1. In isochoric process:
   A. Pressure is kept constant
   B. Exchange of heat is zero
   C. Volume is kept constant
   D. Temperature is kept constant

2. If 42 J heat is transferred to the system during expansion, what is the change in internal energy when work done is 32 J?
   A. 74 J
   B. 10 J
   C. 116 J
   D. 106 J

3. The 1st law of thermodynamic is the generalization of the law of conservation of:
   A. Mass
   B. Charge
   C. Energy
   D. Momentum

4. While studying charging and discharging of a capacitor, Rc = Resistance x Capacitance is known as?
   A. Electrostatic constant
   B. Time constant
   C. Dielectric constant
   D. Proportionality constant

5. In parallel combination of two capacitors, their equivalent capacitance is equal to:
   A. $C_1 + C_2$
   B. $1/C_1 + 1/C_2$
   C. $C_1C_2 / C_1 + C_2$
   D. $2\ C_1C_2 / C_1 + C_2$

6. The S.I unit of capacitance of a capacitor is:
   A. Coulomb
   B. Volt
   C. Farad
   D. Ampere

7. 1 kWh =
   A. 0.36×10^6 J
   B. 36×10^6 J
   C. 3.6×10^6 J
   D. 0.036×10^6 J

8. Volt x Ampere is the unit of:
   A. Current
   B. Volt
   C. Resistance
   D. Power

9. If length of the wire becomes two times to its original value and area becomes one half to its original value, than resistance of the wire becomes:
   A. Double
   B. Four times
   C. One half
   D. One forth

a charged particle enters the magnetic field parallel, it will:

B. Deflect toward south
C. Move straight
D. Move in circular path

11. The dimension of magnetic field strength is same as that of :

A. Magnetic flux
B. Magnetic induction
C. Work done
D. Magnetic force

12. The weber is unit of measure of:

A. Conductance
B. Electric current
C. Magnetic flux
D. Electric flux

13. The lenz's law is also statement of law of conservation of:

A. Charge
B. Mass
C. Energy
D. Pressure

14. In fleming's right hand rule, the second finger indicates:

A. Force
B. Magnetic field
C. Induced current
D. Motion

15. A current generator is a device that converts:

A. Mechanical energy into electrical energy
B. Chemical energy into mechanical energy
C. Sound energy into mechanical energy
D. Electrical energy into mechanical energy

16. A device that converts AC into DC is called:

A. Diode
B. Transistor
C. Capacitor
D. Inductor

17. The conversion of alternating current into direct current is called:

A. Amplification
B. Rectification
C. Magnification
D. Resolution

18. In full wave rectification, _____ diodes are used.

A. 1
B. 2
C. 3
D. 4

19. The time taken for half the number of atoms of radioactive isotopes to ... is called:
A. Average life
B. Mean life
C. Total life
D. Half life

20. A 32g radioactive element decays and remains 2g after 60 days. What is half-life ... this radioactive element?
A. 2 days
B. 6 days
C. 10 days
D. 15 days

21. If the car is slowing down along negative x axis then acceleration will be along:
A. Positive x Axis
B. Negative x Axis
C. Positive y Axis
D. Negative y Axis

22. The instantaneous velocity along the curved path is:
A. Along the tangent
B. Perpendicular to the slope
C. Parallel to the radius
D. Anti-parallel to the radius

23. In perfectly elastic collision:
A. Only momentum is conserved
B. Only total energy is conserved
C. Only kinetic energy is conserved
D. Momentum, kinetic energy and total energy, all are conserved

24. The slope of a displacement- time graph is equal to:
A. Velocity
B. Displacement
C. Acceleration
D. Distance

25. Range of a projectile on a horizontal plane is same for the following pair of angle:
A. 15 & 30
B. 60 & 20
C. 75 & 15
D. 50 & 25

26. The product of force and time is equal to:
A. Angular momentum
B. Force
C. Change in momentum
D. Velocity

27. At what point during the motion of projectile its vertical component of velocity is zero?
A. Point of projection
B. Landing point
C. Highest point
D. Just before landing

ject has 1 J of PE. What is the work done in terms of height?

