

**2018 TnpSC Science Questions In English**

1. The net gain of energy from one molecule of glucose during aerobic respiration is  
(A) 4 ATP                      (B) 8 ATP                      (C) 40 ATP                      **(D) 38 ATP**
2. Which one of the following bio geo chemical cycles is most dependent on bacteria?  
(A) Water cycle                      (B) Carbon cycle  
**(C) Nitrogen cycle**                      (D) Phosphorous cycle
3.  $\text{NH}_4^+$  ion is  
**(A) A conjugate acid**                      (B) A conjugate base  
(C) Neither an acid nor a base                      (D) Both an acid and a base
4. Male hormone secreted by the testes is  
(A) Estrogen                      (B) Progesterone                      (C) Prolactin                      **(D) Androgens**
5. Which of the following nitrogen – fertilizers has the highest nitrogen percentage?  
(A)  $\text{CaCN}_2$                       **(B) Urea**                      (C)  $\text{NH}_4\text{NO}_3$                       (D)  $(\text{NH}_4)_2\text{SO}_4$
6. Packing fraction is  
(A) Mass number / Mass defect                      (B) Mass defect x Mass number  
**(C) Mass defect / mass number**                      (D)  $1 / \text{Mass defect} \times \text{Mass number}$
7. India's first Antidiabetic Ayurvedic drug launched by CSIR is called  
(A) MST-2                      (B) MST-1                      (C) XMU-MP                      **(D) BGR 34**
8. 2, 4 – D is used as  
**(A) Weedicide**                      (B) Vitamin                      (C) Fertilizer                      (D) Insecticide
9. What is the process by which the 6 carbon Glucose converts into 3 carbon pyruvic acid?  
(A) Kreb's cycle                      **(B) Glycolysis**  
(C) Phosphorylation                      (D) Electron transport chain
10. \_\_\_\_\_ are the factors responsible for blood coagulation  
**(A) Platelets**                      (B) Eosinophils                      (C) Basophils                      (D) Monocytes
11. The frequency of crossing over would be higher if  
(A) Two genes are located closely  
**(B) Two genes are far apart on a chromosome**

- (C) Two genes are not located on the same chromosome  
(D) None of the above
12. The precious ruby stones are  
(A) Aluminium silicate (B) Sodium aluminium silicate  
(C) Sodium silicate (D) **Alumina**
13. Which breaking system is most efficient at high speed?  
(A) Electric breaking (B) **Magnetic breaking**  
(C) Drum breaking (D) Disc breaking
14. The velocity of a ball thrown with a speed of  $200 \text{ ms}^{-1}$  at an angle of  $60^\circ$  with the horizontal, at its maximum height is  
(A)  **$100 \text{ ms}^{-1}$**  (B)  $200 \text{ ms}^{-1}$  (C)  $400 \text{ ms}^{-1}$  (D)  $173 \text{ ms}^{-1}$
15. According to the reports of Spanish National Cancer Research Centre 2017 which of the following vitamin can delay aging process  
(A) Vitamin – C (B) **Vitamin – B** (C) Vitamin – A (D) Vitamin – D
16. Which of the following fertilizer has highest percentage of nitrogen?  
(A) Calcium ammonium nitrate (B) Basic calcium nitrate  
(C) **Carbamide** (D) Calcium cyanamide
17. Thromboplastin which is required for blood clotting is secreted by  
(A) Monocytes (B) Erythrocyte (C) Lymphocytes (D) **Blood platelets**
18. The anti-viral proteins produced by virus infected cells is  
(A) Antibiotic (B) Antigen (C) **Interferon** (D) Antivirin
19. Vacuoles are sap filled vesicles in the cytoplasm covered by a membrane called  
(A) Protoplast (B) Leucoplast (C) **Tonoplast** (D) Chromoplast
20. Raman effect is due to  
(A) Interference of light (B) Polarization of light  
(C) Diffraction of light (D) **Scattering of light**
21. Cytochromes are found in  
(A) Matrix of mitochondria (B) **Cristae of mitochondria**  
(C) Lysosomes (D) Outer wall of mitochondria

22. The correct order of acid strength of  $\text{HClO}_4$ ,  $\text{HBr}$ ,  $\text{HF}$  and  $\text{H}_3\text{PO}_4$  is  
(A)  $\text{HClO}_4 > \text{HF} > \text{HBr} > \text{H}_3\text{PO}_4$  (B)  $\text{HClO}_4 > \text{HBr} > \text{HF} > \text{H}_3\text{PO}_4$   
(C)  **$\text{HClO}_4 > \text{HBr} > \text{H}_3\text{PO}_4 > \text{HF}$**  (D)  $\text{HBr} > \text{HF} > \text{HClO}_4 > \text{H}_3\text{PO}_4$
23. The Universal gate is  
(A) **NAND gate** (B) OR gate (C) AND gate (D) NOT gate
24. Match the following:
- |                       |                      |
|-----------------------|----------------------|
| (a) Sindri fertilizer | 1. Sodium nitrate    |
| (b) Chile nitre       | 2. Calcium cyanamide |
| (c) Nitrolim          | 3. Ammonium sulphate |
| (d) Nangal fertilizer | 4. CAN               |
- |            |          |          |          |          |
|------------|----------|----------|----------|----------|
|            | (a)      | (b)      | (c)      | (d)      |
| (A)        | 2        | 4        | 1        | 3        |
| <b>(B)</b> | <b>3</b> | <b>1</b> | <b>2</b> | <b>4</b> |
| (C)        | 4        | 3        | 2        | 1        |
| (D)        | 1        | 2        | 4        | 3        |
25. Phase of menstrual cycle in human that lasts for 7-8 days is called  
(A) Luteal phase (B) **Follicular phase** (C) Menstruation (D) Ovulatory phase
26. Which of the following is used as explosive?  
(A) Mercuric oxide (B) **Nitroglycerine** (C) Graphite (D) Mercuric sulphide
27. Vitamin obtained from the sun light is  
(A) Vitamin A (B) Vitamin B (C) Vitamin C (D) **Vitamin D**
28. The Amalgam used in filling teeth is  
(A) Fe – Hg (B) Na – Hg (C) Zn – Hg (D) **Cu – Hg**
29. The element which is essential for the synthesis of thyroid hormones is  
(A) Iron (B) Cobalt (C) **Iodine** (D) Manganese
30. In household wiring, copper wire 2.05 mm in diameter is often used. Find the resistance of a 35.0 m long wire. Specific resistance of copper is  $1.72 \times 10^{-8} \Omega \cdot \text{m}$ .  
(A) 18  $\Omega$  (B) 1.8  $\Omega$  (C) **0.18  $\Omega$**  (D) 0.018  $\Omega$

