

NATIONAL UNIVERSITY OF MEDICAL SCIENCES

ENTRANCE TEST - 2014

For F.Sc. and Non-F.Sc. Students Time Allowed: 3 Hours Total MCQs: 200

Instructions:

- i. Read the instructions on the MCQ Response Form carefully.
- ii. Choose the Single Best Answer for each question.
- iii. Candidates are strictly prohibited from giving any identification mark except Roll No. & Signature in the specified columns only.

COMPULSORY QUESTION FOR IDENTIFICATION

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

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

Ans: Color of your question Paper is blue. Fill the Circle corresponding to letter 'B' Against 'ID' in your MCQ response form (Exactly as shown in the diagram).

1. **Which one of the following animals possesses an open circulatory system:**
(A) Amoeba (B) Earth worm
(C) Grass hopper (D) Man
2. **The gametophyte of Ulva is:**
(A) Haploid (B) Diploid
(C) Triploid (D) Polyploidy
3. **Its membranes are the sites where sunlight energy's trapped and where al formed refers to:**
(A) Chloroplast (B) Leucoplast
(C) Chromoplast (D) Cytosol
4. **All of the following are bacterial diseases except:**
(A) Cholera (B) Tuberculosis
(C) Typhoid (D) Poliomyelitis viral
5. **The genetic material of plant viruses mostly is:**

- (A) DNA (B) RNA
(C) Both a and b (D) Proteins
6. **The social organization of howling monkeys was studied by:**
(A) Allen (B) Thorpe
(C) Schjeldeup ebbe (D) Carpenter
7. **The flower of family gramineae process contain two scales below ovary Which are called:**
(A) Glumes (B) Lemma and palea
(C) Lodicule (D) Rochella
8. **The total of all the allele in population is called:**
(A) Genetic drift (B) Genotype
(C) Gene pool (D) Gene mutation
9. **The cells that play vital role in the differentiation of various body parts are called:**
(A) Ectodermal cells (B) Mesodermal cells
(C) Endodermal cells (D) All of the above
10. **Fibrinogen is necessary for:**
(A) Metabolism (B) Blood clotting
(C) Reproduction (D) Respiration
11. **It looks like a single flower but it is in fact an Inflorescence called:**
(A) Pencil (B) Typical receme
(C) Compound umbel (D) Capitulum
12. **A cross between F1 hybrids with either of parents is called:**
(A) Back cross (B) Test cross
(C) Reverse cross (D) None of the above
13. **Which one of following is a true fish?**
(A) Cuttle fish (B) Silver fish
(C) Jelly fish (D) Sea fish
14. **Fibrinogen is necessary for:**
(A) Metabolism (B) Blood clotting
(C) Reproduction (D) Respiration
15. **Filter feeders extract food particles from:**

- (A) Water (B) Soil
(C) Air (D) Blood
16. **Which one of the following is homoeothermic animal:**
(A) Uromastix (B) Salamander
(C) Sea horse (D) Kangaroo
17. **The individual with hare lip shows which of the following conditions?**
(A) Hard palate (B) Polydactyl
(C) Cleft Palate (D) Microcephale
18. **Which hormone prepares the body for situations of stress and emergency?**
(A) Adrenaline (B) Non adrenaline
(C) Thyroxin (D) Insulin
19. **Peptide bond is formed between:**
(A) Hydrogen groups of adjacent amino acids
(B) Functional group of the amino acids
(C) Carboxyl group and amino group
(D) Functional group and hydrogen group of adjacent amino acid
20. **The term bivalent mean:**
(A) Two chromatids (B) Two chromosomes
(C) Four chromatids (D) Four chromosomes
21. **All of the following structures are portentous in nature except:**
(A) Hooves (B) Haemoglobin
(C) Enzymes (D) Steroids
22. **Most favorite host cell of HIV-Virus is:**
(A) Lymphocytes (B) RBC
(C) T-cell (D) B-cells
23. **Sunken stomata are found in:**
(A) Mesophytes (B) Xerophytes
(C) Halophytes (D) Hydrophytes
24. **The mammals term connecting link between reptilian and mammals:**
(A) Marsupials (B) Eutherians
(C) Monotremes (D) Metatherians

25. **In which of the following book lungs are found?**
(A) Clam worm (B) Spider
(C) Silver fish (D) Leech
26. **Hydra reproduces asexually by:**
(A) Binary fission (B) Multiple fission
(C) Budding (D) Regeneration
27. **During cellular respiration NADH₂ produces:**
(A) 2 ATP (B) 3 ATP
(C) 4 ATP (D) 5 ATP
28. **An individual has an additional sex chromosome which syndrome does it refer to?**
(A) Down's syndrome (B) Turner's syndrome
(C) Jacob's syndrome (D) Kline filter's syndrome
29. **HIV is also known as:**
(A) AIDS (B) HAV
(C) HTLV (D) HBV
30. **Smaller the animals:**
(A) More rate of respiration
(B) Less the rate of respiration
(C) Rate of respiration has nothing to do with the size of animal
(D) None of these
31. **nicotine in tobacco:**
(A) Decreases the heart rate (B) Decreases the blood pressure
(C) Block the transport of oxygen (D) Paralyzes cells
32. **Stream of chloroplast carries the fixation of:**
(A) Nitrogen (B) Oxygen
(C) Carbon monoxide (D) Carbon dioxide
33. **The valve between right atrium and right ventricle is called:**
(A) Bicuspid valve (B) Tricuspid valve
(C) Pulmonary valve (D) Semi lunar valve
34. **Anthocyanin's are various types of colorful pigments present in the:**