A. 1 J
B. 10 J
C. 0 J
D. 0.1 J

29. Power is dot product of:
A. Force and displacement
B. Force and velocity
C. Force and time
D. Work and time

30. The area under force-displacement graph gives:
A. Displacement
B. Power
C. Work
D. Acceleration

31. A body of mass 'm' is moving with velocity 'v'. After a short interval of time its velocity becomes double. How many times its K.E will increase or decrease?
A. 2 time increased
B. 2 time decreased
C. 4 time increased
D. 4 time decreased

32. The relation between radian and degree is:
A. 1 rad = 57.3^0
B. $1^0 = 57.3$ rad
C. 1 rad = 1^0
D. $1^0 = \pi$ rad

33. In case of centripetal force the value of instantaneous acceleration is given by:
A. $a_c = v / r$
B. $a_c = v^2 / r$
C. $a_c = v\, r$
D. $a_c = v^2\, r$

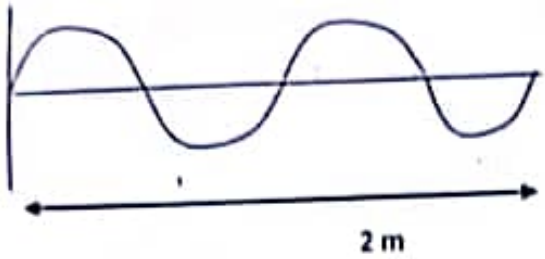
34. An electric motor turns at 400 revolutions per minute. Its angular velocity in rad/s will be:
A. $\frac{20\pi}{3}$
B. $\frac{30\pi}{3}$
C. $\frac{40\pi}{3}$
D. $\frac{30\pi}{4}$

35. A disc, a hoop and a sphere are rolling down from an inclined plane simultaneously. Which object will reach at the bottom first?
A. Hoop
B. Disc
C. Sphere
D. All at the same time

01803

A. $F_c = m\omega^2$
B. $F_c = mr\omega$
C. $F_c = mr\omega^2$
D. $F_c = mr^2\omega$

37. In the following figure the wavelength is:



A. 2m
B. 1.5m
C. 1m
D. 0.5m

38. With increase in pressure, the speed of sound will:
A. Increase
B. Decrease
C. First increase then decrease
D. Remain the same

39. In transverse waves, the portion above the mean level is called:
A. Wave front
B. Wave crest
C. Wave trough
D. Wave length

40. The maximum displacement of particles of a medium, on either side of the mea position of a wave, is called:
A. Wavelength
B. Frequency
C. Amplitude
D. Crest

BIOLOGY

41. Na^+ (sodium Ions) are nearly_____ times greater in fluid outside the cell th inside:
A. 10
B. 30
C. 2
D. 3

42. Which hormone induces labour pains?
A. Estrogen
B. Oxytocin
C. Progesterone
D. LH

43. Hormone secreted in bulk due to decreased water content of blood is:
A. Anti-Diuretic Hormone (ADH)
B. Oxytocin
C. Glucagon
D. Thyroxin

0180

e of production of neurotransmitters is:
A. Postsynaptic neuron
B. Presynaptic neuron
C. Synaptic cleft
D. Dendrite

45. Endorphins are produced in:
A. Brain
B. Adrenal gland
C. Stomach
D. Thymus

46. The hormone responsible for production of sperm cells and male secondary sexual characteristics is:
A. Estrogen
B. Progesterone
C. Testosterone
D. Thyroxin

47. Leydig cells are responsible for:
A. Testosterone production
B. FSH production
C. Sperm production
D. Testosterone inhibition

48. The estrogen hormone secretion during the oogenesis is stimulated by:
A. Leutinizing Hormone
B. Inhibin Hormone
C. Follicle Stimulating Hormone
D. Testosterone Hormone

49. Which of the following hormones of the pituitary gland regulate the menstrual cycle?
A. Follicle Stimulating Hormone and estrogen
B. Luteinizing hormone and estrogen
C. Follicle Stimulating Hormone and Luteinizing hormone
D. Estrogen and progesterone

50. Which of the following traits is transmitted directly from an affected father to only his son?
A. Autosomal
B. X-linked
C. Y-linked
D. X-Y linked

51. When both the alleles of a gene pair are same, the organism is said to be:
A. Heterozygous
B. Genotype
C. Homozygous
D. Phenotype