31. The principle used in lighting conductors is  
(A) **Corona discharge** (B) Self – induction  
(C) Mutual induction (D) Electro magnetic induction
32. Relation between electric field and potential  
(A)  $dV = \frac{-E}{dx}$  (B)  $dV = \frac{-dx}{E}$  (C)  $E = \frac{-dV}{dx}$  (D)  $E = \frac{-dx}{dV}$
33. A parallel plate capacitor with air between the plates has a capacitance of 10  $\mu\text{F}$ . what will be the capacitance, if the distance between the plates be reduced to half and the space between them is filled with a substance of dielectric constant 10.  
(A) 100  $\mu\text{F}$  (B) **200  $\mu\text{F}$**  (C) 1  $\mu\text{F}$  (D) 400  $\mu\text{F}$
34. 1 Wh (Watt hour) is equal to  
(A)  $36 \times 10^5 \text{ J}$  (B)  $36 \times 10^4 \text{ J}$  (C) **3600 J** (D) 3500 J
35. The resistivity range of semi-conductors is  
(A)  $10^{-6} - 10^{-8} \Omega\text{m}$  (B)  $10^8 - 10^{14} \Omega\text{m}$  (C)  $10^5 - 10^8 \Omega\text{m}$  (D)  **$10^{-2} - 10^4 \Omega\text{m}$**
36. The unit of electro chemical equivalent  
(A)  $\text{kg ms}^{-1}$  (B)  $\text{kg m}^{-3}$  (C)  $\text{kg m}^{-1}$  (D)  **$\text{kg c}^{-1}$**
37. The metal having positive Thomson effect is  
(A) Pt (B) **Ag** (C) Ni (D) Hg
38. The colour of  $\text{Fe}(\text{OH})_3$  colloid is  
(A) Yellow (B) Yellow Orange (C) **Red** (D) Black
39. rms value of altering current is  
(A) **0.707  $I_0$**  (B) 70.7  $I_0$  (C) 0.636  $I_0$  (D) 63.6  $I_0$
40. In a acceptor circuit, the value of impedance and current  
(A) **Impedance minimum, current maximum**  
(B) Impedance maximum, current minimum  
(C) Both impedance and current minimum  
(D) Both impedance and current maximum
41. The frequency range of visible light in electromagnetic spectrum is  
(A)  $4 \times 10^{14} \text{ Hz} - 1 \times 10^{13} \text{ Hz}$  (B)  **$8 \times 10^{14} \text{ Hz} - 4 \times 10^{14} \text{ Hz}$**

- (C)  $3 \times 10^{11} \text{ Hz} - 1 \times 10^9 \text{ Hz}$       (D)  $3 \times 10^7 \text{ Hz} - 3 \times 10^4 \text{ Hz}$
42. Which are true statements:
- (I) The dark lines found in solar spectrum is called as Fraunhofer lines  
(II) Fraunhofer lines are used identify elements present in sun's atmosphere
- (A) I and II are true    (B) II and III are true    (C) **I and III are true**    (D) I, II and III are true
43. Total energy of the electron ( $E_n$ ) is half of the potential energy ( $E_p$ ). What will be the kinetic energy ( $E_k$ )?
- (A)  **$-E_n$**       (B)  $+E_n$       (C)  $-2E_n$       (D)  $+2E_n$
44. In Thomson experiment the beam of electron remains undeflected when passed through the electric field  $E = 10^5 \text{ V/m}$  and the magnetic field is  $B = 10^{-2} \text{ tesla}$ . Calculate the velocity of the electron.
- (A)  $10^3 \text{ m/s}$       (B)  $10^5 \text{ m/s}$       (C)  **$10^7 \text{ m/s}$**       (D)  $10^9 \text{ m/s}$
45. In Sommerfeld atom model which one of the following atomic orbit is an elliptical orbit
- (A) 1 s      (B) **2 s**      (C) 2 p      (D) 3 d
46. The work function of zinc is  $6.8 \times 10^{-19} \text{ J}$ . What is the threshold frequency for emission of photo electrons from zinc?
- (A)  $1.206 \times 10^{15} \text{ Hz}$     (B)  **$1.026 \times 10^{15} \text{ Hz}$**     (C)  $1.0026 \times 10^{15} \text{ Hz}$     (D)  $1.026 \times 10^{14} \text{ Hz}$
47. Consider the following statement choose the correct answer from the codes given below.
- Assertion (A): According to relativity, the mass of the body changes with velocity.
- Reason (R): Electrons accelerated in cyclotron with very high velocity acquire increased mass.
- (A) (A) alone is correct and (R) is incorrect  
(B) **(A) and (R) are correct and (R) is the correct explanation of (A)**  
(C) (A) and (R) are incorrect  
(D) (A) and (R) are correct but (R) is not the correct explanation of (A)
48. In one milligram of a substance is fully converted into energy, then the energy is
- (A)  $9 \times 10^{16} \text{ J}$       (B) 1 J      (C)  **$9 \times 10^{10} \text{ J}$**       (D)  $3 \times 10^8 \text{ J}$
49. The half-life period of  $\text{N}^{13}$  is 10.1 minutes. Its life time is
- (A) 5.2 minutes      (B) 10.1 minutes      (C) 20.2 minutes      (D) **Infinity**
50. The energy liberated in proton – proton cycle is
- (A) 26.7 eV      (B) **26.7 MeV**      (C) 14.7 MeV      (D) 14.7 eV

