

**NATIONAL UNIVERSITY OF MEDICAL SCIENCES,
RAWALPINDI**

ENTRANCE TEST - 2016

Time Allowed: 3 hours

Total MCQs: 180

Instructions:

- i. Read All the instructions given on the MCQ response form carefully
- ii. Choose the single best answer for each question i.e. A, B, C, D and E.
- iii. Candidates are strictly prohibited to give any identification marks except Roll No. and signature in the specified columns only.

COMPULSORY QUESTION FOR IDENTIFICATION

Q-ID. What is the color of your Question Paper?

- A) WHITE C) PINK
B) BLUE D) GREEN

Ans: Color of your question Paper is white. Fill the Circle corresponding to letter A' Against 'ID' in your MCQ response form.

PHYSICS

1. **All statements are correct about third law of motion except:**
(A) Forces have equal magnitude.
(B) Both of them have opposite direction.
(C) Both are applied on different bodies.
(D) Both are applied on same body maintaining equilibrium.
2. **A mass has constant acceleration, what is true about force applied on it?**
(A) Constantly increasing
(B) Constant but not zero
(C) Is directly proportional to square of displacement
(D) Is directly proportional to velocity
3. **If temperature is increased from 200K to 800K, then what would be the change in pressure at constant volume?**
(A) Increases by factor 4 (B) Decreases by factor 4
(C) Increases by factor 2 (D) Decreases by factor 2
4. **If each particle of fluid is passing through same point, what would be the flow?**
(A) Linear (B) Streamline

- (C) Tubular (D) Both A and B
5. **Density of blood is:**
(A) More than water (B) less than that of water
(C) Nearly equal to water (D) 3 times greater than water
6. **A body moving on a fluid will experience:**
(A) Drag force (B) Centripetal force
(C) Centrifugal force (D) Tabular fore
7. **If a substance can undergo plastic deformation, until it breaks, it is:**
(A) Ductile substance (B) Brittle substance
(C) Crystalline substance (D) Polymeric substance
8. **If stress is applied on a body then ratio of change in volume to original volume will be:**
(A) Polymeric strain (B) Volumetric strain
(C) Parallel strain (D) Tensile strain
9. **If a wave can be polarized, it means, it is:**
(A) Longitudinal wave (B) Stationary wave
(C) Superimposed wave (D) Transverse wave
10. **The electron current is chiefly due to:**
(A) Cathode (B) Grid
(C) Anode getter (D) Screen
11. **If wire having current 10A has 3t magnetic field, what will be the magnetic field at double of the distance?**
(A) Reduces by factor 2 (B) Reduces by factor 4
(C) Becomes double (D) Becomes tripple
12. **What is true regarding magnetic force and magnetic intensity?**
(A) If electron's movement is parallel to magnetic field, it will rotate clockwise.
(B) If electron's movement is parallel to magnetic field, it will rotate anticlock wise.
(C) If electron enters perpendicular to field force would be parallel to plane.
(D) If electron enters perpendicular to field force will be maximum.
13. **A real image formed by convex lense is always.**
(A) Erect (B) Inverted
(C) Magnified (D) Diminished
14. **What is true about electric field and electric force?**
(A) Electric field lines are towards negative and electron flow in same direction.

- (B) Electric field lines are towards positive and electron flow in opposite direction.
(C) Electric field lines are towards negative and electrons flow in opposite direction.
(D) Electric field lines are towards positive and electrons flow in same direction.
- 15. If electron passes through axis of solenoid the movement will be:**
(A) Towards the outward (B) Towards the inward
(C) Parallel to its motion (D) No force acts on it
- 16. Ejection of electrons from metal surface due to heating effect is:**
(A) Thermonic emission (B) Photoelectric effect
(C) Population inversion (D) Cathode expulsions
- 17. Newton's rings are result of:**
(A) Polarization (B) Diffraction
(C) Reflection (D) Refraction
- 18. If amplitude is 200, intensity is 300. When amplitude is increased to 800 then what will be intensity?**
(A) 1200 (B) 1400
(C) 1600 (D) 1800
- 19. Electric conduction is high in:**
(A) Solid nuclei (B) Sugar solution
(C) Solid graphite (D) None
- 20. If speed of waves is 10m/sec and its frequency is 5Hz. Find its wavelength.**
(A) 1 (B) 2
(C) 4 (D) 6
- 21. Units of gravitational constant G are:**
(A) m sec^{-1} (B) m sec^1
(C) m sec^{-2} (D) m sec^{-2}
- 22. If power is 100 watt and voltage is 220. Find its resistance.**
(A) 2.5 (B) 3.5
(C) 4.5 (D) 5.5
- 23. Third law of Newton is also called:**
(A) Law of inertia (B) Equilibrium
(C) Both a and b (D) None
- 24. The fractional change in resistance per kelvin is known as:**
(A) Temperature coefficient of resistance
(B) Thermal coefficient

