SPECIMEN COPY

Sr. No N. 760138

[SET-III]
GROUP: CHEMICAL & FOOD

Marks: 150 **Time:** 2:30 hours

Roll No.: _____ **Date:** _____

Time: _____ **Centre Name:** _____

INSTRUCTIONS FOR THE CANDIDATES	
1.	**Please do not open (Break the seal) of the question booklet before time**
2.	An **OMR answer sheet** is being provided separately along with this question booklet. Please fill up all relevant entries like Roll number, Centre code, Paper Number etc. in the spaces provided on the OMR answer sheet and put your signature in the box provided for this purpose.
3.	**There are 150 questions in this booklet.** Against each question four alternative choices (A), (B), (C) and (D) are given, out of which only one is correct. Indicate your choice of answer by darkening the suitable circle with **Black/Blue Ball Pen** in the OMR answer sheet supplied to you separately.
4.	Each question carries one mark. **There will be negative marking and 1/4 marks will be deducted for each wrong answer.**
5.	Read and follow the instructions given on the backside of the OMR answer sheet carefully.
6.	Do not write your name/roll number or give any identification mark(s) at any place on the OMR sheet.
7.	Keep all your belongings outside the examination hall. Do not retain any paper except the **ADMITCARD.**
8.	Do not talk to each other. Do not borrow anything from other candidates.
9.	Use of **non-programmable CALCULATOR** is allowed.
10.	Any body found involved in malpractices, will be disqualified from appearing in the entrance test.
11.	At the start of the examination, please ensure that all pages of your booklet are properly printed; your question booklet is not damaged in any manner and contains **150 questions.** In case of any discrepancy, report to the invigilator immediately. No claim in this regard will be entertained at the later stage.

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NOTE:

(i) Attempt all questions. Each question carries **ONE** mark. There will be negative marking. Every wrong answer will result in deduction of **1/4 marks.**

(ii) **There are 150 questions in this booklet.** Against each question four alternative choices (A), (B), (C) and (D) are given, out of which only one is correct. Indicate your choice of answer by Darkening the suitable circle with **Black/Blue Ball Pen** in the OMR answer sheet supplied to you separately.

[ENGLISH/GK/MENTAL APTITUDE]

1. **Maximum Oxygen is available from**
   (A) Deserts
   (B) Green Forests
   (C) Grass Lands
   (D) Phytoplanktons

2. **Which of the following is a renewable resource?**
   (A) Coal
   (B) Mineral Oil
   (C) Natural Gas
   (D) Forests

3. **Which of the following countries is fast moving towards a cashless economy?**
   (A) Denmark
   (B) Sweden
   (C) Iceland
   (D) Norway

4. **Which country recently detonated its first hydrogen bomb?**
   (A) South Korea
   (B) North Korea
   (C) Pakistan
   (D) Iran

5. **Which city will host the 2022 Asian Games?**
   (A) Manila
   (B) Hangzhou
   (C) Sana
   (D) Osaka

6. **Who among the following is the first Indian woman mountaineer to reach the summit of Mount Everest?**
   (A) Premlata Agarwal
   (B) Arunima Sinha
   (C) Bachendri Pal
   (D) Tashi Malik

7. **Whose army did Alexander, the Greek ruler confront on the banks of the river Jhelum?**
   (A) Chandragupta Maurya
   (B) Ambi
   (C) Dhanananda
   (D) Porus

8. **In EMI, 'E' stands for**
   (A) Earned
   (B) Economics
   (C) Easy
   (D) Equated

9. **Who propounded the theory of 'Economic Drain of India' during British imperialism?**
   (A) W. C. Bannerji
   (B) Dadabhai Naoroji
   (C) Gopalkrishna Gokhale
   (D) Gandhiji

10. **The Election Commissioner can be removed by the**
    (A) Chief Election Commissioner
    (B) Prime Minister
    (C) President on the recommendation of the Chief Election Commissioner
    (D) Chief Justice of India

11. **Consider the following events connected with Indian National Movement and find the correct chronological order of the events from the codes given below**

i. Demise of B. G. Tilak
ii. Passing of Rowlatt Bill as an Act
iii. Jalianwala Bagh Massacre
iv. Amritsar Session of Indian National Congress, 1919