- (A) Chloroplasts (B) Chromoplasts
(C) Leucoplasts (D) Vacuoles
35. **Anti-bodies are produced by:**
(A) Red blood cells (B) Platelets
(C) B-lymphocytes (D) Hormones
36. **Which of the following scientists contributed a lot to "modern synthetic theory of organic evolution"?**
(A) Theodosius Dobzhansky 1937 (B) Fischer 1958
(C) Wright 1968 (D) All of above
37. **Flow of energy in an ecosystem is:**
(A) Unidirectional (B) Tridirectional
(C) Multidirectional (D) Bidirectional
38. **When a child with blood group IA,IB is born of a woman with genotype IB,MB, then the father of child could not be a man of the genotype:**
(A) IB/IB (B) IA/IA
(C) IA/IB (D) IA/I
39. **Which of the following amino acids has single codon?**
(A) Isoleucine (B) Tryptophan
(C) Valine (D) Arginine
40. **Poliomyelitis normally affects the:**
(A) Legs (B) Brain
(C) Spinal cord (D) Both B and C
41. **Who experimented with dissected leg of a frog?**
(A) Volta (B) Jenner
(C) Salk (D) Galvanic
42. **Synaptonemal complex helps in:**
(A) Gamete formation
(B) Recombination during cell division
(C) Production of enzymes during cell division
(D) Chromosomal movement towards pole
43. **Amniotic fluid in human embryo protects it from:**

- (A) Degeneration (B) Jerks
(C) Encasement (D) None of these

44. An analysis of chromosomes in a big city revealed the presence of four types of rather rare human being Whose sex chromosome compositions are mentioned in the list-I. They are phenotypically either male M or female F as recorded in list-II, Match list-I chromosome composition with list-II sex and select the correct phenotypic sex using the codes given below the lists.

List I	List II
Chromosome	Composition
A. XO	Male M
B. XXXV	Female F
C. XYY	
D. XXV	

Codes A, B, C, D.

- (A) 1212 (B) 2112
(C) 1121 (D) 1221
45. **Bipinnaria is the larval form of:**
(A) Coelenterate (B) Potychaeta
(C) Echinodermata (D) Cestoda
(E) None of these
46. **Normally body temperature of man is 98.6 degree Fahrenheit but of rabbit is:**
(A) 96°F degree Fahrenheit (B) 98°F degree Fahrenheit
(C) 99°F degree Fahrenheit (D) 100°F degree Fahrenheit
47. **When frog is kept in water for some time it sheds a thin covering of skin which is:**
(A) Cuboidal epithelium (B) Squamous epithelium
(C) Columnar epithelium (D) Ciliated epithelium
48. **Gene mutation takes place in:**
(A) Ribosome's (B) Chloroplast
(C) Dioxyribose nucleï acid (D) None of them
49. **When liver fat content of our body increase then the condition leads to:**
(A) Fatty liver (B) Necros liver

- (C) Jaundice (D) None of them
50. **In fatty liver the fat contents are:**
(A) 1 to 2 % (B) 4 to 5 %
(C) 30 to 40% (D) 10 to 15%
51. **Which one of the following coelenterate is also called Portuguese man of war.**
(A) Hydra (B) Velella
(C) Obelia (D) Physalis
52. **Pseudo coelomate animals are:**
(A) Coelenterates (B) Nematodes
(C) Annelids (E) Arthropods
(E) None of them
53. **Earth worm belongs to:**
(A) Phylum Platyhelminthes (B) Nematode
(C) Mollusca (D) Arthropoda
(E) None to them
54. **The primary oocyte in mammals has which of the following structures around it:**
(A) Zonapellucida (B) Zonavasculosa
(C) Zona radiata (D) None of them
55. **Membrana granulosa is found in which of the mammalian oocytes?**
(A) Primary (B) Secondary
(C) Both a and b (D) None of these
56. **Female rabbits are:**
(A) induced ovulators (B) spontaneous ovulators
(C) seasonal ovulators (D) indifferent ovulators
57. **Opposable thumbs are characteristic feature of:**
(A) Lagomorpha (B) Primates
(C) Ederitate (D) None of these
58. **Differences in the scales of fishes and reptiles lies in them being:**
(A) Endodermal and dry (B) Epidermal and dry
(C) Epidermal and wet (D) Endodermal and wet
(E) None