51. Arrange the following particles in the increasing order of their rest masses  
I. Proton                      II. Electron                      III. Neutron                      IV. Photon  
(A) II – IV – III – I    **(B) IV – II- I – III**    (C) IV – II – III – I    (D) II – IV – I – III
52. The following Boolean expression represents \_\_\_\_\_ gate.  
 $Y = A + \bar{A}B$   
(A) AND                      (B) NAND                      **(C) OR**                      (D) NOR
53. Which of the following are universal gates?  
(A) NOT gate and EX-OR gate                      (B) OR gate and NOT gate  
(C) AND gate and OR gate                      **(D) NOR gate and NAND gate**
54. A sinusoidal carrier wave of amplitude 10 mV is modulated by an audio signal wave of amplitude 6 mV what is the amplitude of Upper Side Band (USB)?  
(A) 0.6 mV                      (B) 0.3 mV                      **(C) 3 mV**                      (D) 6 mV
55. The principle of fiber optical communication is?  
(A) Reflection                      (B) Radio reflection  
**(C) Total internal reflection**                      (D) Transmission
56. Which one of the following pairs is not correctly matched regarding satellite communication?  
(A) Geostationary satellite                      :- 36, 000 Km  
(B) Commercial satellite                      :- 6 GHz – 4 GHz  
**(C) First manmade satellite                      :- Aryabhata**  
(D) Satellite communication                      :- Micro wave link repeater
57. When a current carrying conductor is placed along the direction of the magnetic field, the force acting on it is?  
(A)  $F = BI l$                       **(B)  $F = 0$**                       (C)  $F = BI l \cos \theta$                       (D)  $F = BI l \tan \theta$
58. The ratio of Ne and He gases used in He – Ne laser is  
**(A) 4 : 1**                      (B)  $10^6 : 1$                       (C) 1 : 4                      (D) 1 :  $10^6$
59. Write the type of linkages between glucose and fructose in sucrose?  
(A)  $C_1 - C_1$                       **(B)  $C_1 - C_2$**                       (C)  $C_1 - C_4$                       (D)  $C_1 - C_5$

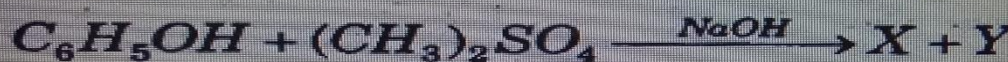
60. Write the correct example of Trisaccharides?

- (A) **Raffinose** (B) Galactose (C) Starch (D) Sucrose

61. Among the following which is used as an anesthetic

- (A) Di – methyl ether (B) **Di – ethyl ether**  
(C) Di – phenyl ether (D) Anisole

62.



X and Y are

- (A) Methyl alcohol + phenetole  
(B) Ethane + benzene  
(C) Anisole + ethyl hydrogen sulphate  
(D) **Anisole + methyl hydrogen sulphate**

63. What is the order of Boiling point of amines?

- (A) **Secondary amine > Primary amine > Tertiary amine**  
(B) Secondary amine < Primary amine < Tertiary amine  
(C) Secondary amine > Primary amine < Tertiary amine  
(D) Primary amine > Secondary amine > Tertiary amine

64. Which one of the following organic compound, aldol-condensation reaction does not undergo?

- (A) Acetaldehyde (B) Acetone (C) **Benzophenone** (D) Ethylalcohol

65. Which compound does not undergo haloform reaction?

- (A) Ethyl alcohol (B) **Methyl alcohol** (C) Iso-propyl alcohol (D) Acetone

66. Which one of the following is the correct order of dipole moments for the three isomers of dichlorobenzene?

- (A) Ortho isomer < Meta isomer < Para isomer  
(B) **Ortho isomer > Meta isomer > Para isomer**  
(C) Para isomer < Ortho isomer < Meta isomer  
(D) Meta isomer > Ortho isomer > Para isomer