Codes
(A) ii, iii, iv, i
(B) iv, iii, ii,i
(C) iii, iv, ii, i
(D) i, ii, iii, iv

12. **If H = 8, HE = 13, Then 'HEN' will be equal to**
(A) 22
(B) 24
(C) 25
(D) 27

In each of the following Questions, an idiomatic expression/ a proverb has been given, followed by some alternatives. Choose the one which best expresses the meaning of given idiom/proverb

13. **A pipe dream**
(A) A pleasant dream
(B) A bad dream
(C) An impracticable plan
(D) A foolish idea

14. **To spill the beans**
(A) To reveal secret information
(B) To misbehave
(C) To keep secrets
(D) To talk irrelevant

Fill in the blanks with suitable tense from the alternatives in the following questions:

15. **_____ adequate pre-emptive action to avert this tragedy?**
(A) Would you not be taking
(B) Would you have not taken
(C) Shall you not have Taken
(D) Should you not have taken

16. **Had she known about it, she _____ have stayed longer.**
(A) would
(B) might
(C) may
(D) should

In each of the following questions, a sentence has been given in Direct/ Indirect Speech. Out of the four alternatives suggested select the one which best expresses the same sentence in Indirect/ Direct Speech.

17. **The Sage said, "God helps those who help themselves."**
(A) The Sage said that God helps those who help themselves.
(B) The Sage said that God helped those who helped themselves
(C) The Sage said that God helps those who helped themselves
(D) The Sage said that God helped those who help themselves

18. **He asked his teacher, "Need I read this chapter?"**
(A) He asked his teacher whether there was a need to read that chapter.
(B) He asked his teacher whether there he needed to read this chapter.
(C) He asked his teacher if it was necessary to read this chapter.
(D) He asked his teacher if he had to read that chapter.

Fill in the blanks with suitable words from the alternatives in the following questions:

19. **If you drink too much, it will _____ your judgement.**
(A) impede
(B) impair
(C) impose
(D) impel

20. **The Chairman treated the employees to a _____lunch at an expensive hotel.**
(A) precious
(B) sumptuous
(C) thriving
(D) stupendous

[CHEMISTRY]

21. **Which of the following has highest mass**
(A) 50 gm Iron
(B) 5 moles of N_2
(C) 0.1 mol atom of Ag
(D) 10^{23} atoms of carbon

22. **The oxidation number of osmium in OsO_4 is**
(A) + 7
(B) + 5
(C) + 4
(D) + 8

23. **An oxide of metal (M) has 40% by mass of oxygen. If, the atomic mass of M is 24, the empirical formula of its oxide will be?**
(A) M_2O
(B) M_2O_3
(C) MO
(D) M_3O_4

24. **Which of the following ions has the smallest radius?**
(A) Li^+
(B) Na^+
(C) Be^{2+}
(D) K^+

25. **Which of the following elements show zero valency?**
(A) Pt
(B) Au
(C) S
(D) Ne

26. **The atomic numbers of vanadium (V), chromium (Cr), manganese (Mn) and iron (Fe) are 23, 24, 25 and 26 respectively. Which of these will show the highest 2nd ionization enthalpy ?**
(A) Fe
(B) V
(C) Cr
(D) Mn

27. **BCl_3 molecule is planer whereas NCl_3 is pyramidal because**
(A) B-Cl bond is more polar than N-Cl bond
(B) N-Cl bond is more covalent than B-Cl bond
(C) Nitrogen atom is smaller than boron atom
(D) BCl_3 has no lone pair of electrons whereas NCl_3 has one lone pair of electrons

28. **Which of the following has the highest dipole moment?**
(A) AsH_3
(B) SbH_3
(C) PH_3
(D) NH_3

29. **The hybridization of carbon in 1,3-butadiene is**
(A) sp
(B) sp^3
(C) sp^2
(D) sp^2 and sp^3

30. **If A= tetracyanomethane; B= CO_2; C= benzene; D= 1,3-butadiene. The ratio of σ and π bonds will be in the order**
(A) A=B<C<D
(B) A=B<D<C
(C) A=B=C=D
(D) C<D<A<B

31. **The frequency of a wave of light is 12 x 10^{14} s^{-1}. The wave number associated with this light is**
(A) 5×10^{-7} m
(B) 4×10^{-8} cm^{-1}
(C) 2×10^{-7} m^{-1}
(D) 4×10^{4} cm^{-1}