59. **Which of the following has oxygenated blood?**
(A) Renal veins (B) Pulmonary artery
(C) Hepatic portal veins (D) None
60. **Scapula is the bone of:**
(A) Skull (B) Pelvic girdle
(C) Pectoral girdle (D) Vertebral column
(E) None
61. **All the digestive are found in vertebrates by:**
(A) Ectoderm (B) Endoderm
(C) Mesoderm (D) None of these
62. **Ammonia is chief excretory product in:**
(A) Reptiles (B) Turtles
(C) Mammals (D) Fish
(E) None of these
63. **Archaeopteryx is an connecting link between:**
(A) Amphibians and reptiles (B) Reptiles and birds
(C) Birds and mammals (D) None of these
64. **Lamarck's theory of evolution is based upon:**
(A) Effect of environment (B) Use and disuse of body parts
(C) Inheritance of acquired characters (D) All of these
(E) None of these
65. **Absorption of digested food occurs mainly in:**
(A) Colon (B) Small intestine
(C) Large intestine (D) Stomach
(E) None of them
66. **Flame cells are commonly found in:**
(A) Platyhelminthes (B) Annelida
(C) Coelenterate (D) All of above
67. **The number of vertebrae in horse neck are:**
(A) 5 (B) 6
(C) 7 (D) 10

68. **Least distance vision for a person of hypermetropia is:**
(A) 25cm (B) Less than 25 cm
(C) More than 25 cm (D) Infinity
69. **The nerve center for sight is located in:**
(A) Thalamus (B) Cerebral cortex
(C) Both a and b (D) None of these
70. **On land frogs are:**
(A) Hypermetric (B) Myopic
(C) Normal sighted (D) None of these
71. **The sense organs of taste in tongue are known as:**
(A) Olfactory receptors (B) Gustatory receptors
(C) Cutaneous receptors (D) All of these
72. **The process of cartilage formation is known as:**
(A) Chondrioblasts (B) Chondriocutosis (
(C) Chondrogenesis (D) None of these
73. **Significant flight muscles in birds is:**
(A) Pectoral (B) Tensor
(C) Appendicular (D) All of these
74. **Which of the following concepts is attributed to Lamarck?**
(A) Struggle for existence
(B) Survival of the fittest
(C) Inheritance of acquired characters
(D) Cells come from pre-existing cells
75. **Which of the following theories of evolution can best explain the vestigial organs.**
(A) Darwinism (B) Lamarckism
(C) Natural selection (D) Special creation
76. **Food is assimilated into the body from digestive tract in:**
(A) Esophagus (B) Stomach
(C) Small intestine (D) Rectum
77. **Sea horse is included in:**

- (A) Pisces (B) Mammals
(C) Insects (D) Mollusca
(E) None of them
- 78. Pond is an example of ecosystem:**
(A) Complete (B) In complete
(C) Almost complete (D) None of these
- 79. Despite the structural diversities they are characterized by having soft body protected by calcareous shell developing from the mantle layer.**
(A) Corals (B) Foraminiferous
(C) Molluscs (D) None of these
- 80. Chlorine upon reaction with NaOH in cold yields:**
(A) NaCl, NaClO, H₂O (B) NaCl, NaClO₃, H₂O
(C) NaClO, NaClO₃, H₂O (D) NaCl, H₂O
- 81. Farming salt is:**
(A) NaCl (B) HF
(C) KHF₂ (D) KClO₃
- 82. Which of the following is least polarizable?**
(A) Ne (B) He
(C) X (D) Kr
- 83. Transfer of heat from hot surrounding to cold refrigerator is an example of:**
(A) Spontaneous reaction (B) Non Spontaneous reaction
(C) First law of thermodynamics (D) All of above
- 84. Alkaline KMnO₄ converts ethylene into:**
(A) Methanol (B) Ethanol
(C) Ethane (D) Ethylene glycol
- 85. Which one of the following is not an isotope of hydrogen:**
(A) Deuterium (B) Tritium
(C) Ortho hydrogen (D) None of these
- 86. Blue litmus turn reds in a solution of pH.**
(A) Below 7 (B) 7
(C) Above 7 (D) at all 7

87. **Maximum ionization potential is of:**
 (A) Ca (B) Na
 (C) Be (D) Mg
88. **Strongest acid among the following is:**
 (A) CCL_3COOH (B) CH_3COOH
 (C) CF_3COOH (D) CBr_3COOH
89. **Which molecule is planar.**
 (A) SF_4 (B) XeF_4
 (C) NF_3 (D) SiF_4
90. **A certain radioactive isotope has a half-life of 50 days. Fraction of the material left behind after 100 days will be:**
 (A) 125% (B) 25%
 (C) 50% (D) 100%
91. **The rms speed at NTP of a gas can be calculated from the expression:**
 (A) Under root $3 P/d$ (B) Under root $3 P_v/M$
 (C) under root $3RT/m$ (D) All of above
92. **Prussian blue is:**
 (A) $\text{K}_2\text{Fe}[\text{Fe}(\text{CN})_6]$ (B) $\text{K}_4[\text{Fe}(\text{CN})_6]$
 (C) $\text{Fe}_4[\text{Fe}(\text{CN})_6] \cdot 3\text{H}_2\text{O}$ (D) $\text{K}_3\text{Fe}(\text{CN})_6$
93. **Which of the following are the fundamental ways of transferring energy?**
 (A) Pressure and work (B) Volume and pressure
 (C) Heat and work (D) Pressure and heat
94. **A mixture of camphor and benzoic acid can be separated by:**
 (A) Fractional crystallization (B) Sublimation
 (C) Chemical method (D) Extraction with solvent
95. **Diameter of an atom is in the range of?**
 (A) 0.2m (B) 0.2 nm
 (C) $2 \times 10^{-19}\text{nm}$ (D) 0.2Pm
96. **The relative abundance of ion with a definite m/e value is measured by?**
 (A) Quantity of fast moving electrons
 (B) Strength of electric current measured

