

## PGCET-2023

Seat No. \_\_\_\_\_

SUB: Food Engineering

Time: 1 Hour 30 minutes

### Instructions:

1. Ensure that all pages are printed.
2. Use Black ball pen only
3. Change in option is not allowed
4. There is no negative marking
5. Use of non-programmable scientific calculator is allowed

1.	Maximum theoretical possible overrun in butter is _____%			
	A	15	B	20
	C	25	D	30
2.	In cheese making, cheddaring refers to combined operations of _____			
	A	Packing, turning, piling and repiling	B	Curing, Turning and piling
	C	Piling, repiling, milling	D	Packing, turning, piling, salting
3.	In bakery industry, the objective of determination of sedimentation value of flour is to know the _____			
	A	Sugar content in flour	B	Gluten quality and approximate quantity in flour
	C	Impurities in flour	D	None of these
4.	Ratio of inertia force to viscous force is known as			
	A	Peclet number	B	Stanton number
	C	Grashof number	D	Reynolds number
5.	Greenish-yellow colour of whey is due to the pigment _____			
	A	Carotene	B	Riboflavin
	C	Anthocyanin	D	None of these
6.	The production of acetic acid from ethanol is an _____			
	A	Aerobic process	B	Anaerobic process
	C	combination of both A and B	D	none of the above

7.	The objective/s of neutralization of sour cream for butter making is/are_____			
	A	To guard against the production of undesirable off-flavour in cream	B	To avoid excessive fat loss in butter milk
	C	To improve the keeping quality of butter	D	All of the above
8.	In bread making, along with which ingredient GMS is added?			
	A	Sugar	B	Water
	C	Fat	D	Salt
9.	For the laminar flow, the Reynolds number should be less than			
	A	2100	B	3100
	C	4100	D	5100
10.	Which of the following heat exchangers are used for quick exchange of heat?			
	A	Jacketed Vessels	B	Plate heat exchangers
	C	Scraped surface heat exchangers	D	Shell and tube heat exchangers
11.	Which among the following surface promote heat transfer?			
	A	Plain	B	Shiny
	C	Corrugated	D	Wet
12.	According to FSSAI specifications, ice cream should have minimum _____ % milk fat			
	A	6	B	8
	C	10	D	12
13.	Humidification is the process of addition moisture in air at			
	A	Constant latent heat	B	Constant wet bulb temperature
	C	Constant dry bulb temperature	D	None of the above
14.	What is the value of mixing index for a complete mixing?			
	A	0	B	1
	C	Less than 1	D	Greater than 1

15.	What is the density of HDPE?		
	A	<0.925 g/cm <sup>3</sup>	B In the range of 0.91 to 0.965g/cm <sup>3</sup>
	C	In the range of 0.81 to 0.865 g/cm <sup>3</sup>	D >0.941g/cm <sup>3</sup>
16.	The science of wine making is known as _____		
	A	pomology	B Oenology
	C	oology	D pedology
17.	When the dew point temperature is equal to the air temperature then the relative humidity is _____		
	A	0	B 50%
	C	100%	D Unpredictable
18.	Which organism causes Red spot in meat?		
	A	<i>Serratia marcescens</i>	B <i>Micrococcus and Flavobacterium</i>
	C	<i>Pseudomonas syncyanea</i>	D <i>Chromobacterium lividium</i>
19.	The ratio of mass of water vapours to the mass of dry air is called		
	A	absolute humidity	B relative humidity
	C	partial pressure of water vapour	D water ratio in air
20.	Rigor mortis which develops immediately after slaughter of animals is due to _____		
	A	Failure of blood circulation	B Loss of fluid
	C	Loss of ATP	D Increase in acidity
21.	The current generated by propeller agitators are _____		
	A	longitudinal	B radial
	C	both longitudinal and radial	D none of the above
22.	The dehumidification process, on the psychrometric chart is shown by		
	A	Vertical line	B Horizontal line
	C	Inclined line	D Curved line
23.	The difference between the values of initial and equilibrium moisture content of a food is known as		
	A	Unbound moisture content	B Bound moisture content
	C	Free moisture content	D Critical moisture content
24.	Saccharometer is used to measure the		
	A	amount of alcohol in solution	B amount of saline in a solution
	C	amount of sugar in a solution	D none of these