67. Fumaric acid and Maleic acid are

- (A) Optical isomers (B) Conformers  
(C) **Geometrical isomers** (D) Ortho and para isomers
68. The catalyst used in Bergius process for the synthesis of petrol from coal is  
(A)  $\text{CuCl}_2$  (B)  $\text{Cr}_2\text{O}_3$  (C)  $\text{V}_2\text{O}_5$  (D)  **$\text{Fe}_2\text{O}_3$**
69. Example of Lyophobic colloid is  
(A) **Sulphur in water** (B) Gelatin (C) Protein (D) Starch
70. What type of complex reaction is, bromination of Bromobenzene?  
(A) Sequential reaction (B) **Side reaction**  
(C) Reversible reaction (D) Chain reaction
71. The signs of  $\Delta H$  and  $\Delta S$  respectively for the following reaction  
 $\text{Cl}_{2(g)} \rightarrow 2 \text{Cl}_{(g)}$   
(A) -, - (B) -, + (C) +, + (D) +, -
72. Why steam is passed to remove away the ammonia in Haber's process  
(A) Standardise pressure (B) Standardise temperature  
(C) Standardise equilibrium (D) **Maximum ammonia formation**
73. In the reversible reaction  
 $2\text{SO}_{2(g)} + \text{O}_{2(g)} \leftrightarrow 2\text{SO}_{3(g)}$   
Find the reaction between  $K_P$  and  $K_C$ .  
(A)  $K_P = K_C \times RT$  (B)  $K_P = K_C \times (RT)^2$  (C)  **$K_P \times RT = K_C$**  (D)  $K_P = K_C \times (RT)^{-2}$
74. The metal having negative Thomson effect is  
(A) Ag (B) **Hg** (C) Sn (D) Sb
75.  ${}_{92}\text{U}^{235} + {}_0\text{n}^1 \rightarrow {}_{56}\text{Ba}^{141} + {}_{36}\text{Kr}^{92} + {}_{30}\text{n}^1 + 200 \text{ Mev}$   
The above said reaction is a  
(A) **Nuclear fission reaction** (B) Nuclear fission reaction  
(C) Spallation reaction (D) Equilibrium reaction
76. Glass is an example for



- (A) Gaseous state      (B) Liquid state      (C) Solid state      **(D) Vitreous state**
77. Which is used as a power source in long mission space probes?  
(A) U – 235      (B) U – 232      **(C) Pu – 238**      (D) Pu – 241
78. Which one is used as fuel in Nuclear reaction in power plants?  
(A)  ${}_{92}\text{U}^{235}$       (B)  ${}_{92}\text{U}^{236}$       (C)  ${}_{92}\text{U}^{239}$       (D)  ${}_{92}\text{U}^{234}$
79. Which one of the following is used in making ointment for curing skin diseases?  
(A)  $\text{AgNO}_3$       (B)  $\text{AgBr}$       **(C)  $\text{ZnCO}_3$**       (D)  $\text{AgCl}$
80. Which is the bond length of  $\text{Br}_2$  molecule?  
(A) 1.54      **(B) 2.28**      (C) 0.74      (D) 1.44
81. The order of ionization energy  
(A)  $s < p < d < f$       **(B)  $s > p > d > f$**       (C)  $s > d > p > f$       (D)  $s < d < p < f$
82. The device based on Wheatstone's bridge is  
(A) Wattmeter      (B) Potentiometer      (C) Bridge rectifier      **(D) Metre bridge**
83. The intra-molecular hydrogen bonding is present in  
(A) **Salicylic acid**      (B) Water      (C) M-nitrophenol      (D) P-nitrophenol
84. Among the following which will produce oxocations  
(A) Lanthanides      **(B) Actinides**      (C) Noble gases      (D) Halogens
85. How do you observed the respiration by Ganong's respiroscope?  
(A)  $\text{CO}_2$  released      (B) Raise of water  
**(C) Raise of KOH level**      (D)  $\text{O}_2$  released
86. Which part is used in Test tube funnel experiment?  
(A) Ipomea      (B) Ichornia      **(C) Hydrilla**      (D) Marsilia
87. Binomial of groundnut is  
(A) *Oryza sativa*      **(B) *Arachis hypogea***  
(C) *Gossypium barbadense*      (D) *Tectona grandis*
88. Mental and physical stress relaxing drug ginseng is obtain from the plant

- (A) **Panax ginseng** (B) Chinchona Officinalis  
(C) Papaver Somniferum (D) Ephedra Sinica
89. A tissue is a  
(A) Single cell (B) Two cells  
(C) **Group of cells** (D) Three cells
90. The terminal part of the chromosome is  
(A) Satellite (B) Centromere (C) **Telomere** (D) Kinetochore
91. Clover leaf model of RNA is called  
(A) **tRNA** (B) sRNA (C) mRNA (D) rRNA
92. The clover leaf structure of tRNA is suggested by  
(A) **R.W. Holley** (B) Watson and Crick  
(C) Wilkins and Franklin (D) Messelson and Stahl's
93. What is the name of the book published by the Carlous Linnaeus?  
(A) **Species Plantarum** (B) Genera Plantarum  
(C) Origin of species (D) Die Naturalichan Pflanzen Familien
94. In human being's fertilization of ovum in which part?  
(A) Corpus luteum (B) Vaginal tube  
(C) **Ampulla of uterine tube** (D) Cervix
95. Arrange the following in correct order:  
I. Sub class: Monochlamydeae II. Family: Euphorbiaceae  
III. Class: Dicotyledonae IV. Series: Unisexuales  
(A) **III – I – IV – II** (B) I – II – III – IV (C) IV – III – II – I (D) II – III – I – IV
96. Statement I: In the cerebral cortex the left hemisphere is connected to the sensory receptors of right half of the body.  
Statement II: In the cerebral cortex the right hemisphere is connected to the sensory receptors of left half of the body.  
(A) I is correct II is incorrect (B) **I and II are correct**