- (C) High pressure of vapors
(D) Electron gas
97. **0.078 g of a hydrocarbon occupies 22.414 ml of volume at S.T.P the empirical formula of hydrocarbon is CH. The molecular formula of hydrocarbon is?**
(A) C_2H_4 (B) C_6H_6
(C) C_8H_8 (D) C_4H_4
98. **Identify correct statement.**
(A) Element sodium can be prepared and isolated by electrolyzing an aqueous solution of NaCl
(B) Elemental Na is strong oxidizing agent
(C) Elemental Na is insoluble in NH_3
(D) Elemental Na is easily oxidizing
99. **Which of the following statements is true?**
(A) Alkali metal hydroxides are stable to heat except KOH
(B) CaOH is a stronger base than NaOH
(C) When NaOH is made the gas released at the cathode is Cl_2
(D) NaOH is named as caustic soda because it reacts with fats to form soap.
100. **The substance which conducts electricity by the movement of ions:**
(A) Graphite (B) Copper
(C) Molten NaCl (D) Mercury
101. **Point out the property which is not characteristic of alkali metal:**
(A) Low electronegativity
(B) Low melting point
(C) Their ions are isoelectronic with noble gas
(D) High ionization energy
102. **Metal belonging to the same group in the periodic table:**
(A) Magnesium and Na (B) Magnesium and Copper
(C) Magnesium and Barium (D) Magnesium and Potassium
103. **Magnesium keep on burning in:**
(A) N_2 (B) CO_2
(C) N_2O (D) N_2 as well as CO_2

- 104. Red lead is:**
(A) PbO (B) Pb₃O₄
(C) Pb₂O₄ (D) Pb₂O₅
- 105. Solid CO₂ dry ice has a structure just like:**
(A) Diamond (B) Sulphur
(C) Graphite (D) None of
- 106. Silicon is found in nature in form of:**
(A) Isolated or free silicon (B) Sulphides
(C) Silica or silicates (D) Only silicates
- 107. Choose the correct statement:**
(A) Diamond is the hardest and graphite is softest
(B) Graphite is the hardest while lamp black is softest
(C) Coal is the hardest and coke is softest
(D) Diamond is the hardest and coke is softest
- 108. Which one is not organic compound?**
(A) Fats (B) Carbohydrates
(C) Water (D) None
- 109. The isomers due to the unequal distribution of carbon atoms on either side of the functional group belonging to the same homologous series are called:**
(A) Functional isomers (B) Position isomers
(C) Chain isomers (D) Metamers
- 110. The active part in organic molecules is called:**
(A) Homologous series (B) Functional group
(C) Chemical bonding (D) Ionic complex
- 111. The four bonds of carbon in methane are directed towards the corners of:**
(A) Cube (B) Pentagon
(C) Hexagon (D) Tetrahedron
- 112. Which of the following compounds will form a hydrocarbons on reaction with Grignard reagent?**
(A) CH₃CH₂CH (B) CH₃COCH₃
(C) CH₃COOCH₃ (D) CH₃CHO

- 113. Acetylene on reacting with ammonium silver nitrate gives.**
(A) Silver metal (B) Silver mirror
(C) Silver acetylide (D) Silver acetate
- 114. Aromatic compounds burn with a sooty flame because:**
(A) They are resistant to react with oxygen
(B) They have a cyclic structure
(C) They have high percentage of Carbon
(D) They have high percentage of hydrogen
- 115. In a resonance structure of a molecule:**
(A) Pairing scheme should be same
(B) Arrangement of atom should be same
(C) Same energy
(D) All are true
- 116. An ester is prepared by:**
(A) Two alcohols (B) Carboxylic acid and alcohol
(C) Ketone and alcohol (D) Aldehyde and alcohol
- 117. Which of the following does not give iodoform test?**
(A) Ethanol (B) Ethanal
(C) Acetophenone (D) Benzophenone
- 118. Which of the following molecules has π bond?**
(A) H_2O (B) C_3H_6
(C) O_2 (D) NH_3
- 119. Ionic radius in period from left to right:**
(A) Decreases (B) Increases
(C) 1st increase and then decrease (D) 1st decrease and then increase
- 120. Which of the following molecules has no net dipole moment?**
(A) HCl (B) H_2O
(C) CCl_4 (D) CH_3Cl
- 121. Choose the value of the Rydberg constant among the following value:**
(A) $1.09678 \times 10^7 \text{ nr}^{-1}$ (B) $1.602 \times 10^{-19} \text{ C}$
(C) 1.7588×10^{11} (D) $1.007 \times 10^7 \text{ m}^{-1}$