52. This theory says that "mitochondria and chloroplasts are, in effect, ancient bacteria which now live inside the larger cells"?
A. Darwin's theory of evolution
B. Lamarckism
C. Neo-darwinism

53. The organs which are similar in function but differ in structure are call...
A Analogous organs
B Homologous organs
C Convergent organs
D Divergent organs

54. Which may NOT be a mode of action of an antibody?
A. Neutralizing an antigen
B. Precipitating an antigen
C. Secretion of cytokines
D. Enhancing phagocytosis

55. Pepsinogen is converted into its active form pepsin by:
A. Proteolytic enzyme action
B. Dissolving in mucus
C. Hormonal action
D. Hydrochloric acid

56. Intrinsic factor is secreted by:
A. Pancreas
B. Liver
C. Stomach
D. Duodenum

57. The cells which play very important role in developing immunity are:
A. Monocytes
B. Neutrophils
C. Lymphocytes
D. Thrombocytes

58. Digestion of which food component start from oral cavity?
A. Proteins
B. Fats
C. Carbohydrates
D. Vitamins

59. Vaccination is an example of :
A. Natural passive immunity
B. Natural active immunity
C. Acquired/Artificial active immunity
D. Acquired/ Artificial passive immunity

60. The heart chamber from where aorta originates:
A. Left ventricle
B. Right ventricle
C. Left atrium
D. Right atrium

61. Public symphysis and inter vertebral disc are the example of:
A. Fibrous joints
B. Synovial joints
C. Cartilaginous joints
D. Gliding joints

62. Cartilage is more difficult to heal than bone because cartilage:
A. Lacks vascular supply
B. Lacks mineral deposits in matrix
C. Has less number of cells deep down
D. Lacks protein in matrix

ich feature is absent from cardiac muscles?
A. Intercalated disc
B. Multinucleate cells
C. Light and dark bands
D. Contractile sarcomeres

64. Sarcoplasmic reticulum of muscle fibers is mainly responsible for:
A. Calcium storage
B. Protein synthesis
C. Lipid metabolism
D. Storing cell wastes

65. The junction between two neurons is:
A. Impulse
B. Synapse
C. Axon
D. Cleft

66. Which hormone is chemically a steroid?
A. ADH
B. Thyroxin
C. Cortisone
D. Insulin

67. Under activity of parathyroid glands causes a drop in blood of:
A. Mg^{++}
B. Na^{+}
C. K^{+}
D. Ca^{++}

68. Which of the following protein establishes the matrix of bone & cartilage?
A. Elastin
B. Keratin
C. Collagen
D. Histone

69. Non-competitive inhibitors react with enzymes at:
A. Allosteric site
B. Active site
C. Passive site
D. Regulatory site

70. Most enzymes work the best at the following temperature:
A. 30°C
B. 40°C
C. 50°C
D. 20°C

71. In term of enzyme action, 'maximum temperature' refers to a temperature at which:
A. Enzymes start to denature
B. Enzymes start to re-nature
C. Enzymes work best
D. Enzymes are reactivated

72. _____ reduce the enzymes productivity by blocking the [illegible] entering into the active site due to similar shapes:
A. Competitive inhibitors
B. Non-competitive inhibitors
C. Co-enzymes
D. Activators

73. When light falls on P-700, which event is likely to occur?
A. It induces photolysis
B. Gains Hydrogen
C. Accept electrons
D. It is oxidised

74. Which of the following molecules are released after completion of light reaction and then utilized in the dark reaction of photosynthesis?
A. ATP and NADP•
B. ADP and NADP•
C. ADP and NADPM
D. ATP and NADPH

75. Which are the end products of light reactions of photosynthesis?
A. ATP and NADPH
B. ATP and glucose
C. Glucose and NADP
D. ATP and water

76. Synthesis of ATP during photosynthesis takes place at the region:
A. Stroma
B. Thylakoid
C. Matrix
D. Cisternae

77. The complete, mature and infectious virus particle is known as:
A. Venome
B. Genome
C. Virion
D. Capsid

78. All viruses are:
A. Autotrophs
B. Heterotrophs
C. Parasites
D. Predators

79. _____ increases the pathogenecity of bacteria:
A. Capsule
B. Cell wall
C. Slime
D. Cell membrane