Linear coefficient of expansion

Volumetric coefficient of expansion

25. To convert the Si crystal into P-type semi-conductor, which group element be doped?

- (A) Trivalent element (B) Second group element
(c) Four group element (D) Pentovalent element

26. The current measuring part of the Avometer consists of number of low resistances connected.

- (A) At an angle of 180° with the galvanometer
(B) P-v-llel with galvanometer
(C) At an angle of 45° with the galvanometer
(D) Perpendicular with the galvanometer

27. The energy supplied by the cell to the charge carriers is derived from the conversion of:

- (A) Heat energy into chemical energy
(B) Chemical energy into electrical energy
(C) Solar energy into electrical energy
(D) Mechanical energy into electrical energy

28. The deviation of I-V graph from straight line is due to:

- (A) Decrease in temperature and decrease in resistance
(B) Increase in temperature and increase in resistance
(C) Decrease in temperature and increase in resistance
(D) Increase in temperature and decrease in resistance

29. The information received at the other end of a fibre can be inaccurate.....due to of the light signal.

- (A) Longer wavelengths (B) Frequency
(C) Intensity (D) Dispersion or spreading

30. The pressure on the other sides and energy where inside the vessel will be same according to the:

- (A) Pascal's law (B) Hook's law
(C) Boyle's law (D) Charle's law

31. The value of universal constant "R" is:

- (A) $8.314 \text{ J mole}^{-3} \text{ K}^{-3}$ (B) $1.38 \text{ J mole}^{-1} \text{ K}^{-3}$

(C) $1.38 \text{ J mole}^{-1} \text{ K}^{-1}$ (D) $8.314 \text{ J mole}^{-1} \text{ K}^{-1}$

32. **For a diabatic process, the first law of thermodynamics is:**

(A) $w = \Delta u + Q$ (B) $Q = w$
(C) $Q = w$ (D) $w = -\Delta u$

33. **The entropy of the universe always:**

(A) Decreases (B) Increases
(C) Remains the same (D) Both A and B

34. **If the body is rotating with uniform angular velocity, then its torque is:**

(A) Zero (B) 90° (C) 1 (D) -1

35. **The direction of the magnetic lines of force depends upon:**

(A) Nature of the material of the conducting wire
(B) Area of the conducting wire
(C) Amount of the current
(D) Direction of the current

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36. A uniform magnetic field is represented by a set of lines of force which are.
- (A) Parallel (B) Divergent
(C) Convergent (D) None of these
37. Weber ampere per meter is equal to:
- (A) Joule (B) Watt
(C) Newton (D) Henry
38. The difference between soft and hard X-rays is of:
- (A) Velocity (B) Intensity
(C) Frequency (D) Polarization
39. Which of the following is an instrument for monitoring radiations:
- (A) GM tube (B) Geiger counter
(C) Wilson cloud chamber (D) All of the above
40. Which of the following is the pair of isobars?
- (A) ${}^1_1\text{H}$ and ${}^2_1\text{H}$ (B) ${}^{12}_6\text{C}$ and ${}^{13}_6\text{H}$
(C) ${}^2_1\text{H}$ and ${}^3_1\text{H}$ (D) ${}^{30}_{15}\text{H}$ and ${}^{30}_{14}\text{Si}$
41. Half life of radioactive element depends upon:
- (A) Amount of element present (B) Pressure
(C) Temperature (D) None
42. Which of the following is the percentage of the original quantity of a radioactive material left after five half - lives approximately.
- (A) 3% (B) 10%
(C) 10% (D) 20%
43. When nucleus de-excite, it emits.
- (A) α -rays (B) γ -rays
(C) β -rays (D) All of these
44. The direction of the magnetic lines of force depends upon:
- (A) Nature of the material of the conducting wire
(B) Area of the conducting wire
(C) Direction of the current
(D) Direction of the current
45. When a charged particle is projected perpendicularly in a magnetic field its trajectory is:

- (A) Hyperbola (B) Helix
(C) Parabola (D) Circular

ENGLISH

46. **You should stick..... your promise.**
(A) By (B) To
(C) With (D) In
47. **The traveler.....a long tour to water the camel.**
(A) Took (B) Saw
(C) Sought (D) Made
48. **Shah Jahan.....the great mosque at Delhi.**
(A) Founded (B) Raised
(C) Created (D) Established
49. **He was.....of theft in the court.**
(A) Charged (B) Reported
(C) Blamed (D) Acused
50. **He.....on a very extraordinary ambition.**
(A) Arrived (B) Decided
(C) Came (D) Hit

In each of the following questions, four alternative sentences are given. Choose the correct one and fill the circle corresponding to that letter in the MCQ response form.