- 122. A 4s orbital has:**
(A) One node (B) Two node
(C) three node (D) 0 node
- 123. Electronic configuration of k is:**
(A) [Ar] 4s² (B) [Ar] 4s¹
(C) [Kr] 4s¹ (D) [He] 4s¹
- 124. The spectrum of He is expected to be similar to that of:**
(A) H (B) Na
(C) He⁺ (D) Li⁺
- 125. Triatomic molecules have following movements:**
(A) translation and vibrational (B) vibrational and rotational
(C) all the above (D) none the above
- 126. Law of mass action was derived by:**
(A) Newton (B) CM guldbrug
(C) P wage (D) CM guldbrug and P wage
- 127. If we move down in electrochemical series:**
(A) Reduction potential will increase
(B) Reduction potential will decrease
(C) Oxidizing ability decrease
(D) None of them
- 128. The periodic table consist of:**
(A) 7 horizontal series, 7 vertical series and 2 blocks
(B) 8 horizontal series, 7 vertical series and 2 blocks
(C) 7 horizontal series, 18 vertical series and 4 blocks
(D) 8 horizontal series, 18 vertical series and 8 blocks
- 129. Variable valency is generally exhibited by:**
(A) Normal elements (B) Transition elements
(C) Metallic elements (D) None of them
- 130. Which of the following oxides is amphoteric in character?**
(A) CaO (B) CO₂
(C) SiO₂ (D) SnO₂

- 131. Salt of weak bases react with strong acid to give**
(A) Basic solution (B) Acidic solution
(C) Neutral solution (D) None
- 132.is a technique to separate impurities from chemical products:**
(A) Lands Berger's method (B) Fractional crystallization
(C) Beckmann method (D) None
- 133. A carbohydrate that cannot be acid hydrolyzed is called:**
(A) Monosaccharide's (B) Disaccharides
(C) Polysaccharides (D) Oligosaccharides
- 134. One gram of carbohydrate yields energy:**
(A) 10kcal (B) 100kcal
(C) 4kcal (D) 9kcal
- 135. Ascorbic acid is a chemical name of:**
(A) Vitamin D (B) Vitamin A
(C) Vitamin C (D) Vitamin B6
- 136. The number of amino acids found in proteins that a human body can synthesize is:**
(A) 230 (B) 10
(C) 5 (D) 14
- 137. Choose the correct statement:**
(A) Ultraviolet radiation from sun causes a reaction that produces ozone
(B) Ozone hole is depletion in total amount of O
(C) A single chlorine free radical can destroy 10000 ozone molecules
(D) All of above
- 138. Which of the following is not an air pollutant?**
(A) N_2 (B) N_2O
(C) NO (D) CO
- 139. Pick up the correct statement about photochemical smog.**
(A) Photo chemical smog contains nitric oxide and unburnt hydrocarbon as main reactants
(B) Photo chemical smog is caused by NO_2

- (C) Photochemical smog occurs in day time whereas the classical smog occurs In early morning hours
- (D) Both B and C
- 140. The physical quantity which produces angular acceleration in the body is**
- (A) Force (B) Moment of inertia
- (C) Impulse (D) Torque
- 141. The dimension of angular momentum is**
- (A) $M \cdot L \cdot T^{-1}$ (B) $M^1 L^2 T^{-1}$
- (C) $M \cdot L^2 \cdot T^{-1}$ (D) $m_2 L_1 T$
- 142. If $A = B + C$ and A,B,C have scalar magnitudes of 5,4,3 unit respectively then the angle between vector A and Vector B is:**
- (A) $\cos^{-1} (3/5)$ (B) $\cos^{-1} (4/5)$
- (C) $3.14/2$ (D) $\sin^{-1} (3/4)$
- 143. Pick up the correct statement about photochemical smog:**
- (A) Photo chemical smog contains nitric oxide and unburnt hydrocarbon as main reactant
- (B) Photochemical smog is caused by N_2O
- (C) Photo chemical smog occurs in day time whereas the classical smog occurs in early in mornings hours
- (D) Both B and C
- 144. A particle is travelling along a straight line OX. The distance x in meters of the particle from O at a time t is given by $X = 37 + 27t - t^3$ where t is given by X in the seconds. The distance of particles from O when it comes to rest is. w3.**
- (A) 81m (B) 91m
- (C) 101m (D) 111m
- 145. A particle is projected from the ground with a kinetic energy E at an angle of 60 degree with the horizontal. Its kinetic energy at the highest point of its motion will be:**
- (A) (B) $E/2$
- (C) $E/4$ (D) $E/8$
- 146. A bullet on penetrating 30cm into its target loses its velocity by 50%. What additional distance will it penetrate into the target before it comes to rest?**

- (A) 30cm (B) 20cm
(C) 10cm (D) 5cm
147. When a spring is stretched by 10cm, the potential energy is stored is E. When the spring is stretched by 10cm more, the potential energy stored in the spring becomes.
(A) 2E (B) 4E
(C) 6E (D) 10E
148. Average distance of the earth from the sun is L_1 . If one year of the earth = D days one year of another planet whose average distance from the sun is L_2 will be:
(A) $D(L_2/L_1)^{1/2}$ days (B) $D(L_2/L_1)^{3/2}$ days
(C) $D(L_2/L_1)^{2/3}$ days (D) $D(L_2/L_1)$ days
149. The point at which an applied force produces linear motion but no rotatory motion is:
(A) Mid-point (B) Center of gravity
(C) Optical center (D) Pole
150. When a certain metal surface is illuminated with light of frequency ν , the stopping potential for photoelectric current is V_0 . When the same surface is illuminated by light of frequency $\nu/2$, the stopping potential is $V_0/4$. The threshold frequency for photoelectric emission is:
(A) $\nu/6$ (B) $\nu/3$
(C) $2\nu/3$ (D) $4\nu/3$
151. Let L be the length and d be the diameter of cross section of a wire. Wires of the same material with different L and d are subjected to the same tension along the length of the wire. In which of the following cases the extension of wire will be the maximum?
(A) $L=200\text{cm}$, $d=0.5\text{mm}$ (B) $L=300\text{cm}$, $d=1.0\text{mm}$
(C) $L=50\text{cm}$, $d=0.05\text{mm}$ (D) $L=100\text{cm}$, $d=0.2\text{mm}$
152. An object placed in front of a concave mirror at a distance of X cm from the pole gives a 3 times magnified real image if it is moved to distance of $X+5\text{cm}$, the magnification of the image becomes 2. The focal length of the mirror is:
(A) 15cm (B) 20cm
(C) 25cm (D) 30cm