80. The smallest known bacteria belong to the genus:
A. Mycoplasma
B. Streptococcus
C. Escherichia
D. Bacillus

enteric veins drain the blood from:
A Liver
B Large intestine
C Stomach
D Gall bladder

82. Secondary cell wall in plants is present:
A Outer to primary cell wall
B In between two primary cell walls
C Between the primary cell wall and plasma membrane
D Inner to plasma membrane

83. What distinguishes Prokaryotic cell wall from Fungal cell wall?
A Prokaryotic cell wall contains cellulose
B Prokaryotic cell wall contains peptidoglycan
C Prokaryotic cell wall contains cutin
D Prokaryotic cell wall contains silica

84. Pollination is facilitated by:
A Chloroplast
B Chromoplast
C Leucoplast
D Amyloplast

85. Tonoplast is the membrane separating:
A Vacuole and Nucleoplasm
B Cytoplasm and Nucleoplasm
C Vacuole and Stroma
D Vacuole and Cytoplasm

86. Each centriole is composed of ____ of Microtubules:
A Seven Triplets
B Eleven Triplets
C Nine Triplets
D Five Triplets

87. The folds of Inner Membrane of mitochondria are called:
A Cisternae
B Cristae
C Mesosome
D Infolds

88. According to the fluid mosaic model of cell membrane, which zone is embedded inside?
A Hydrophobic
B Hydrophilic
C Globular
D Filamentous

89. Select the one which is NOT a function of Smooth Endoplasmic Reticulum (SER)?
A Metabolism of lipids
B Transmission of impulses
C Transport of materials
D Processing of glycoproteins

01803

90. Cell membrane also contains _____ place by active and passive transport:
A Lipids
B Corner Proteins
C Charged pores
D Carbohydrates

91. _____ are spherical sacs, surrounded by a single membrane and contain hydrolytic enzymes:
A Mitochondria
B Golgi Bodies
C Lysosomes
D Chloroplast

92. Most abundant organic compound in mammalian cells are:
A. Water
B. Lipids
C. Carbohydrates
D. Proteins

93. Thermal stability of organisms in the environment is because of which characteristic of water?
A. Solvent property
B. Heat capacity
C. Ionization
D. Protection

94. C-H bonds in lipids are important:
A. As insulating material
B. Providing more energy
C. As exoskeleton
D. As cuticle of leaves

95. These carbohydrates are sweetest among all carbohydrates:
A. Monosaccharides
B. Disaccharides
C. Oligosaccharides
D. Polysaccharides

ENGLISH

96. I _____ English for five years.
A. Study
B. Am Studying
C. Have been studying
D. studies

97. The soup _____ good
A. Taste
B. Tastes
C. Is tasting
D. Has taste

98. Unless we _____now, we cannot be on time
A. Start
B. Will start
C. Do not start
D. Are starting

99. Daud is better than _____of the collego.
A. All teachers
B. Any teachers
C. All other teachers
D. Any teacher

100. Abide _____the traffic laws for smooth and safe flow of traffic.
A. On
B. With
C. By
D. To

101. He prefers death _____dishonor.
A. Over
B. On
C. Upon
D. To

102. What does the word "SURPLUS" mean?
A. In excess
B. A mathematical term
C. Within reach
D. Salutation

103. What does the word "SPILL" mean?
A. Coil
B. Deliver
C. Spoil
D. Spread

104. What does the word "CURIOUS" mean?
A. Keen
B. Careful
C. Quest
D. Cruel

105. Pick the sentence with correct punctuation:
A. He had one motto "serving humanity."
B. He, had one motto, serving humanity.
C. He had one motto; serving humanity.
D. He had one motto: serving humanity.

106. Pick the word with correct spelling:
A. Collique
B. Colleague
C. Collegue
D. Co-leageu

107. Pick the word with correct spelling:
A. Acquaintance
B. Equatance
C. Equantence
D. Equentense

01803

108. **Pick the word with correct spelling:**
   A. Prayority
   B. Priarity
   C. Prioarity
   D. Priority

109. **Pick the sentence with correct punctuation:**
   A. "He did his best that was all anyone could do in any job".
   B. He did his best, that was all anyone could do in any job.
   C. "He did his best: that was all anyone could do in any job".
   D. "He did his best; that was all anyone could do in any job".