51. (A) E-mail is a relatively new mean of communication.
(B) E-mail is a relatively new mean to communication.
(B) E-mail is a relatively new means of communication.
(D) E-mail-is relatively new means to communication.
52. (A) As she said, the computer was programmed by Mona.
(B) Just like she said the computer was programmed by Mona.
(C) As like she said the computer was programmed by Mona.
(D) Just like she had said the computer was programmed by Mona.
53. (A) The remains of the body were thrown into the sea
(B) The remains of the body was thrown into the sea.
(C) The remains of the body were thrown to sea.
(D) The remains of the body was thrown into the sea.

54. (A) They felt bad while leaving their friends.
(B) They felt badly about leaving their friends.
(C) They felt very badly about leaving their friends.
(D) They felt badly while leaving their friends.
55. (A) Masood told me that he would hire more salesmen if he is in my position.
(B) Masood told me that he would hire more salesmen if he had been in my position.
(C) Masood told me that he would hire more salesmen if he has my position.
(D) Masood told me that he would hire more salesmen if he had been in my position.

In each of the following questions, four alternative meanings of a word are given, you have to select the nearest correct meaning of the word and fill the appropriate circle on the MCQ response form.

56. **AGHAST:**
(A) Critical (B) Reluctant
(C) Happy (D) Horrified
57. **INVIDIOUS:**
(A) Unbreakable (B) Interesting
(C) Unpleasant (D) Fair
58. **IMPROMPTU:**
(A) Arriving at the right time (B) Showing signs of being good
(C) Done without preparation (D) Wretched
59. **DISCERNMENT:**
(A) A system of controlling a country (B) the ability to show good judgment
(C) The act of encouraging somebody (D) the ability to show no concern
60. **NEOLOGISM:**
(A) A new word (B) pleasant remarks
(C) Brief summary (D) archaic expression
- * 61. **FURTIVE:**
(A) Furious (B) Familiar
(C) Secretive (D) Easy
62. **BOURGEOIS:**
(A) Belonging to the bureaucratic class
(B) Belonging to the middle class

- (C) Belonging to the upper class
- (D) Belonging to the lower Class

63. RUMINATE:

- (A) Eat greedily
- (B) Think deeply
- (C) Work lasily
- (D) Run Fast

64. EMBELLISH:

- (A) Beauty
- (B) Nominate
- (C) Finish
- (D) Weaken

65. PARABLE:

- (A) Impossible
- (B) Sociable
- (C) Allegory
- (D) Suitable

BIOLOGY

66. Number of bones in skull:

- (A) 22
- (B) 26
- (C) 24
- (D) 28

67. NADH produces how many ATP?

- (A) 2 ATP
- (B) 3 ATP
- (C) 4 ATP
- (D) 6 ATP

68. How much MI blood is pumped by each contraction?

- (A) 4500 ML
- (B) 4000 ML
- (C) 3500 ML
- (D) 3000 ML

69. Fundography is relevant to:

- (A) Heart
- (B) Liver
- (C) Stomach
- (D) Eyes

70. Shape of tobacco mosaic virus is:

- (A) Spring shape
- (B) Rod shape
- (C) Comma shape
- (D) Spherical shape

71. Bil is used in:

- (A) Protein digestion
- (B) Starch digestion
- (C) Fat emulsification
- (D) Both A and B

72. Amphibian heart has..... chambers:

- (A) Two
- (B) Three

- (C) Four (D) Five
73. **Plasma membrane is named so because it surrounds:**
(A) Semifluid cell contents (B) Protoplasm
(C) Cell wall (D) None
74. **Which of the following is not a basic unit of cell?**
(A) Cell wall (B) Cell membrane
(C) Nucleus (D) Ribosome
75. **Group of cells performing same function:**
(A) Organelles (B) Tissue
(C) System (D) Both A and B
76. **Amphibians live on:**
(A) Water (B) Water and land
(C) Land (D) Air
77. **Mutations occur in:**
(A) DNA (B) Protein
(C) RNA (D) All of these
78. **DNA is found in which of the following?**
(A) Golgi complex (B) Lysosomes
(C) Mitochondria (D) Ribosomes
79. **Which enzyme present in stomach curdles the milk?**
(A) Rennin (B) Trypsin
(C) Pepsin (D) Lipase
80. **Germ theory was given by:**
(A) Robert Koch (B) Antonie van Leeuwenhoek
(C) Robert Hooke (D) Robert Brown
81. **Hybrid black Guinea pigs are crossed with each other. The resulting offsprings will be:**
(A) All black (B) All white
(C) 3 black, 1 white (D) 3 white, 1 black
82. **The enzyme in breast milk that causes the coagulation of milk or forms precipitates of milk as:**
(A) Renin (B) Trypsin
(C) Amylase (D) Lipase
83. **The egg laying birds are called:**