153. 22320 cal heat is supplied to 100g of ice at zero degree centigrade. If the latent heat of fusion of ice is 80 cal /g and latent heat of vaporization of water is 540 cal/g the final amount of water thus obtained and its temperature respectively are:
- (A) 8 g, 100degree centigrade (B) 100 g, 90degree centigrade
(C) 92 g, 100degree centigrade (D) 82g, 100degree centigrade
154. A progressive wave moving along X axis is represented by $y = [(2\pi/\lambda-x)]$. The wavelength λ at which the maximum particle velocity is 3 time the wave velocity is:
- (A) $A/3$ (B) 3π
(C) $3/4\pi A$ (D) $2/3(\pi A)$
155. Two radioactive substances A and B have decay constants λ_A and λ_B respectively. At $t = 0$, they have the same number of nuclei of A to that of B will be $1/e^2$ after a time interval of:
- (A) $1/\lambda_A$ (B) $1/2\lambda_B$
(C) $1/3\lambda_A$ (D) $1/4\lambda_B$
156. A magnetic needle is placed in a uniform magnetic field and is aligned with the field. The needle is now rotated by an angle of 60 degree and the work done is W. the torque on the magnetic needle at this position.
- (A) $2\sqrt{3}W$ (B) $3W$
(C) $(3/2)W$ (D) $(3/4)W$
157. A body when fully immersed in a liquid of specific gravity 1.2 weight 44gwt. The same body when fully immersed in water weights 50gwt. The mass of the body is a. 36g b. 48g c. 64g d. 80g 158) The equation of state of a gas is given by $(P + a/V^8)(V - b) = cT$, where P,V,T, are pressure. Volume and temperature respectively, and a, b, c are constants the dimensions of a and b are respectively.
- (A) $ML^8 T^{-2}$ and $L^{3/2}$ (B) $ML^8 T^{-2}$ and L^3
(C) $ML^5 T^{-2}$ and L^6 (D) $ML^6 T^{-2}$ and $L^{3/2}$
158. The R.M.S speed of the molecules of a gas at 100 degree centigrade is v. The temperature at which the R.M.S speed will be $\sqrt{3}v$ is:
- (A) 546 degree centigrade (B) 646 degree centigrade
(E) 746 degree centigrade (D) 846 degree centigrade

159. A frictional piston cylinder based enclosure contains some amount of gas at a pressure of 400kPa. Then heat is pressure in a quasi-static process. The piston moves up slowly through a height of 10cm If the piston has across section area of 0.3m^2 , the work done by the gas in the process is:
- (A) 6kj (B) 12kj
(C) 75kj (D) 24kj
160. An electric cell of e.m.f E is connected across a copper wire of diameter d and length l . The drift velocity of electrons in the wire is v_0 . If the length of the wire is changed to $2l$, the new drift velocity of electrons in the copper wire will be:
- (A) V (B) $2V$
(C) $V/2$ (D) $V/4$
161. A bar magnet has a magnetic moment of $200\text{A}\cdot\text{m}^2$. The magnet is suspended in a magnetic field of $0.30\text{ NA}^{-1}\text{ m}^{-1}$. The torque required to rotate the magnet from its equilibrium position through at an angle of 300° will be:
- (A) 30Nm (B) 3073 Nm
(C) 60Nm (D) 604Nm
162. A ball is thrown vertically upward with a velocity of 98 m/s if it takes 10 seconds to reach the highest point then the acceleration of the ball is:
- (A) 9.8m/s^2 (B) 980m/s^2
(C) 98m/s^2 (D) -98m/s^2
163. The velocity of a car travelling on a straight road is 36 km/h at an instant of time. Now travelling with uniform acceleration for 10s. the velocity becomes exactly double if the wheel radius of the car is 25cm then which of the following numbers is the closest to the number of revolutions that the wheel makes during this 10s?
- (A) 84 (B) 95
(C) 126 (D) 135
164. Two glass prisms P1 and P2 are to be combined together to produce dispersion without deviation. The angle of the prisms P1 and P2 are selected as 40° and 30° respectively. If the refractive index of prism P1 is 1.54, then that of P2 will be:
- (A) 1.48 (B) 1.58
(C) 1.62 (D) 1.72