25.	Which of the following shows shear thickening behavior?			
	A	Dilatant fluid	B	Thixotropic Fluid
	C	Rheopectic fluid	D	Pseudoplastic fluid
26.	What is the major objective of addition of egg yolk in the preparation of bakery products?			
	A	To improve taste	B	Air incorporation
	C	Emulsification	D	Flavour enhancer
27.	Which law of thermodynamics is the basis of temperature measurement?			
	A	Zeroth law of thermodynamics	B	Second law of thermodynamics
	C	First law of thermodynamics	D	None of the above
28.	LSU dryer is most suitable for drying of _____			
	A	Wheat	B	Paddy
	C	Corn	D	Barle
29.	Stress - Strain relationship for a Newtonian fluid is			
	A	Hyperbolic	B	Inverse type
	C	Linear	D	Parabolic
30.	The compressibility factor of any gas			
	A	Is always greater than 1	B	Is always less than 1
	C	May be less than equal to or greater than 1 depending on the nature of the gas	D	Is always equal to 1
31.	Cottage cheese is a _____			
	A	Ripened usually made from skim milk	B	Unripened usually made from whole milk
	C	Ripened usually made from whole milk	D	Unripened usually made from skim milk
32.	The higher osmotic pressure in food preservation will be given by _____			
	A	Glucose	B	Glycogen
	C	Starch	D	Sucrose

33.	The value of dry basis moisture content is always _____ wet basis moisture content.		
	A	equal to	B greater than
	C	less than d	D None of the above
34.	Which of the following is a non-enzymatic browning process which occurs during a complex series of reactions of amino acids and carbohydrates?		
	A	Tyndall Effect	B Caramelization
	C	Maillard Reaction	D Ordinary cooking
35.	In rubber roll sheller, one roller moves about _____ % faster than the other roll.		
	A	10	B 25
	C	40	D 50
36.	Whole milk powder should contain fat in the range of _____ %		
	A	8-12	B 13-20
	C	22-30	D 26-42
37.	The pressure at the outlet of a refrigerant compressor is called		
	A	Critical pressure	B Back pressure
	C	Suction pressure	D Discharge pressure
38.	In hydrogenation, _____ fatty acids are converted into _____ fatty acids.		
	A	Saturated, partially saturated	B Unsaturated, saturated
	C	Partially Saturated, fully saturated	D Saturated, unsaturated
39.	The 95% ethanol is equivalent to _____		
	A	100 proof	B 125 proof
	C	150 proof	D 190 proof
40.	In multi layered laminates, the polymer _____ is used for heat sealable property		
	A	LDPE	B LLDPE
	C	HDPE	D HMHDPE

41.	Which enzyme is useful for checking the efficiency of pasteurization?			
	A	Lipase	B	Phosphatase
	C	Diastase	D	Peroxidase
42.	For tenderization of meat, _____ enzyme is mostly used			
	A	Diastase	B	Amylase
	C	Lipase	D	Papain
43.	The purpose of parboiling of paddy is _____			
	A	to prevent the loss of nutrients	B	to increase the head rice yield
	C	to improve the appearance	D	Both A & B
44.	Ropiness in bread is caused by			
	A	<i>Bacillus lichenformis</i>	B	<i>Aspergillus niger</i>
	C	<i>Monilla sitophilia</i>	D	<i>Bacillus panis</i>
45.	Food Poisoning is caused by _____			
	A	Fungus	B	Yeast
	C	Bacteria	D	None of these
46.	Ammonium bicarbonate is recommended for _____ foods as a leavening agent			
	A	Sugar free	B	High moisture
	C	Liquid	D	Low moisture
47.	Iodized salt should contain minimum _____ iodine during expected shelf life.			
	A	10 ppm	B	15 ppm
	C	20 ppm	D	25 ppm
48.	Refining of crude oil consists of following sequence of processes _____			
	A	deodourization, degumming, neutralization, bleaching	B	degumming, neutralization, bleaching, deodourization
	C	neutralization, deodourization, degumming, bleaching	D	degumming, bleaching, neutralization, deodourization

49.	Which of the following is a non-reducing sugar?			
	A	Cellobiose	B	Galactose
	C	Sucrose	D	Maltose
50.	In Horizontal friction polisher the friction between _____ and _____ takes place.			
	A	Rice and emery	B	Rice and rice
	C	Rice and cylinder	D	None of these
51.	The international body that is involved in harmonizing food standards around the world is			
	A	World Health Organization	B	International Union of Food Standards
	C	International Standards Organization	D	Codex Alimentarius Commission
52.	The equilibrium moisture content at 100% relative humidity is known as			
	A	free moisture d.	B	saturation water
	C	bound moisture	D	unbound moisture
53.	Example of a sulfur containing amino acid is			
	A	Histidine	B	Glutamine
	C	Arginine	D	Cysteine
54.	Z value is expressed in _____			
	A	Log number	B	Micro-meter
	C	Degree centigrade	D	None of theses
55.	In HTST pasteurization, milk is heated to _____ degree Celsius temperature/ time combination.			
	A	63/ 15 sec	B	72/ 15 Sec
	C	72/ 55 sec	D	82/ 15 sec
56.	In radiation processing, _____ kilo Gray is the dose limit of radiation of bulbs, tubers and rhizomes to inhibit sprouting.			
	A	0.02 to 0.2	B	0.2 to 0.4
	C	0.5 to 0.8	D	2.5 to 4.0