- (A) Oviparous (B) Viviparous
(C) Monotremes (D) All of these
84. **Which of the following have both external and internal digestion?**
(A) Hydra (B) Planaria
(C) Cockroach (D) All of these
85. **Milk drinking babies have an additional enzyme called:**
(A) Renin (B) Amylase
(C) Lipase (D) None
86. **Egg laying mammals are called:**
(A) Prototheria (B) Protozoa
(C) Chordata (D) Monotremes
87. **Aerobic respiration results in how many ATP?**
(A) 2 (B) 36
(C) 18 (D) 32
88. **Which process takes place during the movement of glucose from body fluid to blood?**
(A) Endosmosis (B) Osmosis
(C) Active transport (D) Facilitated diffusion
89. **Ecological succession starting from drylands is:**
(A) Xerosere (B) Hydrophytes
(C) Hallophytes (D) All
90. **Organs of voice in birds:**
(A) Larynx (B) Pharynx
(C) Spinx (D) Both A and C
91. **Treponema palladium causes:**
(A) Syphilis (B) Gonorrhoea
(C) Aids (D) Hepes
92. **Lamark is best known for his theory of:**
(A) Inheritance
(B) Dominance
(C) Inheritance of acquired characteristics
(D) All of the above
93. **Commercial method of producing million of seedlings in limited time?**
(A) Parthenogenesis (B) Parthenocarp

- (C) Cutting (D) Grafting
- 94. Cell wall is synthesized by:**
(A) Cellulose (B) Cell
(C) Ribosomes (D) Penicillin binding protein
- 95. In tissue culture cells are held together by:**
(A) Callus (B) Adhesives
(C) Both (D) None
- 96. Thyroid gland requires high amount of:**
(A) Phosphate (B) Calcium
(C) Iodine (D) Sodium
- 97. Which of the following is not the function of cerebrum?**
(A) Volunteer digestion (B) Thinking
(C) Intelligence (D) Skeletal muscles.
- 98. Which of the following is the function of adrenalin?**
(A) To increase breathing rate
(B) To increase heart rate
(C) To increase calcium level in blood
(D) Both A and B
- 99. Antibodies are actually:**
(A) Globular proteins (B) Glycoproteins
(C) Fibrous proteins (D) Glycolipids
- 100. Hepatic and Pancreatic secretions are also stimulated by a hormone called:**
(A) Gastrin (B) Secretin
(C) Insulin (D) Glucagon
- 101. The respiratory pigment, which has much higher affinity to combine with oxygen is:**
(A) Myoglobin (B) Globin
(C) Haemoglobin (D) Hemocyanin
- 102. Coelom is a cavity lined by:**
(A) Mesoderm (B) Endoderm
(C) Epiderm (D) Ectoderm
- 103. It is an endoparasite of humans cattle and pig that completes its life cycle in two hosts.**
(A) Tape worm (B) Aurelia

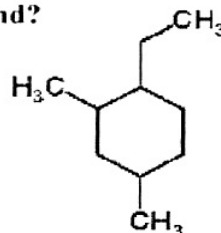
- (C) Liver fluke (D) Planaria
- 104. The Gymnosperms are called "Naked seeded" plants because they bear naked:**
- (A) Antheridia (B) Ovules
(C) Fruits (D) Archegonia
- 105. Immediate source of energy for cellular respiration is:**
- (A) Lipids (B) ATP
(C) Proteins (D) Carbohydrates
- 106. Hemoglobin exhibits:**
- (A) Secondary structure (B) Primary structure
(C) Quaternary structure (D) Tertiary structure
- 107. Arteriosclerosis is:**
- (A) A metabolic disorder (B) A degenerative disorder
(C) An infections disorder (D) A nutritional deficiency disorder
- 108. When phenotype of a hetrozygote is in between the phenotypes of both the homozygote parents, it is called:**
- (A) Incomplete dominance (B) Epitasis
(C) Pleiotropy (D) Codominance
- 109. Cloning is a form of:**
- (A) Parthenogenesis (B) Apomixis
(C) Sexual reproduction (D) Asexual reproduction
- 110. Evolutionary relationships amongst species are reflected in their:**
- (A) DNA and proteins (B) RNA and proteins
(C) DNA and gene (D) DNA and RNA
- 111. The productivity of aquatic ecosystem is determined by:**
- (A) Water (B) Light and nutrients
(C) Light (D) Nutrients
- 112. Diseases in living organisms which are caused by parasites are called:**
- (A) Disinfectations (B) Anticepsis
(C) Infections (D) Infestations
- 113. Technique used for non-surgical removal of kidney stone is called:**
- (A) Ultrasound (B) Lithotripsy
(C) Dialysis (D) X-rays
- 114. Microcephaly, the small sized skull is due to:**