32. **An electron jumps from 6th energy level to 3rd energy level in H-atom. How many lines belong to the visible region?**
(A) 1
(B) 2
(C) 3
(D) zero

33. **The orbital angular momentum for a *d-electron* is**
(A) $\sqrt{6}\,(h/2\pi)$
(B) $\sqrt{2}\,(h/2\pi)$
(C) $(h/2\pi)$
(D) zero

34. **The number of nodal planes in a p_x orbital is**
(A) 1
(B) 2
(C) 3
(D) zero

35. **Which of the following has maximum number of unpaired electrons (At. no. of Fe = 26)?**
(A) Fe
(B) Fe (II)
(C) Fe (III)
(D) Fe (IV)

[PHYSICS]

36. **A particle revolves around a circular path. The acceleration of the particle is**
(A) along the circumference of the circle
(B) along the tangent
(C) along the radius
(D) zero

37. **A heavy and a light body have equal kinetic energies. Which one has a greater momentum?**
(A) Light body
(B) heavy body
(C) both have equal momentum
(D) information is insufficient

38. **Cream gets separated out of milk when it is churned, it is due to**
(A) Gravitational force
(B) Centripetal force
(C) Centrifugal force
(D) Frictional force

39. **Torque is analogous to force, and moment of inertia is analogous to**
(A) mass
(B) B momentum
(C) impulse
(D) none of these

40. **The radius of gyration is independent of the**
(A) location of axis of rotation
(B) distribution of mass
(C) shape of body
(D) mass of body

41. **The moment of inertia of a thin uniform circular disc about one of its diameter is J. The moment of inertia about an axis perpendicular to the circular surface and passing through its center is**
(A) $(2J)^{1/2}$
(B) 2J
(C) J/2
(D) $J/(2)^{1/2}$

42. **In the equation, pV=RT, V stands for the volume of**
(A) any amount of gas
(B) one gram of gas
(C) one gram molecule of gas
(D) one liter of gas

43. **A gas behaves as an ideal gas at**
(A) very low pressure and high temperature
(B) high pressure and low temperature
(C) high pressure and high temperature
(D) low pressure and low temperature

44. **If p is the pressure of the gas then kinetic energy per unit volume of the gas is**
(A) p/2
(B) p
(C) 3p/2
(D) 2p

45. **Angular momentum is**
(A) scalar
(B) an axial vector
(C) a polar vector
(D) none of these

46. **Energy of electromagnetic waves is due to their**
(A) Wavelength
(B) frequency
(C) electric and magnetic field
(D) none of these

47. **Out of the following phenomena, the one which cannot be explained on the basis of wave theory is**
(A) Polarization
(B) Diffraction
(C) Photoelectric effect
(D) Interference

48. **The difference between soft and hard X-rays is of**
(A) velocity
(B) frequency
(C) intensity
(D) polarization

49. **Nuclear fusion requires high temperature because**
(A) all nuclear reactions absorb heat
(B) particles cannot come closer unless they are moving rapidly
(C) binding energy must be supplied from an external source
(D) mass deficit must be supplied

50. **If the radiation from a radioactive material is passed through an electric field**
(A) all the three kind of rays will be deflected
(B) only gamma ray is deflected
(C) only alpha and beta rays are deflected
(D) only the alpha ray is deflected

[MATHEMATICS]

51. **The value of k, so that the equation $2x^2 + kx - 5 = 0$ and $x^2 - 3x - 4 = 0$ may have one root in common is**
(A) −6
(B) −27/4
(C) 6
(D) None of the above.

52. **If each term of an infinite G. P. is twice the sum of terms following it, then the common ration of G. P. is**
(A) 1/3
(B) 3
(C) 2
(D) None of the above.

53. **The sum of n terms of the series $1^2 + 3^2 + 5^2 + \cdots$ is**
(A) $\frac{n(n+1)(2n+1)}{6}$
(B) $\frac{n(4n-1)(2n-1)}{3}$
(C) $\frac{n(2n-1)(2n+1)}{3}$
(D) None of the above.

54. **General solution of the equation $\tan 5A = \cot 2A$ is**
(A) $A = \frac{n\pi}{7} + \frac{\pi}{2}$
(B) $A = \frac{n\pi}{7} - \frac{\pi}{14}$
(C) $A = \frac{n\pi}{7} + \frac{\pi}{14}$
(D) None of the above.