- (C) I is incorrect II is correct      (D) I and II are incorrect
97. The another name of Vitamin 'D' is  
(A) Niacin      (B) Pyridoxine      (C) **Calciferol**      (D) Ergosterol
98. Water loss happens through expiration is  
(A) **400 ml**      (B) 600 ml      (C) 1400 ml      (D) 100 ml
99. Myasthenia Gravis is a  
(A) Vitamin deficiency disease      (B) Infectious disease  
(C) Kidney disorder      (D) **Autoimmune disease**
100. What is the first antibiotic discovered in the world?  
(A) Ampicillin      (B) Tetracyclin      (C) **Penicillin**      (D) Streptomycin
101. Pain during urination and yellow discharge from the urethra of male are the symptoms of  
(A) Syphilis      (B) Plague      (C) **Gonorrhea**      (D) Pneumonia
102. Major Histocompatibility Complex (MHC) gene of mouse is located in which chromosome?  
(A) 74<sup>th</sup> chromosome      (B) 4<sup>th</sup> chromosome      (C) **6<sup>th</sup> chromosome**      (D) 5<sup>th</sup> chromosome
103. Assertion I: The disease Huntington's chorea is characterized by uncontrolled jerking of the body is due to involuntary twitching of voluntary muscles.  
Assertion II: Huntington's chorea is caused by autosomal recessive gene in human.  
(A) I and II are incorrect      (B) **I is correct II is incorrect**  
(C) I and II are correct      (D) I is incorrect II is correct
104. In Karyotyping process chemical colchicine is used to stop mitosis at which stage?  
(A) Prophase      (B) **Metaphase**      (C) Anaphase      (D) Telophase
105. What method is used to dispose large amount of water carrying relatively small amount of chemical wastes?  
(A) **Surface impoundments**      (B) Landfills  
(C) Incineration      (D) Bio-remediation
106. What is the incubation period of fertilized hen's egg?  
(A) 16 – 18 days      (B) 20 – 21 days      (C) 24 – 25 days      (D) **21 – 22 days**

107. Milk of Jersey cow has a characteristic yellow colour due to the high content of which of the following?  
(A) Haemoglobin (B) Melanin (C) **Carotene** (D) Xanthophyll
108. During brooding of chicken how much of floor space has to be provided per chicken in poultry house?  
(A) **500 sq.cm** (B) 100 sq.cm (C) 200 sq.cm (D) 400 sq.cm
109. In the case of insulators, as the temperature decreases, resistance  
(A) Decreases (B) **Increases** (C) Remains constant (D) Becomes zero
110. A toaster operating at 240 V has a resistance of  $120\ \Omega$ , the power is  
(A) 400 W (B) 2 W (C) **480 W** (D) 240 W
111. The period of rotation of a charged particle in a uniform magnetic field does not depend upon  
(A) Charge (B) Magnetic induction (C) **Velocity** (D) Mass
112. Which of the following statements are true?  
Current sensitivity of a galvanometer can be increased by  
(I) Increasing the number of turns in the coil  
(II) Increasing the magnetic induction  
(III) Decreasing the area of the coil  
(IV) Increasing the couple per unit twist of the suspension wire  
(A) **I, II** (B) II, III (C) III, IV (D) I, IV
113. In a coil of radius 10 cm having 100 turn carrying a current of 1 A, the magnitude of the magnetic field at the center of the coil is  
(A)  **$2\pi \times 10^{-4}\ \text{T}$**  (B)  $4\pi \times 10^{-4}\ \text{T}$  (C)  $3\pi \times 10^{-6}\ \text{T}$  (D)  $5\pi \times 10^{-6}\ \text{T}$
114. In a step up transformer, the transformer ratio  $k$  is  
(A)  $k < 1$  (B)  $k = 1$  (C)  **$k > 1$**  (D)  $k = 0$
115. Pick out the wrong statement. In transformer energy losses  
(A) Hysteresis loss can be minimized by using silicon steel  
(B) **Copper loss can be minimized by using thin wires**

- (C) Eddy current loss can be minimized by stelloy  
(D) Copper loss can be minimized by using thick wires
116. In an AC circuit with a capacitor only, the current will be  
(A) Leading voltage by  $\pi$  phase difference  
**(B) Leading voltage by  $\pi/2$  phase difference**  
(C) Lagging behind the voltage by  $\pi$  phase difference  
(D) Lagging behind the voltage by  $\pi/2$  phase difference
117. Which of the following rays are travelling with velocity of light?  
(I)  $\alpha$ -rays                      (II)  $\beta$ -rays                      (III)  $\gamma$ -rays                      (IV) X-rays  
(A) I and II                      (B) II and III                      **(C) III and IV**                      (D) I and IV
118. If  $\lambda_x$ ,  $\lambda_{uv}$ ,  $\lambda_m$  are wavelengths of X-rays, uv rays and microwaves respectively then which of the following is correct?  
(A)  $\lambda_x = \lambda_{uv} = \lambda_m$                       (B)  $\lambda_x > \lambda_{uv} > \lambda_m$                       **(C)  $\lambda_x < \lambda_{uv} < \lambda_m$**                       (D)  $\lambda_{uv} > \lambda_m = \lambda_x$
119. Atomic spectrum should be  
**(A) Pure line spectrum**                      (B) Emission band spectrum  
(C) Absorption line spectrum                      (D) Absorption band spectrum
120. The wave number for Balmer series at long wavelength limit  
(A) R                      (B) R/4                      (C) 3 R/24                      **(D) 5 R/36**
121. Which of the following statements are true?  
(I) The cathode rays are a stream of electrons  
(II) The elliptical orbits of electrons in the atom were proposed by de Broglie  
(III) Canal rays can produce fluorescence  
(A) I and II                      (B) II and III                      (C) I, II and III                      **(D) I and III**
122. The equation showing relation between currents in a transistor circuit is  
**(A)  $I_E = I_B + I_C$**                       (B)  $I_C = I_B + I_E$                       (C)  $I_B = I_E + I_C$                       (D)  $I_E = I_B - I_C$
123. Which of the following diodes is operated in a reverse bias mode?