- (A) Nutritional causes (B) Skeleton causes
(C) Hormonal causes (D) Genetic defects
- 115. The most abundant organic molecule on the planet earth is:**
(A) starch (B) Glycogen
(C) Glucose (D) Cellulose
- 116. The active site of an enzyme is formed by a few of the enzyme:**
(A) R-groups of amino acids (B) NH₂ groups of amino acids
(C) -COOH groups of amino acids (D) Exposed disulphide bonds
- 117. Detoxification of the drugs is a function of in a cell.**
(A) R.E.R (B) S.E.R
(C) Liver cells (D) Lysosome
- 118. Which of the following bacteria are without cell wall?**
(A) Mycoplasma (B) Gram positive bacteria
(C) Gram negative bacteria (D) Archaeo bacteria
- 119. Gram negative bacteria are stained pink by the use of:**
(A) Crystal violet (B) Gram's iodine
(C) Feulgen stain (D) Safranin
- 120. Which of the following is a fresh water sponge?**
(A) Sycon (B) Leucosolenia
(C) Euplectella (D) Spongilla
- 121. Pseudocoelom is actually derived from:**
(A) Blastocoel (B) Gastrocoel
(C) Neurocoel (D) Haemocoel
- 122. The molecule used by most of the animals for long-term energy storage is:**
(A) Glycogen (B) Starch
(C) Fat (D) Cholestrol
- 123. The process of swallowing is controlled by:**
(A) Hypothalamus (B) Hormones
(C) Medulla oblongata (D) Sympathetic nervous system
- 124. Humans are:**
(A) Ammonotalic (B) Ureotelic
(C) Uricotelic (D) None of these
- 125. The spinal nerves are functionally:**
(A) Sensory nerves (B) Motor nerves

- (C) Mixed nerves (D) Unknown
126. **The major constituent of contraceptive pills is:**
(A) Oestrogen (B) Progesteron
(C) Prolactin (D) Testosterone
127. **T-lymphocytes are matured in thymus glands. They are produced in:**
(A) Thymus glands (B) Bone marrow
(C) Panereases (D) Heart
128. **The chemical nature of antibody is:**
(A) Glycoprotein (B) Glycolipids
(C) Lipoproteins (D) Polysaccharides
129. **The 1st human hormone produced by recombinant DNA technology was:**
(A) Oestrogen (B) Testosterone
(C) Cortisone (D) Insulin
130. **The wings of birds and the fore-legs of a horse are.....structures.**
(A) Analogous (B) Homologous
(C) Vestigial (D) Evolutionary convergent
131. **The first simplest oxygen producing orginism:**
(A) Methanogens (B) Cyanobacteria
(C) Euglena (D) Spirogyra
132. **.....are more common in human moles than females.**
(A) X-linked dominant traits (B) X-linked recessive traits
(C) Y-linked dominant traits (D) Autosomal linked recessive traits
133. **Treatment of heredity disorders by gene manipulations is called:**
(A) Biotechnology (B) Genetic engineering
(C) Gene therapy (D) None of these
134. **A trait whose alleles are present in both male and female but expresses more in one sex than other.**
(A) Sex-linked trait (B) Sex limited trait
(C) Sex influenced trait (D) X-linked trait

CHEMISTRY

135. What is the name of the following compound?



- (A) 1-Ethyl-3, 4-dimethylcycloheptane
 (B) 2-Ethyl-4, 5-dimethylcyclohexane
 (C) 1-Ethyl-3, 4-dimethylcyclohexane
 (D) 4-Ethyl-1, 2-dimethylcyclohexane

136. Which of the following compounds possesses at least one bond?

- (A) CH_4 (B) C_2H_2
 (C) C_2H_4 (D) All of the above

137. Which of the following carboxylic acids will be the most acidic?

- (A) $\text{CH}_3\text{CHClCH}_2\text{COOH}$ (B) $\text{CH}_3\text{CH}_2\text{CCl}_2\text{COOH}$
 (C) $\text{CH}_3\text{CH}_2\text{CHClCOOH}$ (D) $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$

138. Which of the following cannot be used to convert butanoic acid to butanoyl chloride?

- (A) PCl_3 (B) PCl_5
 (C) CCl_4 (D) SOCl_2

139. Which of the following reagents will reduce butanoic acid to butanol?

- (A) LiAlH_4 (B) $\text{LiAlH}_4, \text{H}_2\text{O}$
 (C) $\text{Mg}(\text{BH}_4)_2$ (D) All of the above

140. The equation shows the reaction between element X and dilute hydrochloric acid. $\text{X}(\text{s}) + 2\text{HCl}(\text{aq}) \Rightarrow \text{XCl}_2(\text{aq}) + \text{H}_2(\text{g})$

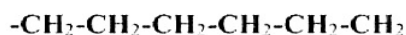
What types of bonding are present in element X and in compound XCl_2 ?