55. **If cos x=-1/3 and x lies in third quadrant, then sin x/2 is equal to**
(A) $\sqrt{\frac{2}{3}}$
(B) $\frac{\sqrt{2}}{3}$
(C) $-\frac{\sqrt{2}}{3}$
(D) None of the above.

56. **First negative term in the expansion $(1+x)^{7/2}$is**
(A) 5^{th} term
(B) 6^{th} term
(C) 7^{th} term
(D) None of the above.

57. $tan^{-1}\left(\frac{x}{y}\right) - tan^{-1}\left(\frac{x-y}{x+y}\right)$ **is equal to**
(A) $\frac{\pi}{2}$
(B) $\frac{\pi}{3}$
(C) $\frac{\pi}{4}$
(D) None of the above.

58. **The area of a triangle formed by co-ordinate axes and a line is 6 square units and the length of hypotenuse is 5 units. Equation of the line is**
(A) $3x - 4y = 12$
(B) $3x + 4y = 12$
(C) $3x + 2y = 6$
(D) None of the above.

59. **The angle between the lines $x = a$ and $by + c = 0$ is**
(A) $\frac{\pi}{2}$
(B) 0°
(C) $\frac{\pi}{4}$
(D) None of the above.

60. The tangents to the circle $x^2 + y^2 = 169$ at the points (5, 12) and (12, –5) are
(A) parallel
(B) perpendicular
(C) coincident
(D) None of the above.

61. The equation of directrix of parabola $y^2 + 4y + 4x + 2 = 0$ is
(A) $x = -1$
(B) $x = 1$
(C) $x = -3/2$
(D) $x = 3/2$.

62. If $f(x) = \begin{cases} k\frac{\sin x}{x} + \cos x, x \le 0, \\ 4\left(\frac{1-\sqrt{1-x}}{x}\right), x > 0 \end{cases}$ is continuous at $x = 0$, then the value of k is
(A) 1
(B) 3
(C) –1
(D) None of the above.

63. The value of $\frac{d}{dx}(cos^{-1}(\sin x))$ is equal to
(A) –1
(B) 1
(C) $\frac{\pi}{2}$
(D) None of the above.

64. If $e^x + e^y = e^{x+y}$, then $\frac{dy}{dx}$ at (2,2) is
(A) 2
(B) 1
(C) –1
(D) None of the above.

65. The real number x when added to its inverse gives the minimum value of the sum at x equal to
(A) 1
(B) –1
(C) –2
(D) 2.

66. The normal to the curve $x = a(1 + \cos\theta), y = a\sin\theta$ at a point θ always passes through the fixed point
(A) (a,0)
(B) (0,a)
(C) (0,0)
(D) (a,a).

67. The value of $\int_{-1}^{1} log\left(\frac{2-x}{2+x}\right) dx$ is equal to
(A) ½
(B) 1
(C) –1
(D) 0.

68. The value of $x > 1$ satisfying the equation $\int_1^x t \log t \, dt = \frac{1}{4}$ is
(A) $\sqrt{e}$
(B) e
(C) e^2
(D) $e - 1$.

69. $\int sec^3\theta \, d\theta$ is equal to
(A) $\frac{1}{2}(sec\theta \, tan\theta + \log|sec\theta + \tan\theta|) + c$
(B) $sec\theta \, tan\theta + \log|sec\theta + \tan\theta| + c$
(C) $\frac{1}{3}(sec\theta \, tan\theta + \log|sec\theta + \tan\theta|) + c$
(D) None of the above.

70. If the roots of the equation $(b - c)x^2 + (c - a)x + (a - b) = 0$ are equal, then a, b and c are in
(A) A.P.
(B) G.P.
(C) H.P.
(D) None of these.

[CHEMICAL & FOOD TECHNOLOGY]

71. If x_i, y_i and P_i^{sat} is liquid phase mole fraction, vapor phase mole fraction and vapor pressure of pure species 'i' at the temperature of the system respectively, Roult's law states that partial pressure of species 'i' is equal to
(A) $x_i P_i^{sat}$
(B) $y_i P_i^{sat}$
(C) $\frac{P_i^{sat}}{x_i}$
(D) $\frac{P_i^{sat}}{y_i}$

72. **The second law of thermodynamics states**
(A) Heat capacity of crystalline solid is zero at absolute zero temperature.
(B) When the energy disappears in one form, it appears simultaneously in other forms.
(C) Heat transfer from low temperature to high temperature is not possible without external work.
(D) A process can be reversed at any point by a differential change in external conditions.