(A) P – N junction    **(B) Zener**    (C) Tunnel    (D) LED

124. Which of the following statements are true?

I. Photoelectric effect can be explained on the basis of quantum theory of light

II. The photoelectric effect is instantaneous process

III. To produce large number of photoelectrons the cathode of photosensitive material is coated with high work function material

**(A) I, II**    (B) II, III    (C) I, III    (D) I, III, III

125. Which of the following statements are FALSE?

I. Nuclear reactor is based on the principle of uncontrolled fission reaction

II. Atom bomb is based on the principle of uncontrolled fusion reaction

III. Hydrogen bomb is an example for nuclear fusion reaction

**(A) I and II**    (B) II and III    (C) I and III    (D) I, II and III

126. In  $\alpha$ -decay, the change that occurs in the daughter element is

(A) Atomic number decreases by one

(B) Mass number increases by four

(C) Proton number remains the same

**(D) Neutron number decreases by two**

127. Since the input impedance of an ideal operational amplifier is infinite

**(A) Its input current is zero**

(B) Its output resistance is high

(C) Its output voltage becomes independent of load resistance

(D) It become a current controlled device

128. In super heterodyne FM receiver if the incoming frequency is  $150 \times 10^3$  KHz what will be the frequency produced by local oscillator?

(A) 160.7 Hz

**(B) 160.7 MHz**

(C) 160.7 KHz

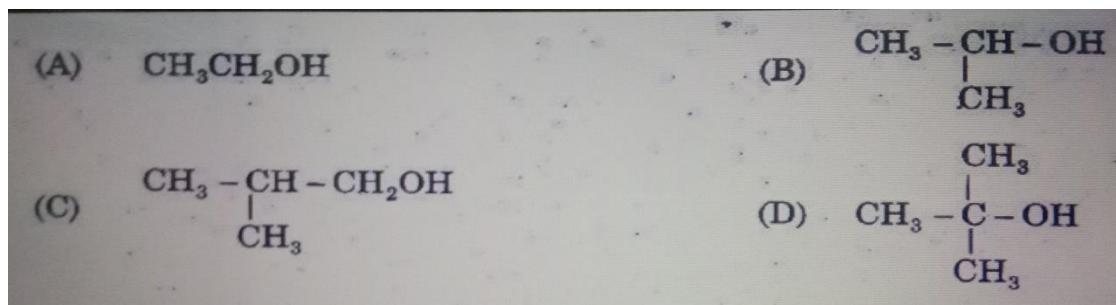
(D) 167 KHz

129. In a broadcasting studio a 1000 KHz carrier is modulated by an audio signal of frequency range 100 – 5000 Hz what are the maximum and minimum frequencies of USB and LSB?

(A) 1005 Hz, 1000.1 Hz and 999.9 Hz, 995 Hz

(B) 10.05 MHz, 10.001 MHz and 9.999 MHz, 9.95 MHz

- (C) **1005 KHz, 1000.1 KHz and 999.9 KHz, 995 KHz**  
(D) 1.005 KHz, 1.0001 KHz and 0.9999 KHz, 0.995 KHz
130. The compounds sodium benzoate and potassium meta-bisulphate are used as  
(A) Artificial sweetening agent      (B) **Food preservative**  
(C) Antibiotic      (D) Dyes
131. Which of the following act as the propellents for rocket motors used in space vehicles?  
(A) Liquid O<sub>2</sub>      (B) **Liquid H<sub>2</sub>**      (C) Liquid N<sub>2</sub>      (D) Liquid propylene
132. What is the name of the solution containing equal molecules of D(+) glucose and D(-) glucose?  
(A) Grape sugar      (B) Cane sugar  
(C) **Invert sugar**      (D) Non – reducing sugar
133. What product is formed after 2 mole of aniline treated with carbon-disulphide?  
(A) **S – diphenyl thio urea**      (B) S – phenyl thio urea  
(C) S – triphenyl thio urea      (D) S – diphenyl urea
134. Which one of the following compound react with Grignard reagent to form carboxylic acid?  
(A) Formaldehyde      (B) Acetaldehyde      (C) Acetone      (D) **Carbon dioxide**
135. Which one of the following compound is in wintergreen oil?  
(A) Methyl acetate      (B) Methyl formate  
(C) **Methyl salicylate**      (D) Acetyl salicylic acid
136. Phenol reacts with formaldehyde gives  
(A) **Bakelite**      (B) Malechite green  
(C) Malonic acid      (D) Tincture benzoin
137. Oxidation of glycerol with bismuth nitrate which gives  
(A) Glyceric acid      (B) Glyceraldehyde      (C) **Mesoxalic acid**      (D) Oxalic acid
138. Which one of the following does not have  $\alpha$  – hydrogen