	Type of bonding	
	In element X	In compound XCl_2
(A)	Covalent	Covalent
(B)	Covalent	Ionic
(C)	Metallic	Covalent
(D)	Metallic	Ionic

141. Which of the following has the highest electrical conductivity?

- (A) Aqueous sugar solution (B) Solid graphite
 (C) Solid sodium chloride (D) Gaseous carbon dioxide

142. Part of a polymer molecule has the following structure.



- (A) C₂H₄ (B) C₂H₆
(C) C₃H₆ (D) C₃H₈

143. The common features, among the species CN, CO and NO are:

- (A) Bond order three and Isoelectronic
(B) Bond order three and weak field ligands
(C) Bond order two and π - acceptors
(D) Isoelectronic and weak field ligands

144. Which of the following is the electronic configuration of ${}_{19}\text{K}$?

- (A) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2$ (B) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3s^2, 3d^1$
(C) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^5$ (D) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^1$
(E) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}$

145. At equilibrium, which of the following reactions is not affected by pressure?

- (A) $\frac{1}{2}\text{N}_2(\text{g}) + \frac{1}{2}\text{O}_2(\text{g}) \rightleftharpoons \text{NO}(\text{g})$
(B) $\text{PCl}_5(\text{g}) \rightleftharpoons \text{PCl}_3(\text{g}) + \text{Cl}_2(\text{g})$
(C) $2\text{NO}_2(\text{g}) \rightleftharpoons \text{N}_2\text{O}_4(\text{g})$
(D) $\text{SO}_2\text{Cl}_2(\text{g}) \rightleftharpoons \text{SO}_2(\text{g}) + \text{Cl}_2(\text{g})$

146. The sum of all the exponents to which the molar concentration in terms in the rate equation are raised" defines:

- (A) Rate of reaction (B) Order of reaction
(C) Type of reaction (D) Product of reaction

147. H₂ and Cl₂ do not react in the dark, but in the presence of light a vigorous reaction is initiated due to the formation of:

- (A) Hydrogen free radical (B) Chlorine free radical
(C) Hydrogen chloride molecule (D) Both hydrogen and chlorine free radicals

148. The rate of a gaseous reaction is given by $K [\text{A}] [\text{B}]$. If the volume of the vessel containing these gases is reduced to 1/4th of initial volume, the rate of reaction relative to the original rate would be:

- (A) 16/1 (B) 1/16
(C) 4/1 (D) 1/8
(E) 8/1

149. Solid NaCl is a bad conductor of electricity because:

- (A) Solid NaCl is covalent
(B) In the solid state, there are no ions

- (C) In solid NaCl, there is no migration of ions
 (D) In solid NaCl, there are not electron
150. At 25°C, the equivalent conductance at infinite dilution of HCl solution is 425 $\text{ohm}^{-1} \text{cm}^2 \text{equiv}^{-1}$ while its specific conductance is 3.825 $\text{ohm}^{-1} \text{cm}^{-1}$. If the apparent degree of dissociation is 90%, the normality of the solution is:
 (A) 0.9 N (B) 1.0 N
 (C) 1.1 N (D) 1.2 N
 (E) 3.5 N
151. In an adiabatic process:
 (A) Pressure is maintained constant
 (B) The gas is isothermally expanded
 (C) There is perfect heat insulation
 (D) System exchanges heat with the surroundings
152. Enthalpy of a compound is equal to its:
 (A) Heat of combustion (B) Heat of formation
 (C) Heat of solution (D) Heat of dilution
153. A mixture of ethyl and isopropyl iodides is heated with Na in dry ether. According to Wurtz reaction the product (s) obtained is / are:
 (A) $\text{CH}_3 \text{CH}_2 \text{CH}_2 \text{CH}_3$ (B) $(\text{CH}_3)_2 \text{CHCH}_2 \text{CH}_3$
 (C) $\text{CH}_3 \text{CH}_2 \text{CH}(\text{CH}_3)_2$ (D) All of the above
154. 3 Moles of ethanol react with 1 mole of PBr_3 to form 3 moles of bromoethane and 1 mole of X. Which of the following is X?
 (A) H_3PO_4 (B) H_3PO_2
 (C) HPO_3 (D) H_3PO_3
155. The conversion of phenol to benzene in the presence of zinc involves:
 (A) Oxidation (B) Reduction
 (C) Dehydroxylation (D) Dehydrogenation
156. Phenyl methyl ketone can be converted into ethyl benzene in one step by using:
 (A) LiAlH_4 (B) $\text{Zn}(\text{Hg})\text{-HCl}$
 (C) NaBH_4 (D) $\text{CH}_3 \text{MgI}$
157. Which of the following will not undergo aldol condensation?
 (A) Acetaldehyde (B) Propanaldehyde
 (C) Benzaldehyde (D) Trideuteroacetaldehyde
158. Treatment of propionaldehyde with Dil. The NaOH solution gives:

