉತ್ತರವನ್ನು ತಪ್ಪು ಎಂದು ಪರಿಗಣಿಸಲಾಗುತ್ತದೆ ಮತ್ತು ಯಾವುದೇ ಅಂಕವನ್ನು ನೀಡಲಾಗುವುದಿಲ್ಲ. ಓ.ಎಂ.ಆರ್. ಹಾಳೆಯಲ್ಲಿನ ಉದಾಹರಣೆ ನೋಡಿ.
7. ಅಭ್ಯರ್ಥಿ ಮತ್ತು ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರು ನಿರ್ದಿಷ್ಟಪಡಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ಓ.ಎಂ.ಆರ್. ಹಾಳೆಯ ಮೇಲೆ ಸಹಿ ಮಾಡಬೇಕು.
8. ಅಭ್ಯರ್ಥಿಯು ಪರೀಕ್ಷೆಯ ನಂತರ ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರಿಗೆ ಮೂಲ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಹಾಳೆ ಮತ್ತು ವಿಶ್ವವಿದ್ಯಾನಿಲಯದ ಪ್ರತಿಯನ್ನು ಹಿಂದಿರುಗಿಸಬೇಕು.
9. ಅಭ್ಯರ್ಥಿಯು ಪ್ರಶ್ನೆ ಪುಸ್ತಕವನ್ನು ಮತ್ತು ಓ.ಎಂ.ಆರ್. ಅಭ್ಯರ್ಥಿಯ ಪ್ರತಿಯನ್ನು ತಮ್ಮ ಜೊತೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
10. ಕ್ಯಾಲ್ಕುಲೇಟರ್, ಪೇಜರ್ ಮತ್ತು ಮೊಬೈಲ್ ಫೋನ್‌ಗಳನ್ನು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಒಳಗೆ ಅನುಮತಿಸಲಾಗುವುದಿಲ್ಲ.
11. ಅಭ್ಯರ್ಥಿಯು ದುಷ್ಕೃತ್ಯದಲ್ಲಿ ತೊಡಗಿರುವುದು ಕಂಡುಬಂದರೆ, ಅಂತಹ ಅಭ್ಯರ್ಥಿಯನ್ನು ಕೋರ್ಸ್‌ಗೆ ಪರಿಗಣಿಸಲಾಗುವುದಿಲ್ಲ ಮತ್ತು ನಿಯಮಗಳ ಪ್ರಕಾರ ಇಂತಹ ಅಭ್ಯರ್ಥಿಯ ವಿರುದ್ಧ ಕ್ರಮ ಕೈಗೊಳ್ಳಲಾಗುವುದು.
 ಓ.ಎಂ.ಆರ್. ಹಾಳೆಯನ್ನು ತುಂಬಲು ಸೂಚನೆಗಳು
 1. ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೆ ಒಂದೇ ಒಂದು ಅತ್ಯಂತ ಸೂಕ್ತವಾದ/ಸರಿಯಾದ ಉತ್ತರವಿರುತ್ತದೆ.
 2. ಪ್ರತಿ ಪ್ರಶ್ನೆಗೆ ಒಂದು ವೃತ್ತವನ್ನು ಮಾತ್ರ ನೀಲಿ ಅಥವಾ ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ನಿನಿಂದ ಮಾತ್ರ ತುಂಬತಕ್ಕದ್ದು. ಉತ್ತರವನ್ನು ಮಾರ್ಪಡಿಸಲು ಪ್ರಯತ್ನಿಸಬೇಡಿ.
 3. ವೃತ್ತದೊಳಗಿರುವ ಅಕ್ಷರವು ಕಾಣದಿರುವಂತೆ ವೃತ್ತವನ್ನು ಸಂಪೂರ್ಣವಾಗಿ ತುಂಬುವುದು.
 4. ಓ.ಎಂ.ಆರ್. ಹಾಳೆಯಲ್ಲಿ ಯಾವುದೇ ಅನಾವಶ್ಯಕ ಗುರುತುಗಳನ್ನು ಮಾಡಬೇಡಿ.

Note : English version of the instructions is printed on the front cover of this booklet.