Ans: D

139. Which one of the following reaction is not feasible?
- (A)  $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$       (B)  $\text{Cu}^{2+} + \text{H}_2 \rightarrow \text{Cu} + 2\text{H}^+$
- (C)  $\text{Cu} + \text{H}_2\text{SO}_4 \rightarrow \text{CuSO}_4 + \text{H}_2$       (D)  $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
140. Ionic product of water at 298 K is
- (A)  $K_w = 1 \times 10^7 \text{ mol}^2 \text{ dm}^{-6}$       (B)  $K_w = 1 \times 10^{-7} \text{ mol}^2 \text{ dm}^{-6}$
- (C)  $K_w = 1 \times 10^{14} \text{ mol}^2 \text{ dm}^{-6}$       (D)  $K_w = 1 \times 10^{-14} \text{ mol}^2 \text{ dm}^{-6}$
141. Tyndall effect is \_\_\_\_\_ kind property of colloids.
- (A) Kinetic property      (B) Electrical property
- (C) Chemical property      (D) **Optical property**
142. Unit of rate constant of a reaction can be calculated using the formula
- (A)  $\text{Mol}^{(1-n)} \text{ lit}^{(n-1)} \text{ Sec}^{-2}$       (B)  $\text{lit}^{(1-n)} \text{ Mol}^{(n-1)} \text{ Sec}^{-1}$
- (C)  $\text{Mol}^{(1-n)} \text{ lit}^{(n-1)} \text{ Sec}^2$       (D)  **$\text{lit}^{(n-1)} \text{ mol}^{(1-n)} \text{ Sec}^{-1}$**
143. Which one of the following statement is correct?
- (A) Entropy of the Universe remains constant, energy of the universe remains constant
- (B) Entropy of the Universe tends to a maximum, energy of the universe tends to a maximum
- (C) **Entropy of the universe tends to a maximum, energy of the universe remains constant**
- (D) Energy and entropy of the universe tends to a minimum
144. An example of a complex compound having coordination number 4
- (A)  $\text{K}_4[\text{Fe}(\text{CN})_6]$       (B)  $[\text{Co}(\text{en})_3]\text{Cl}_3$       (C)  $[\text{Co}(\text{en})_3]\text{Cl}_3$       (D)  **$[\text{Cu}(\text{NH}_3)_4]\text{Cl}_2$**
145. Which of the following statement is correct with respect to Central metal atom?



- (A) Accepts electron (B) **Accepts the pair of electron**  
 (C) Donate electron (D) Donate pair of electron
146. Pick the complex used as anti-tumour drug.  
 (A) **cis-[Pt(NH<sub>3</sub>)<sub>2</sub>Cl<sub>2</sub>]** (B) trans-[Pt(NH<sub>3</sub>)<sub>2</sub>Cl<sub>2</sub>]  
 (C) cis-[Pd(NH<sub>3</sub>)<sub>2</sub>(NO<sub>2</sub>)<sub>2</sub>] (D) trans-[Pd(NH<sub>3</sub>)<sub>2</sub>(NO<sub>2</sub>)<sub>2</sub>]
147. Which one of the following is example of metal deficiency defect?  
 (A) NaCl (B) AgCl (C) CsCl (D) **FeS**
148. What is General electronic configuration of the transition elements?  
 (A) (n-1)d<sup>0-10</sup> ns<sup>1-2</sup> (B) **(n-1)d<sup>1-10</sup> ns<sup>1-2</sup>** (C) (n-1)d<sup>1-5</sup> ns<sup>2</sup> (D) (n-1)d<sup>0</sup> ns<sup>1</sup>
149. Choose the wrong statement regarding K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>  
 (A) It is a powerful oxidizing agent (B) It is used in tanning industry  
 (C) It is soluble in water (D) **It reduces ferric sulphate to ferrous sulphate**
150. The shape of PCl<sub>5</sub> is  
 (A) Pyramidal (B) **Trigonal bipyramidal** (C) Linear (D) Tetrahedral
151. Match the following:
- | Alloy         |     | Composition                   |     |
|---------------|-----|-------------------------------|-----|
| (a) Bronze    |     | 1. Cu = 87, Sn = 10, Zn = 3   |     |
| (b) Brass     |     | 2. Cu = 75 – 90, Sn = 10 – 25 |     |
| (c) Nichrome  |     | 3. Cu = 60 – 80, Zn = 20 – 40 |     |
| (d) Gun metal |     | 4. Cr = 15, Ni = 60, Fe = 25  |     |
| (a)           | (b) | (c)                           | (d) |
| (A) 2         | 3   | 4                             | 1   |
| (B) 3         | 1   | 4                             | 2   |
| (C) 4         | 2   | 1                             | 3   |
| (D) 1         | 2   | 3                             | 4   |
152. What is the shape of p-orbitals?  
 (A) Spherical (B) Clover leaf shape (C) **Dumb-bell** (D) (B) or (C)

153. Assertion (A): Inter molecular hydrogen bonding is formed between the two molecules of the same or different compounds.

Reason (R): Hydrogen bonding is possible when a six or five membered rings can be formed.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A)  
 (B) Both (A) and (R) are true but (R) is not the correct explanation of (A)  
**(C) (A) is true but (R) is false**  
 (D) (A) is false, but (R) is true

154. Some of the light sensitive seeds can germinate by the treatment of hormone is

- (A) Auxin (B) Ethylene (C) **Gibberellin** (D) Cytokinin

155. The gas evolved during respiration is

- (A) Oxygen (B) Hydrogen (C) Nitrogen (D) **Carbon-dioxide**

156. Which part of the plant is most important in photosynthesis?

- (A) Root (B) Stem (C) **Leaves** (D) Flowers

157. The function of cytokinin is increase

- (A) Cell elongation (B) Fruit initiation (C) **Cell division** (D) Differentiation

158. Clonal selection is from

- (A) Sexual reproduction (B) **Vegetative propagation**  
 (C) External characters of plant (D) Based on gene structure

159. Match the following:

Name of the organism	Haploid set of chromosome
(a) Arabidopsis thaliana	1. 7
(b) Paddy	2. 5
(c) Garden pea	3. 40
(d) Sugar cane	4. 12

- |     |     |     |     |     |
|-----|-----|-----|-----|-----|
|     | (a) | (b) | (c) | (d) |
| (A) | 2   | 4   | 1   | 3   |
| (B) | 1   | 2   | 3   | 4   |
| (C) | 3   | 2   | 4   | 1   |
| (D) | 4   | 1   | 2   | 3   |