165. A man throws a ball vertically upward in compartment of an accelerated train. The ball will fall
- (A) In front of him (B) In his hand
(C) Behind him (D) Beside him
166. Water is flowing in stream line motion through a horizontal tube. The pressure at a point in the tube is P where the velocity of flow is v . At another point, where the pressure is $P/2$, the velocity of flow is [density of water = ρ]
- (A) $(V^2 + p/\rho)$ (B) $(V^2 - p/\rho)$
(C) $(V^2 + 2p/\rho)$ (D) $(V^2 - 2p/\rho)$
167. A wire of initial length L and radius r is stretched by a length l . another wire of same material but with initial length $2L$ and radius $2r$ is stretched by length $2l$. the ratio of the stored elastic energy per unit volume in the first and second wire is:
- (A) 1:4 (B) 1:2
(C) 2:1 (D) 1:1
168. A current of $1A$ is flowing along positive x -axis through a straight wire of length $0.5m$ placed in a region of magnetic field given by $B = (2\hat{i} + 2\hat{j}) T$. The magnitude and the direction of the force experienced by the wire respectively are:
- (A) $\sqrt{15}N$, along positive z -axis (B) $\sqrt{20}N$, along positive x -axis
(C) $2N$, along positive axis (D) $4N$, along positive axis
169. A bomber drop a bomb, when it is vertically above the target, it missed the target because of :
- (A) Vertical component of the velocity of bomber
(B) Force of gravity
(C) Acceleration of the bomber
(D) Horizontal component of the velocity of bomber
170. There was a surprising story in the paper about the _____ car was stolen:
- (A) Man which his (B) Man whose his
(C) Man that his (D) Man whose
171. Several times during the session the director _____ to tell his success story to the other promotion:

- (A) Asked he (B) Asked who
(C) Asked him (D) Asked his
172. **When one need career counseling go to the college career advisor?**
(A) You should (B) It should
(C) He should (D) One should
173. **Did anybody do the work_____?**
(A) Themselves (B) Himself
(C) His self (D) None
174. **Take your application to the_____you think can help you.**
(A) Person whom (B) Person
(C) Person who (D) Person which

Read the passage and answer the questions given at the end of passage (5-10).

Recent advances in science and technology have made it possible for geneticists to find out abnormalities in the unborn fetus and take remedial action to rectify some defects which would otherwise prove to be fatal to the child. Though genetic engineering is still at its infancy, scientists can now predict with greater accuracy a genetic disorder. It is not yet an exact science since they are not in a position to predict when exactly a genetic disorder will set in. While they have not yet been able to change the genetic order of the gene in germs, they are optimistic and are holding out that in the near future they might be successful in achieving this feat they have however, acquired the ability in manipulating tissue cells. However, genetic misinformation can sometimes be damaging for it may adversely affect people psychologically. Genetic information may lead to a tendency to brand some people as inferiors. Genetic information can therefore be abused and its application in deciding the sex of the fetus and its subsequent abortion is now hotly debated on ethical lines. But on this issue geneticists cannot be squarely blamed though this charge has often been leveled at them. It is mainly a societal problem. At present genetic engineering is costly process of detecting disorders but scientists hoped to reduce the costs when technology becomes more advanced. This is why much progress in this area has been possible in scientifically advanced and rich country like the U.S.A, U K and Japan .It remains to be seen if in the future this science will lead to the development of a race of supermen or will be able to obliterate disease from this world.

175. Which of the following is the same in meaning as the phrase "holding out" as used in passage?
- (A) Catching (B) Expounding
(C) Sustaining (D) Restraining
176. According to the passage the question of abortion is:
- (A) Ignored (B) Hotly debated
(C) Unanswered (D) Left to the scientists to decide
177. Which of the following is true regarding the reasons for progress in genetic engineering?
- (A) It has become popular to abort female fetuses
(B) Human beings are extremely interested in heredity
(C) Economically sound and scientifically advanced countries can provide the infrastructure for such research
(D) Poor countries desperately need genetic information.
178. Which of the following is same in meaning as the word "obliterate" as used in passage?
- (A) Wipe off (B) Eradicate
(C) Give birth to (D) Wipe out
179. Which of the following is the opposite in meaning to the word "charged" as used in the passage?
- (A) Calm (B) Disturbed
(C) Discharged (D) Settled
180. Agenda: conference (analogy):
- (A) Teacher: class (B) Agency : assignment (analogy)
(C) Map : trip (D) Man : women
181. Manacle : male factor (analogy):
- (A) Juvenile : delinquent (B) Suave Maniac
(C) Muzzle : dog (D) Pinto : tether
182. Aerie : Eagle (analogy):
- (A) Venom : rattle snake (B) Viper: reptiles
(C) Hawk : falcon (D) Lair: wolf