73. **A system in which there is an exchange of energy but not of mass is known as**
(A) Open system
(B) Closed system
(C) Isolated system
(D) Non-isothermal system

74. **Equilibrium constant of a reaction depends on**
(A) temperature
(B) initial concentration of reactant
(C) both (A) & (B)
(D) pressure

75. **If *P, V, T, U,* and *S* are the primary thermodynamics properties as pressure, volume, temperature, internal energy, entropy respectively and *H is* enthalpy, then Gibb's free energy (*G*) is defined as**
(A) $G = U + PV$
(B) $G = U - TS$
(C) $G = H - TS$
(D) $G = T - PV$

76. **Which of the following is not true?**
(A) Molecularity of an elementary reaction is the number of molecules involved in reaction.
(B) Molecularity has been found to have the values of one, two or occasionally three.
(C) Molecularity refers only to elementary reaction.
(D) Molecularity of a reaction must not be an integer because it refers to the reaction mechanism.

77. **For an elementary liquid phase reaction $A \xrightarrow{k} B$, time required to reduce the initial concentration of reactant, C_{A0} to half of its original value is**
(A) $\frac{ln2}{k}$
(B) $\frac{k}{ln2}$
(C) $\frac{kC_{A0}}{ln2}$
(D) $\frac{ln2}{C_{A0}}$

78. **Which one of the following statements is true?**
(A) Space velocity, the proper performance measure of flow reactors has the units of $(velocity)^{-1}$.
(B) For systems of constant density, the performance equations are not identical for batch reactor and plug flow reactor.
(C) In an ideal plug flow reactor at steady state, there must be mixing or diffusion along the flow path.
(D) In an ideal mixed flow reactor at steady state the composition throughout the reactor remains uniform.

79. **The rate constant of an elementary liquid phase reaction having units as $(time)^{-1}$, depends upon the**
(A) Time
(B) Concentration of reactant
(C) Temperature
(D) Molecularity of the reaction

80. **For a liquid phase chemical reaction $A \rightarrow B$, an increase of 8 times in the rate of reaction has been observed, when the concentration of the reactant, C_A is doubled. If rate = αC_A^n, the order of reaction, n is**
(A) 1
(B) 2
(C) 2.5
(D) 3

81. The proportionality constant in the Fourier's law
(A) is known as thermal diffusivity
(B) has the SI units as W/m-°C
(C) is applicable for heat transfer by convection
(D) all of the above

82. Monochromatic emissive power from black body radiations can be given by
(A) Kirchhoff's law
(B) Plank's law
(C) Stefan-Boltzmann's law
(D) Beer's law

83. In natural convection for single horizontal cylinder, which one of the following is not the dimensionless group to which the heat transfer coefficient cannot be correlated
(A) Graetz number
(B) Grashoff number
(C) Nusselt number
(D) Prandtl number

84. Which of the following is not heat transfer equipment
(A) Shell and tube heat exchanger
(B) Evaporator
(C) Plate type exchanger
(D) None of the above

85. A flat furnace wall consists of two materials B and C of equal thickness joined together in series, while having thermal conductivity of 2 and 1 kcal / hr. m. °C respectively. The temperature difference across the wall is 72°C. The temperature across the layer B in °C is
(A) 12
(B) 24
(C) 36
(D) 48

86. Which one of the following is not true?
(A) The diffusion coefficient of a constituent A in the solution in B has the units of *m/s*.
(B) The negative sign in the Flick's first law emphasizes that diffusion occur in the direction of drop in concentration.
(C) Molecular diffusion in gases and liquids is faster than molecular diffusion in solids.
(D) Eddy diffusion describes the mass transfer under turbulent conditions.

87. If during a infinite number of successive flash vaporizations of a liquid, only an infinitesimal amount of liquid were flashed each time, the net result would be equivalent to
(A) Simple distillation
(B) Multi-component distillation
(C) Extractive distillation
(D) none of the above

88. Which one of the following statement is not true?
(A) Rectification distillation is a multistage countercurrent distillation operation.
(B) Inside the fractionators the highest temperature is at the bottom while the lowest at the top.
(C) Maximum possible separation in a binary system is possible for relative volatility of the system = 1.
(D) Rayleigh equation applies to differential distillation.