- (A) $\text{CH}_3\text{CH}_2\text{COOH}$ C_2H_5
- (B) $\text{CH}_3\text{CH}_2\text{CHOHCH}_2\text{CH}_2\text{CHO}$
- (C) $\text{CH}_3\text{CH}_2\text{CH}(\text{OH})\text{CH}(\text{CH}_3)\text{CHO}$
- (D) $\text{CH}_3\text{CH}_2\text{COCH}_2\text{CH}_2\text{CHO}$

159. Which of the following solids is an example of a substance with a macromolecular structure?

- (A) Aluminum chloride
- (B) Ice
- (C) Magnesium oxide
- (D) Silicon (IV) oxide
- (E) Sodium chloride

160. Which one of the following statements is true?

- (A) All nitrates of Group II metals are decomposed by heat to give the oxide NO_2 .
- (B) Aqueous sodium nitrate is acidic to litmus.
- (C) Aqueous ammonium nitrate is alkaline to litmus.
- (D) The alkali metal nitrites are insoluble in water.
- (E) Metals dissolve in concentrated nitric acid to give hydrogen.

161. Which property of the Group II elements (magnesium to barium) and their compounds increases with an increasing proton (atomic) number?

- (A) The magnitude of the enthalpy change of hydration of the metal ion
- (B) The pH of the aqueous chloride
- (C) The solubility of the sulphate in water
- (D) The stability of the carbonate to heat
- (E) The tendency to form complex ions

162. The reduction of a nitrite produced as compound of formula $\text{C}_3\text{H}_7\text{NH}_2$. Which one of the following compounds would be produced if the same nitrile was hydrolyzed by heating with dilute hydrochloric acid?

- (A) CH_3CONH_2
- (B) $\text{CH}_3\text{CH}_2\text{NH}_2$
- (C) $(\text{CH}_3)_2\text{CHCO}_2\text{H}$
- (D) $\text{CH}_3\text{CH}_2\text{CO}_2\text{H}$
- (E) $\text{CH}_3\text{CH}_2\text{OH}$

163. Which one of the following pairs of substances react together forming an organic product that gives a neutral solution in water?

- (A) $\text{CH}_3\text{CO}_2\text{H}$ and NaOH
- (B) $\text{C}_6\text{H}_5\text{OH}$ and Na
- (C) $\text{C}_6\text{H}_5\text{NH}_2$ and HCl
- (D) $\text{CH}_3\text{CO}_2\text{H}$ and PCl_5
- (E) CH_3COCH_3 and UAlH_4

164. A Solid compound X dissolved readily in water to give a weakly alkaline solution. On evaporation of the water, X was recovered unchanged. Which one of the following could Y ?
- (A) $\text{CH}_3\text{NH}_3\text{Cl}$ (B) $\text{CH}_3\text{O}^-\text{Na}^+$
 (C) $\text{C}_6\text{H}_5\text{O}^-\text{Na}^+$ (D) $\text{C}_6\text{H}_5\text{NH}_2$
 (E) $\text{H}_2\text{NCH}_2\text{CO}_2\text{H}$
165. An azeotropic mixture of two liquids has a boiling point higher than either of them when it:
- (A) Shows positive deviation from Raoult's law
 (B) Shows negative deviation from Raoult's law
 (C) Shows ideal behavior
 (D) Is saturated
166. The osmotic pressure of equimolar solutions of BaCl_2 , NaCl and sucrose will be in the order:
- (A) Sucrose > NaCl > BaCl_2 (B) Sucrose > BaCl_2 > NaCl
 (C) NaCl > BaCl_2 > Sucrose (D) BaCl_2 > NaCl > Sucrose
167. Impurities of lead in silver are removed by:
- (A) Parke's process (B) Solvay process
 (C) Cyanide process (D) Amalgamation process
168. Chromium dissolves in dilute H_2SO_4 to form $[\text{Cr}(\text{H}_2\text{O})_6]^{2+}$. The colour of the ion is:
- (A) Blue (B) Yellow
 (C) Brown (D) Pink
169. Which of the following will react with water?
- (A) CHCl_3 (B) $\text{Cl}_3\text{C.CHO}$
 (C) CHCl_4 (D) $\text{ClCH}_2\text{CH}_2\text{Cl}$
170. In the reaction of m-chlorotoluene with KNH_2 in liquid NH_3 , the major product is:
- (A) o-toluidine (B) m-toluidine
 (C) p-toluidine (D) p-chloroanz
171. Ascorbic acid (vitamin C) contains 40.92% carbon, 5.58% hydrogen and 54.5% of oxygen by mass. What is the empirical formula of ascorbic acid?
- (A) $\text{C}_3\text{H}_4\text{O}_3$ (B) $\text{C}_3\text{H}_4\text{O}_6$
 (C) CH_4O_3 (D) $\text{C}_6\text{H}_4\text{O}_3$