- 183. Altimeter: height (analogy):**
(A) Speedometer: speed (B) Observatory :constellation
(C) Racetrack : furlong (D) Vessel: knots
- 184. Slipshod : organization (analogy):**
(A) Clever: shroud (B) Cringing : obsequious
(C) Prodigal : generosity (D) Phlegmatic : emotion
- 185. Rookie synonyms:**
(A) An old man (B) A new recruit
(C) A fighter (D) A wrestler
- 186. Catharsis synonyms:**
(A) Sudden (B) outlet for strong emotions
(C) anti-climax (D) informal discussion
- 187. Adapt Antonym:**
(A) Approve (B) Applaud
(C) Shed (D) Reject
- 188. Atheist Antonym:**
(A) Hypnotic (B) Bane
(C) Believer (D) Theorist
- 189. Generous antonym:**
(A) Cruel (B) Noble
(C) Selfish (D) Lavish
- 190. 2,5,9 ___ 20,27:**
(A) 14 (B) 16
(C) 18 (D) 24
- 191. 3, 6, 18, 72, ___**
(A) 144 (B) 2 16
(C) 288 (D) 360
- 192. 12, 32, 72, 152 _____**
(A) 312 (B) 325
(C) 515 (D) 613
- 193. 2, 15, 41, 80 ----**

- (A) 111 (B) 120
(C) 121 (D) 132
194. **8,10,14,18,___34,50,60:**
(A) 24 (B) 25
(C) 26 (D) 27
195. **Sick is to Sack as Lick is to:**
(A) Lack (B) Luck
(C) Eat (D) Meat
(E) Lock
196. **What letter comes next in the following series? B D G K P**
(A) C (B) E
(C) B (D) V
(E) Q
197. **What number comes next in the following series? 34 24 16 10 6**
(A) 5 (B) 10
(C) 3 (D) 2
(E) 4
198. **If 4 is more than 9 write a as your answer otherwise write b?**
(A) A (B) B
(C) C (D) D
(E) E
199. **Children go to school because**
(A) they want to learn poems
(B) they want to be away from home
(C) They want to look beautiful
(D) they want to gain knowledge
(E) they want to tease the teacher

Answer Key NUMS 2014

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|----------|----------|----------|----------|----------|----------|
| 1. (C) | 2. (B) | 3.(A) | 4. (D) | 5.(C) | 6. (D) |
| 7. (B) | 8. (C) | 9. (C) | 10. (B) | 11. (C) | 12. (A) |
| 13. (D) | 14. (B) | 15. (A) | 16. (D) | 17. (C) | 18. (A) |
| 19. (C) | 20. (C) | 21. (D) | 22. (C) | 23. | 24. (C) |
| 25. (B) | 26. (C) | 27. (A) | 28. (D) | 29. (A) | 30. (A) |
| 31. (D) | 32. (D) | 33. (B) | 34. (B) | 35. (C) | 36. (C) |
| 37. (A) | 38. (B) | 39. (C) | 40. (D) | 41. (D) | 42. (B) |
| 43. (B) | 44. (A) | 45. (C) | 46. (D) | 47. (B) | 48. (C) |
| 49. (A) | 50. (B) | 51. (D) | 52. (E) | 53. (E) | 54. (D) |
| 55. (C) | 56. (A) | 57. (B) | 58. (C) | 59. (D) | 60. (C) |
| 61. (C) | 62. (C) | 63. (B) | 64. (C) | 65. (B) | 66. (A) |
| 67. (C) | 68. (A) | 69. (B) | 70. (B) | 71. (C) | 72. (C) |
| 73. (A) | 74. (C) | 75. (A) | 76. (C) | 77. (A) | 78. (A) |
| 79. (C) | 80. (A) | 81. (A) | 82. (B) | 83. (A) | 84. (D) |
| 85. (C) | 86. (A) | 87. (C) | 88. (B) | 89. (A) | 90. (C) |
| 91. (C) | 92. (C) | 93. (C) | 94. (C) | 95. (B) | 96. (A) |
| 97. (B) | 98. (A) | 99. | 100. (C) | 101. (A) | 102. (C) |
| 103. (B) | 104. (B) | 105. (A) | 106. (C) | 107. (A) | 108. (C) |
| 109. (D) | 110. (B) | 111. (D) | 112. (A) | 113. (C) | 114. (C) |
| 115. (D) | 116. (B) | 117. (D) | 118. (C) | 119. (A) | 120. (C) |
| 121. (A) | 122. (C) | 123. (B) | 124. (A) | 125. (B) | 126. (D) |
| 127. (D) | 128. (C) | 129. (B) | 130. (D) | 131. (B) | 132. (B) |
| 133. (A) | 134. (C) | 135. (C) | 136. (D) | 137. (C) | 138. (C) |
| 139. (D) | 140. (D) | 141. (C) | 142. (D) | 143. (A) | 144. (B) |
| 145. (C) | 146. (A) | 147. | 148. (A) | 149. (A) | 150. (A) |
| 151. (B) | 152. (A) | 153. | 154. | 155. | 156. (A) |
| 157. (B) | 158. (A) | 159. (B) | 160. (B) | 161. (D) | 162. (D) |
| 163. (C) | 164. (C) | 165. (B) | 166. (B) | 167. (B) | 168. (C) |
| 169. (A) | 170. (D) | 171. (C) | 172. (C) | 173. (B) | 174. (A) |
| 175. (C) | 176. (D) | 177. (B) | 178. (B) | 179. (C) | 180. (B) |
| 181. (B) | 182. (C) | 183. (C) | 184. (C) | 185. (B) | 186. (B) |
| 187. (D) | 188. (C) | 189. (C) | 190. (A) | 191. (D) | 192. (A) |
| 193. (C) | 194. (A) | 195. (A) | 196. (D) | 197. (D) | 198. (A) |
| 199. (B) | | | | | |