110. **Pick the correct option:**
   A. How has the chair leg broken?
   B. How has the leg of the chair broken?
   C. How the leg of the chair has broken?
   D. How the chair's leg is broken?

CHEMISTRY

111. **Vapor pressure is independent of which factor?**
   A. Temperature
   B. Intermolecular forces
   C. Density of liquid
   D. Surface area of liquid

112. **The boiling point of ether is less as compared to alcohols and phenols due to:**
   A. Functional group
   B. Intermolecular forces
   C. Nature of alkyl groups
   D. Isomerism

113. **When 2 ice cubes are pressed over each other they unite to form one cube due to:**
   A. Dipole dipole attraction
   B. Covalent attraction
   C. Van Der Waal's forces
   D. H – bonding

114. **Which statement correctly describes the structure of sodium chloride crystal?**
   A. Each sodium ion is surrounded by six chloride ions and each chloride ions surrounded by six sodium ions
   B. The crystal is face centered cubic structure
   C. Each sodium ion is surrounded by 3 chloride ions and each chloride ion surrounded by 3 sodium ions
   D. Inter molecular forces are present between two oppositely charges ions

115. **The greater Lattice energy is shown by:**
   A. NaCl
   B. NaBr
   C. NaI
   D. NaF

116. **Thermal conductivity of metals is due to:**
   A. Layered structure of metals
   B. Freely moving electrons
   C. Loosely held metal atoms
   D. Vibrational movement of metals

117. The high pressure of 200 atm in Haber's process is used for:
A. Better yield
B. Lower yield
C. Lower rate
D. Cost decrease

118. By which of the following factors equilibrium state is attained earlier?
A. Temperature
B. Pressure
C. Concentration
D. Catalyst

119. When temperature of reacting gases is raised by 10 K, the reaction rate will increase to:
A. Double
B. Three times
C. Four times
D. Five times

120. The minimum amount of energy required by the colliding particles for effective collisions is called:
A. Activation energy
B. Lattice energy
C. Bond energy
D. Hydration energy

121. Which of the following is not a state function?
A. Pressure (P)
B. Work (W)
C. Volume (V)
D. Temperature (T)

122. Equation represents which energy change?

$$Mg^{2+}(g) + O^{2-}(g) \longrightarrow MgO(s)$$

A. Atomization
B. Neutralization
C. Lattice energy
D. Solution

123. When nitric oxide reacts with ozone, the order of reaction will be:
A. 2nd
B. 3rd
C. 1st
D. Zero

124. During electrolysis, reduction always occurs at the:
A. Anode
B. Cathode
C. SHE
D. Salt bridge

125. The reason of highest electronegativity value of Fluorine is:
A. Complete outermost shell
B. Ability to form negative ion
C. Existence as diatomic molecule
D. Smaller size and higher nuclear charge in the respective period

01803

126. Valance shell electron pair repulsion theory explains:
A. Bond Energy
B. Bond Length
C. Shapes and Bond Energy
D. Shapes

127. Which of the following has sp^3 hybridization?
A. BF_3
B. C_2H_4
C. $BeCl_2$
D. CH_4

128. The factor which is not affecting bond length is:
A. Pressure of multiple bonds
B. Nature of hybridization present
C. Difference in electronegativity between the two bonded atoms
D. Ionization energies of the two bonded atoms

129. Which of the following substance is malleable and ductile?
A. Sodium chloride
B. Copper sulphate
C. Mercury
D. Aluminum

130. Co-ordination number of Na is:
A. 10
B. 9
C. 8
D. 12

131. The cracking method used to obtain better quality gasoline is:
A. Thermal
B. Catalytic
C. Steam
D. Radiations

132. Homocyclic organic compounds are sub divided into two types namely:
A. Alicyclic and Aromatic
B. Open chain and branched chain
C. Aromatic and non-aromatic
D. Antiaromatic and antialicyclic

133. Acetophenone can be formed by which of the following reaction of benzene?
A. Alkylation
B. Acylation
C. Halogenation
D. Nitration

134. Generic formula of cycloalkane is:
A. C_nH_{2n+2}
B. C_nH_{2n}
C. C_nH_{2n-1}
D. C_nCH_{2n-2}

Which of the following reactions differentiates alcohol from phenol?