57.	In freeze drying the water vapour is removed by _____ from ice.			
	A	Evaporation	B	Melting
	C	Sublimation	D	All of the above
58.	Which of the following vitamin is also known as cobalamin?			
	A	Vitamin B1	B	Vitamin B11
	C	Vitamin B2	D	Vitamin B12
59.	Cans treated with acid resistant lacquer are called _____			
	A	Plain cans	B	SR cans
	C	R-enamel cans	D	C-enamel cans
60.	Enzymes increases the rate of reaction by			
	A	Increasing activation energy	B	Lowering activation energy
	C	Maintaining constant activation energy	D	All of the above
61.	While butter making, the optimum temperature for cooling and ageing cream is _____ degree Celsius			
	A	1-5	B	5-10
	C	10-15	D	15-20
62.	As per FSSAI standards, minimum TSS in fruit squash should be _____ %			
	A	15	B	20
	C	35	D	40
63.	At iso-electric point, protein has _____			
	A	Positive charge b.	B	Negative charge
	C	No charge	D	None of the above
64.	The purpose of lacquering of tin cans is _____			
	A	to kill the microorganism	B	to expell the air
	C	to prevent discolouration of products	D	to prevent off flavour formation



65.	The main purpose of dehulling/dehusking of oilseeds is			
	A	To remove free fatty acids	B	To produce dark colour oil
	C	Ease for oil extraction	D	To enhance storage life
66.	_____ is not an intrinsic factor in food spoilage.			
	A	Temperature	B	Available nutrients
	C	Moisture	D	pH
67.	In freeze-drying, the liquid phase comes at the pressure above			
	A	3.7 mm Hg	B	4.7 mm Hg
	C	5.7 mm Hg	D	6.7 mm Hg
68.	According to FSSAI regulations, oil extracted by solvent extraction method should not contain more than _____ ppm hexane			
	A	2	B	5
	C	15	D	20
69.	The refrigeration system works on which law of thermodynamics			
	A	First law	B	Zeroth law
	C	Second law	D	None of the above
70.	High amylose content is usually associated with _____.			
	A	Sticky rice	B	Rice with more gruel
	C	Non sticky rice	D	None of the above
71.	Protein fraction of an enzyme is referred as			
	A	Holoenzyme	B	Alloenzyme
	C	Apoenzyme	D	Cofactor
72.	FSSAI is governed by Indian Government _____			
	A	Ministry of Food Processing Industries	B	Ministry of Agriculture
	C	Ministry of Health & Family Welfare	D	Ministry of Consumer Affairs, Food and Public Distribution

73.	In bread making, starch is finally converted into CO <sub>2</sub> and alcohol by the action of enzyme _____			
	A	Zymase	B	Lactase
	C	Diastase	D	Maltase
74.	Which of the following operations occur in a vapour refrigeration cycle?			
	A	Compression	B	Cooling and condensing
	C	Expansion and evaporation	D	All of the mentioned
75.	Shigella leads to disorder _____			
	A	Cholera	B	Dysentery
	C	Brucellosis	D	Enteric fever
76.	What is the objective of heat treatment to oilseeds prior to oil extraction?			
	A	coalescence of oil droplets	B	to reduce the moisture content in the oil seeds
	C	denaturation of proteins and breaking of oil-protein emulsion	D	Both A and C
77.	Red boy and edema condition develops in _____			
	A	Rickets	B	Marasmus
	C	Osteomalcia	D	Kwashiorkar
78.	Benzoic acid as preservative is more effective against _____			
	A	Bacteria	B	Mold
	C	Yeast	D	Fungi
79.	As per FSSAI, butter should contain maximum moisture content _____			
	A	13	B	14
	C	16	D	18
80.	Baking powder is a combination of _____			
	A	Sodium carbonate + Acid salt + Starch	B	Sodium carbonate + Acid salt + sugar
	C	Sodium bicarbonate + Acid salt + Starch	D	Sodium bicarbonate + alkali salt + Starch