(E) $C_2H_5O_3$

172. The order of reactivities of the following alkyl halides for a S_N^2 reaction is:
- (A) $RF > RCl > RBr > RI$ (B) $RF > RBr > RCl > RI$
(C) $RCl > RBr > RF > RI$ (D) $RI > RBr > RCl > RF$
173. Natural rain forms.....in the presence of carbon dioxide in the air.
- (A) Smog (B) Ozone
(C) Carbonic acid (D) Chlorofluorocarbons
174. The major source of unburnt hydrocarbons in the atmosphere is/are:
- (A) Petroleum (B) Natural gas
(C) Automobiles (D) Human beings
175. Among the most abundant biomolecules,.....is the most abundant one on earth.
- (A) Proteins (B) Carbohydrates
(C) Lipids (D) Vitamins
176. Genetic mutations occur in:
- (A) RNA (B) Protein
(C) DNA (D) All of the above
177. Enzymes that are functioning within the cell are called:
- (A) Endoenzymes (B) Exoenzymes
(C) Holoenzymes (D) Both A & C
178. Which of the following fertilizers has maximum percentage of nitrogen in solid state?
- (A) Ammonia
(B) Urea
(C) Di ammonium hydrogen phosphate
(D) Ammonium nitrate
179. To avoid the formation of toxic compounds with chlorine, which substance is used for disinfecting water?
- (A) $KMnO_4$ (B) Chloramines
(C) O_3 (D) Alums

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1. D) 2. (D) 3. (A) 4. (B) 5. (A) 6. (A)
7. (D) 8. (D) 9. (D) 10. (A) 11. (D) 12. (B)
13. (C) 14. (A) 15. (C) 16. (B) 17. (C) 18. (A)
19. (C) 20. (B) 21. (C) 22. (A) 23. (A) 24. (A)
25. (A) 26. (B) 27. (A) 28. (D) 29. (B) 30. (A)
31. (D) 32. (D) 33. (B) 34. (A) 35. (D) 36. (A)
37. (C) 38. (C) 39. (C) 40. (D) 41. (D) 42. (A)
43. (B) 44. (D) 45. (D) 46. (B) 47. (A) 48. (A)
49. (D) 50. (A) 51. (C) 52. (C) 53. (B) 54. (A)
55. (B) 56. (B) 57. (A) 58. (C) 59. (B) 60. (A)
61. (D) 62. (B) 63. (A) 64. (A) 65. (C) 66. (A)
67. (A) 68. (A) 69. (D) 70. (B) 71. (C) 72. (B)
73. (A) 74. (A) 75. (B) 76. (B) 77. (A) 78. (C)
79. (A) 80. (A) 81. (C) 82. (A) 83. (A) 84. (A)
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91. (A) 92. (C) 93. (C) 94. (D) 95. (A) 96. (C)
97. (A) 98. (D) 99. (A) 100. (B) 101. (C) 102. (A)
103. (C) 104. (D) 105. (B) 106. (C) 107. (B) 108. (A)
109. (D) 110. (C) 111. (B) 112. (C) 113. (B) 114. (D)
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133. (C) 134. (C) 135. (D) 136. (D) 137. (B) 138. (C)
139. (A) 140. (D) 141. (B) 142. (A) 143. (A) 144. (D)
145. (A) 146. (B) 147. (B) 148. (A) 149. (C) 150. (A)
151. (C) 152. (B) 153. (D) 154. (D) 155. (B) 156. (B)
157. (C) 158. (C) 159. (D) 160. (A) 161. (D) 162. (D)
163. (E) 164. (C) 165. (B) 166. (D) 167. (A) 168. (A)
169. (B) 170. (C) 171. (A) 172. (D) 173. (C) 174. (A)
175. (B) 176. (C) 177. (A) 178. (B) 179. (C)