A. Lucas test
B. Halogenations
C. Nitration
D. Idoform test

136. The order of reactivity of alcohol when C-O bond breaks is:

A. Tertiary alcohol > secondary alcohol > Primary alcohol
B. Secondary alcohol> primary alcohol>tertiary alcohol
C. Primary alcohol> secondary alcohol> tertiary alcohol
D. Tertiary alcohol> primary alcohol> secondary alcohol

137. $C_nH_{2n}O$ is the general formula of:

A. Ether
B. Carboxylic acid
C. Ketones
D. Carbolic acid

138. Catalytic reduction of aldehyde & Ketone forms:

A. Alcohol
B. Carboxylic acid
C. Alkane
D. Aldehyde

139. Which of the following reacts with Carboxylic Acid to form Ester?

A. Aldehyde
B. Alkyl Halide
C. Ketones
D. Alcohol

140. Hydrolysis of Nitriles produces:

A. Carboxylic acid
B. Aldehydes
C. Ketones
D. Esters

141. What is the mass of sulphur in 24.5 g of H_2SO_4?

A. 32 g
B. 24 g
C. 16 g
D. 8 g

142. From the equation ($N_2 + 3H_2 \leftrightarrow 2NH_3$), how many moles of NH_3 are produced from 2.5 moles of N_2?

A. 2.5 moles
B. 2 moles
C. 5 moles
D. 7.5 moles

143. The amount of energy associated with quantum of radiation is directly proportional to:

A. Photon
B. Wavelength
C. Frequency
D. Velocity

01803

144. If value of azimuthal quantum number is 2 then total values of magnetic quantum number will be:
A. 03
B. 05
C. 07
D. 10

145. Total number of directions of f-orbitals in space are:
A. 05
B. 03
C. 07
D. 06

146. Which of the following quantum number is not obtained from Schrodinger Wave equation?
A. Principal Quantum Number
B. Spin Quantum Number
C. Azimuthal Quantum Number
D. Magnetic Quantum Number

147. The electronic configuration for degenerate orbitals is explained by:
A. Aufbau Principle
B. n + l rule
C. Hund's rule
D. Pauli exclusion principle

148. The idea that molecules in gases are in constant movement is called:
A. Kinetic theory of gases
B. Crystal field theory
C. Molecular orbital theory
D. Transition state theory

149. The SI unit for pressure is:
A. mm of Hg
B. Pascal
C. Bar
D. Torr

150. If both temperature and volume of gas are doubled, the pressure:
A. Cannot be predicted
B. Is reduced to ½
C. Remains unchanged
D. Is doubled

01803

NUMS 2023 KEY BY eprepare.org

Q	KEY	Q	KEY	Q	KEY
1	C	51	C	101	D
2	B	52	D	102	A
3	C	53	A	103	D
4	B	54	C	104	A
5	A	55	D	105	D
6	C	56	C	106	B
7	C	57	C	107	A
8	D	58	C	108	D
9	B	59	B	109	B
10	C	60	A	110	B
11	B	61	C	111	D
12	C	62	A	112	B
13	C	63	B	113	D
14	C	64	A	114	A
15	A	65	B	115	D
16	A	66	C	116	B
17	B	67	D	117	A
18	B	68	C	118	D
19	D	69	A	119	A
20	D	70	B	120	A
21	A	71	A	121	B
22	A	72	A	122	C
23	D	73	D	123	A
24	A	74	D	124	B
25	C	75	A	125	D
26	C	76	B	126	D
27	C	77	C	127	D
28	A	78	C	128	D
29	B	79	C	129	D
30	C	80	A	130	C

31	C	81	B	131	B
32	A	82	C	132	A
33	B	83	B	133	B
34	C	84	B	134	B
35	C	85	D	135	D
36	C	86	C	136	A
37	C	87	B	137	C
38	D	88	A	138	A
39	B	89	D	139	D
40	C	90	C	140	A
41	A	91	C	141	D
42	B	92	D	142	C
43	A	93	B	143	C
44	B	94	B	144	B
45	A	95	A	145	C
46	C	96	C	146	B
47	A	97	B	147	C
48	C	98	A	148	A
49	C	99	C	149	B
50	C	100	C	150	C