89. The moisture content expressed as equal to [kg moisture/(kg dry solid + kg moisture)]100 describes
(A) Moisture content, dry basis
(B) Moisture content, wet basis
(C) Critical moisture content
(D) Equilibrium moisture content

90. During the period of falling rate phase of drying, unsaturated surface drying occurs when the value of rate of drying _____, even though the rate per unit of wet surface remains constant.
(A) fall
(B) does not change
(C) increases
(D) None of the above

91. Which of the following property is exploited while separating the two gases in a liquid solvent by absorption
(A) Density
(B) Viscosity
(C) Solubility
(D) Relative volatility

92. **The _____ law states that the work required in crushing is proportional to the new surface created**
(A) Rittinger's
(B) Kick's
(C) Bond crushing
(D) Work index

93. **Which of the following is not true?**
(A) In any batch mixing process, mixing index is unity at the start and increases as mixing proceeds.
(B) Mixing index actually will not become infinity because mixing is never quite complete.
(C) Rate of mixing varies greatly with the kind of mixer and nature of mixed material.
(D) None of the above

94. **During constant rate filtration**
(A) Filtrate flows is proportional to time
(B) Filter medium resistance increases
(C) The overall pressure drop is constant
(D) Linear velocity of filtrate is constant

95. **In the centrifuge equipment utilized to separate the solids and liquids of different densities (as in milk cream separator)**
(A) The separation force is less than that of gravity.
(B) The separation force is equal to that of gravity.
(C) The separation force acts in the direction towards the axis of rotation instead of downward toward the earth's surface.
(D) Heavier liquid is thrown outwards, displacing the lighter liquid towards the center of the bowl.

96. **The terms nucleation, yield and purity are related with**
(A) Mixing
(B) Crystallization
(C) Agitation
(D) Centrifugation

97. **Newtonian fluids are the fluids where at constant temperature and pressure**
(A) the shear stress at constant shear rate increases with time.
(B) the shear stress is directly proportional to rate of shear.
(C) the rate of shear is zero until a threshold stress.
(D) the shear stress at constant shear rate decreases with time.

98. **Which of the following is a reciprocating pump?**
(A) Diaphragm pump
(B) Piston pump
(C) Spur-gear pump
(D) Plunger pump

99. **Which of the following is not true?**
(A) Rotary pump contains check valves.
(B) Lobe pump and screw pump are the examples of rotary pumps.
(C) In centrifugal pumps, mechanical energy of the pump is increased by centrifugal action.
(D) All of the above

100. **Which one of the following is not true?**
(A) With reference to Bernoulli equation, in the absence of friction, if the velocity of fluid is reduced, height above datum *Z*, pressure P or both must increase.
(B) All the terms in the Bernoulli equation have the dimensions of energy per unit mass.
(C) Bernoulli equation is a special application of the principle of conservation of energy.
(D) None of the above

101. **Under ordinary conditions, for Reynolds number, N_{Re} >4000**
(A) Inertial force predominates the viscous force
(B) Viscous force predominates the inertial force
(C) Viscose force and inertial force are equal
(D) Inertial and viscous forces are unimportant

102. For a laminar flow of Newtonian fluid in circular pipe, the average velocity is precisely _____the maximum velocity.
(A) One fourth
(B) One half
(C) Equal to
(D) Double

103. In SI system the units of viscosity are
(A) Poise
(B) Pounds per foot-hour
(C) Pascal-second
(D) Centipoises

104. In material balance of a process with recycle, recycle product is always considered as
(A) input to process
(B) output to process
(C) bypass
(D) accumulation

105. Skim milk is found to contain by weight 90% water, 4% protein, 5% carbohydrate, 0.1% fat and 0.9% ash which was prepared by removing only fat from whole milk. If the original whole milk contained 4.5% fat, the percentage of water in the original whole milk is
(A) 75%
(B) 81%
(C) 86%
(D) 90%

106. The objective of material and energy balance is
(A) to assess material and energy losses.
(B) to analyze conversion efficiency of a process.
(C) to express the constraints of conservation of mass and energy.
(D) All of the above

107. During the manufacturing of glass, a process which involves holding the mass of glass above certain critical temperature for long enough duration to reduce internal strain by plastic flow less than the predetermined limit and then gradual cooling to room temperature is known as
(A) Quenching
(B) Galvanizing
(C) Shaping or forming
(D) Annealing