81	Solution of differential equation $\sinh x \cos y dx - \cosh x \sin y dy = 0$ is given by			
	A	$\sinh x \cos y$	B	$\sinh x \sin y$
	C	$\cosh x \cos y$	D	$\cosh x \sin y$
82	Solution of differential equation $\frac{d^2 y}{dx^2} - 4y = \cosh 3x$ is given by			
	A	$y = c_1 e^{-2x} + c_2 e^{2x} + \frac{1}{10}(e^x + e^{-x})$	B	$y = c_1 e^{-2x} + c_2 e^{2x} + \frac{1}{10}(e^{3x} + e^{-3x})$
	C	$y = c_1 e^{-2x} + c_2 e^{2x} + \frac{1}{10}(e^x + e^{-3x})$	D	$y = c_1 e^{-3x} + c_2 e^{3x} + \frac{1}{10}(e^x + e^{-x})$
83	Laplace Transformation of $t \cos 3t$ is equal to			
	A	$\frac{s^2 - 9}{(s^2 + 9)^2}$	B	$\frac{s^2}{(s^2 + 9)^2}$
	C	$\frac{9}{(s^2 + 9)^2}$	D	$\frac{9s^2}{(s^2 + 9)^2}$
84	Inverse Laplace Transformation of $\frac{s+7}{(s^2+14s+58)}$ is equal to			
	A	$e^{-7t} \sin 3t$	B	$e^{-3t} \cos 7t$
	C	$e^{-7t} \sin 7t$	D	$e^{-7t} \cos 3t$
85	$\lim_{x \rightarrow \frac{\pi}{2}} (1 - \sin x) \tan x$ is equal to			
	A	2	B	0
	C	1	D	1/2
86	If $U = \log\left(\frac{x^2+y^2}{x+y}\right)$ then $x \frac{\partial U}{\partial x} + y \frac{\partial U}{\partial y}$ is equal to			
	A	U	B	0
	C	1	D	2U
87	If $\phi = 3x^3 + xz^3 - yz$ then $\text{curl}(\text{grad} \phi)$ is equal to			
	A	0	B	2
	C	1	D	3

88	Vector Field $\vec{F} = (3x^2yz) i + (3x^3z)j + x^3yk$ is			
	A	Solenoidal vector Field	B	Irrotational vector field
	C	Both (A) and (B)	D	None of these
89	Which of the following is correct for the system $x - 2y + 3z = 0, \quad 2x + y - z = 0, \quad -4x - 2y + 2z = 0$			
	A	Trivial Solution	B	System is inconsistency
	C	Unique solution	D	Non- Trivial solution
90	If $A = \begin{bmatrix} 4 & 7 & 1 \\ 0 & 2 & 3 \\ 0 & 0 & 5 \end{bmatrix}$ then an Eigen values of $A^{-1}$ are			
	A	2, 4, 5	B	$\frac{1}{2}, \frac{1}{3}, \frac{1}{5}$
	C	$\frac{1}{2}, \frac{1}{4}, \frac{1}{5}$	D	$\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$
91	If $A = \begin{bmatrix} 2 & 3 & 7 \\ 4 & 6 & 14 \\ 0 & 1 & 0 \end{bmatrix}$ then rank of the matrix A is.			
	A	1	B	2
	C	3	D	0
92	If $f(z) = \frac{z-3}{(z-2)(z^2-8z+15)}$ which are the points where $f(z)$ fails to be analytic ?			
	A	2,3	B	3,5
	C	2,5	D	1,2
93	Value of $\int_c \frac{1}{(z-2)^3} dz$ , ( where $c$ is $ z  = 1$ ) is.			
	A	$\pi i$	B	0
	C	$2\pi i$	D	$3\pi i$
94	Residue of $f(z) = \frac{z+3}{(z-4)(z-3)}$ at pole 4 is.			
	A	3	B	5
	C	4	D	7

95	The Mean, Median and mode of 25, 10, 15, 10, 20 are.			
	A	Mean=10, Median=15, Mode= 10	B	Mean=16, Median=15, Mode= 20
	C	Mean=16, Median=15, Mode= 10	D	Mean=16, Median=10, Mode= 15
96	If A and B are independent event where $P(A)=1/2$ and $P(B)=1/3$ then $P(A \cup B)$ is			
	A	$2/3$	B	$3/2$
	C	$5/6$	D	$1/6$
97	The lifetime T of an alkaline battery is exponentially distributed with $\lambda = 0.04$ per hour. What is the mean of the battery life time ?			
	A	20 hrs.	B	15 hrs.
	C	25 hrs.	D	30 hrs.
98	Value of $\int_0^4 \frac{1}{1+x^2} dx$ with $h = 1$ by Simpsons $\frac{1}{3}$ rule is.			
	A	0.286	B	2.186
	C	0.1286	D	1.286
99	A numerical solution of the equation $f(x) = x^3 + x - 1 = 0$ can be obtained using Newton-Raphson method. If the initial guess $x_0 = 1$ for the iteration then what is the value of first iteration?			
	A	0.70	B	0.75
	C	0.65	D	0.80
100	If $\frac{dy}{dx} = x + y$ and $y(0) = 2$ , taking $h=0.1$ using second order Runge-Kutta method what is the value of $y(0.1)$ ?			
	A	2.215	B	2.152
	C	2.512	D	2.225