108. During the cement manufacturing gypsum (4-5%) is added to clinker to regulate the
(A) setting time of cement
(B) water requirement of cement
(C) formation of colloidal gel
(D) binding of calcium silicate particles

109. The raw material utilized for the manufacturing of urea is
(A) Coke oven gas
(B) CO_2 and NH_3
(C) Phosphoric acid and sodium carbonate
(D) CO_2 and NO

110. The most commonly used process for the manufacturing of soda ash is _____ process.
(A) Solvay
(B) Le-chatlier's
(C) Haber's
(D) Stengel

111. During the production of sulphuric acid by contact process the reaction involving oxidation of SO_2 converting it to SO_3 is
(A) endothermic reversible reaction
(B) endothermic irreversible reaction
(C) exothermic reversible reaction
(D) exothermic irreversible reaction

112. Which one of the following is not true?
(A) Thermocouples consist of two dissimilar wires joined together.
(B) Seeback effect fundamentally explains the e.m.f. generation in a thermocouple.
(C) Radiation pyrometer is used for the measurement of temperature.
(D) None of the above

113. **Which one of the following instrument is utilized for the measurement of pressure?**
(A) Ionization gauge
(B) Bourdon gauge
(C) McLeod gauge
(D) None of the above

114. **The instrument commonly utilized for the measurement of sludge flow rate is**
(A) rota meter
(B) venturimeter
(C) open weirs
(D) orifice meter

115. **Which one of the following device is capable of measuring the liquid level in a tank?**
(A) Spectrophotometer
(B) Potentiometer
(C) Hygrometer
(D) Capacitance transmitters

116. **The primary air pollutant responsible for acid rain is**
(A) CO_2
(B) CO
(C) SO_2
(D) O_3

117. **Which one of the following water pollutant is not contributed by the industrial source?**
(A) Arsenic
(B) Oil spills
(C) Lead and mercury
(D) Sewage

118. **Hazardous noise pollution is caused by the noisy chemical plant sound for a man working for 8 hrs per day at about_____ decibels.**
(A) > 50
(B) > 90
(C) > 120
(D) > 150

119. **Which is the most effective method for the removal of fine dust particles (< 1μ dia) from air?**
(A) Cyclone separator
(B) Bag filter
(C) Electrostatic precipitator
(D) Wet scrubber

120. **The presence of high concentration of hydrogen fluoride in atmospheric air causes**
(A) cancer
(B) fluorosis
(C) asthma
(D) asphyxiation

121. **Which of the following carbohydrate is present in milk?**
(A) Maltose
(B) Sucrose
(C) Lactose
(D) Starch

122. **Peroxide value is the measure of**
(A) Degree of unsaturation
(B) Rancidity
(C) Type of fatty acid present
(D) Amount of cholesterol present

123. **Iodine test can be used for the detection of**
(A) Reducing sugars
(B) Sucrose
(C) Starch
(D) Lipids

124. **Which of the following bond is present in proteins?**
(A) Glycosidic bond
(B) Peptide bond
(C) Hydrogen bond
(D) All of these

125. **Fats are esters of high molecular weight of_____**
(A) Glycerol and lignin
(B) Glycerol and chitin
(C) Glycerol and fatty acids
(D) Ketone and phosphate

126. **The colour of Gram positive bacteria after staining is_____**
(A) Red
(B) Green
(C) Purple
(D) Yellow

127. **Which of the following scientist gave the concept of pasteurization _____ ?**
(A) F. Appert
(B) L. Pasteur
(C) R. Koch
(D) F. Redi

128. **Psychrophiles can grow at temperature range of _____**
(A) 0-15°C
(B) 20-40°C
(C) 25-50°C
(D) 40-60°C

129. **The most common method of reproduction in yeast is_____**
(A) Binary fission
(B) Fragmentation
(C) Budding
(D) Sexual

130. **Which of the following microorganism(s) is/are involved in the production of curd (dahi)?**
(A) *Lactobacillus lactis*
(B) *Lactobacillus bulgaricus*
(C) *Lactobacillus cremoris*
(D) All of these

131. **Saurkraut is the fermented product of?**
(A) Cabbage
(B) Raddish
(C) Carrot
(D) Capsicum

132. **Milling is process, which removes**
(A) Layer of bran & germ
(B) Endosperm
(C) Seed coat
(D) All of these

133. **Starch is present in which layer of cereal grain?**
(A) Aluerone
(B) Seed Coat
(C) Endosperm
(D) Pericarp

134. **Standardized milk should have minimum fat concentration of _____ .**
(A) 1.5%
(B) 4.0%
(C) 4.5%
(D) 2.5%

135. **The process of making stable emulsion of milk fat and milk serum by mechanical treatment is known as_____**
(A) Pasteurization
(B) Sterilization
(C) Homogenization
(D) Sonication

136. **The term 'rigor mortis' is related to___**
(A) Milk processing
(B) Meat processing
(C) Fruit and vegetable processing
(D) Cereal processing

137. **Egg yolk is rich in_____**
(A) Vitamin A
(B) Vitamin D
(C) Cholesterol
(D) All of these

138. **Wine is produced through the fermentation of_____**
(A) Fruit juices
(B) Barley
(C) Corn
(D) Wheat

139. **Wort is obtained during the production of_____**
(A) Bread
(B) Beer
(C) Vinegar
(D) Meso

140. **Which of the following component is responsible for firmness of jelly?**
(A) Sugar
(B) Pectin
(C) Fruit content
(D) All of these

141. **The term marmalade is generally associated with the product made from_____**
(A) Orange
(B) Grape fruit
(C) Lemon
(D) All of these

142. **Browning reactions can be caused by**
(A) Nitration
(B) Sulphonation
(C) Maillard type reactions
(D) All of these

143. **Canning is also known as**
(A) Apperitization
(B) Pasteurization
(C) Ionization
(D) None of these

144. **Which of the following is used as a preservative for coloured juices?**
(A) Potassium metabisulphite
(B) Sorbic acid
(C) Sodium benzoate
(D) Acetic acid

145. **Hurdle technology consists of_____**
(A) Mixture of different ingredients to form a uniform quality product
(B) Mixture of different preservation technique
(C) Using irradiation for increasing the shelf life of meat
(D) None of the above

146. **Which of the following(s) is/are added as adulterant in milk?**
(A) Water
(B) Starch
(C) Urea
(D) All of these

147. **The 9-point Hedonic Scale is used in food for___**
(A) Sensory evaluation
(B) Chemical testing
(C) Mechanical testing
(D) All of these

148. **PFA stands for ___**
(A) Plant flavour analysis
(B) Pasteurized food application
(C) Processed food act
(D) Prevention of food adulteration

149. **Which of the following is related to food safety?**
(A) ISO 9001
(B) HACCP
(C) Both (A) and (B)
(D) None of these

150. **The full form of HACCP is _____.**
(A) Hazard Analysis Critical Control Point
(B) Hazard Analysis Control Critical Point
(C) Hazard Analysis Control Critical Position
(D) Hazard Analysis Critical Control Position

6/6/16
9.10AM

SET III (Chemical & Food)

1	D	51	B	101	A
2	D	52	A	102	B
3	B	53	C	103	C
4	B	54	C	104	A
5	B	55	A	105	C
6	C	56	B	106	D
7	D	57	C	107	D
8	D	58	B	108	A
9	B	59	A	109	B
10	C	60	B	110	A
11	A	61	D	111	C
12	D	62	A	112	D
13	C	63	A	113	B
14	A	64	C	114	C
15	D	65	B	115	D
16	A	66	A	116	C
17	A	67	D	117	D
18	A	68	A	118	B
19	B	69	A	119	C
20	B	70	A	120	B
21	B	71	A	121	C
22	D	72	C	122	B
23	C	73	B	123	C
24	C	74	A	124	B
25	D	75	C	125	C
26	C	76	D	126	C
27	D	77	A	127	B
28	D	78	D	128	A
29	C	79	C	129	C
30	A	80	D	130	D
31	D	81	B	131	A
32	D	82	B	132	A
33	A	83	A	133	C
34	A	84	D	134	C
35	C	85	B	135	C
36	C	86	A	136	B
37	B	87	A	137	D
38	C	88	C	138	A
39	A	89	B	139	B
40	D	90	A	140	B
41	B	91	C	141	D
42	C	92	A	142	C
43	A	93	D	143	A
44	C	94	D	144	C
45	B	95	D	145	B
46	C	96	B	146	D
47	C	97	B	147	A
48	B	98	B	148	D
49	B	99	A	149	B
50	C	100	D	150	A