160. A weed plant has been engineered to produce a biodegradable plastics. (Poly hydroxyl butyrate or PHB)  
(A) **Mouse – eared cress** (B) Zea Mays (C) Oryza Sativa (D) Avena Sativa
161. C<sub>4</sub> pathway is take place in  
(A) **Leaf of mesophyll and bundle sheath cells** (B) Leaf of mesophyll cell  
(C) Leaf of bundle sheath cell (D) All part of leaf
162. The Osteoscleriods are seen in  
(A) Seed coat of crotolaria (B) **Seed coat of Pigum**  
(C) Pulp of Pyrus (D) Petioles of Banana
163. Which is called as libriform fibers?  
(A) **Xylem fibers** (B) Pholem fibers  
(C) Sclerenchyma fibers (D) Xylem parenchyma
164. This is a Dead Tissue  
(A) Parenchyma (B) Collenchyma (C) **Sclerenchyma** (D) Choloreenchyma
165. Statement I: In Myopia, light is focused in front of the retina.  
Statement II: Myopia can be corrected by placing a convex lens in front of the eye.  
(A) I and II are correct (B) I is incorrect II is correct  
(C) I and II are incorrect (D) **I is correct II is incorrect**
166. Each gram of carbohydrate is capable of yielding energy equivalent of  
(A) 9.3 Calories (B) **4.1 Calories** (C) 8.2 Calories (D) 7.1 Calories
167. Which one of the following is a protozoan disease?  
(A) **African sleeping sickness** (B) Measles  
(C) Cholera (D) Typhoid fever
168. Match the following:  
(a) Cholera 1. Yersinia pestis  
(b) Plague 2. Neisseria gonorrhea

- (c) Syphilis                      3. Vibrio cholera  
 (d) Gonorrhoea                4. Treponema palladium

	(a)	(b)	(c)	(d)
(A)	1	2	3	4
(B)	3	4	1	2
(C)	4	3	2	1
<b>(D)</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>2</b>

169. B Lymphocytes mature in  
 (A) **Bone marrow**    (B) Thymus                      (C) Heart                      (D) Liver
170. The tissue of the original donor is grafted back into the same donor is  
 (A) Xenograft                      (B) Allograft                      **(C) Autograft**                      (D) Isograft
171. What is the name of mobile genetic elements?  
 (A) Barr body                      (B) Plasmids                      (C) Mitochondria                      **(D) Transposons**
172. What chemical is used in solar cells?  
 (A) Calcium                      **(B) Cadmium**                      (C) Potassium                      (D) Sodium
173. Nitrous oxide traps how many times more heat than carbon-dioxide?  
 (A) 20 times                      **(B) 300 times**                      (C) 500 times                      (D) 50 times
174. Heat of combustion of Hydrogen per unit weight is how many times more than that of hydrocarbon fuel?  
 (A) **2.5 times**                      (B) 3.5 times                      (C) 4.5 times                      (D) 1.5 times
175. The scientific name of sea bass  
 (A) Artemia Salina                      **(B) Lates Calcarifer**  
 (C) Tilapia Mossambica                      (D) Labeo Rohita
176. Match the following.
- |                 |                              |
|-----------------|------------------------------|
| (a) Colposcopy  | 1. Joints such as knee       |
| (b) Gastroscopy | 2. Colon and large intestine |

(c) Arthroscopy 3. Vagina and cervix

(d) Colonoscopy 4. Stomach, intestine

(a) (b) (c) (d)

(A) 3 4 1 2

(B) 1 2 3 4

(C) 4 3 2 1

(D) 3 4 2 1

177. At what rate of speed, our brain sends the messages?

(A) 250 kmph (B) 275 kmph (C) 350 kmph (D) 375 kmph

178. Prothrombin is found in blood and is related with

(A) Initiation of heart beat (B) Blood clotting

(C) Blood agglutination (D) Blood pressure

179. In mammals, prolactin stimulates the production of

(A) Progesteron (B) Mucus in the digestive tract

(C) Digestive enzymes in the small intestine (D) Milk

180. Chemical name of Teflon is

(A) Poly propylene (B) Poly Acetylene

(C) Poly tetra fluoro ethylene (D) Poly Vinyl alcohol

181. The compounds which have back bonding are

(A) Metal nitrate (B) Metal carbonates (C) Metal carbonyls (D) Metal oxides

182. The ozone layer forms naturally by

(A) Interaction of CFC with oxygen

(B) Interaction of UV radiation with oxygen

(C) Interaction of IR radiation with oxygen

(D) Interaction of oxygen and water vapour

183. Match the following:

- |                      |             |
|----------------------|-------------|
| (a) $\beta$ carotene | 1. Cereals  |
| (b) Copper           | 2. Pappaya  |
| (c) Iron             | 3. Mushroom |
| (d) Selenium, zinc   | 4. Pulses   |

- |            |          |          |          |          |
|------------|----------|----------|----------|----------|
|            | (a)      | (b)      | (c)      | (d)      |
| (A)        | 1        | 3        | 4        | 2        |
| <b>(B)</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>1</b> |
| (C)        | 3        | 4        | 2        | 1        |
| (D)        | 4        | 3        | 2        | 1        |

184. During centrifugation, which one of the following will settle down at last

- (A) Nuclei                      **(B) Ribosome**                      (C) Mitochondria                      (D) Chloroplast

185. Which chemical product is mixed in the polyolefins plastic bags?

- (A) Polyvinyl chloride                      (B) Polystyrene  
**(C) Benzophenone**                      (D) Polyumethylchloride

186. The term chromosome was introduced in

- (A) 1888**                      (B) 1887                      (C) 1889                      (D) 1988

187. The most important reason for the decrease of biodiversity is

- (A) Habitat pollution                      (B) Introduction of exotic species  
 (C) Over – exploitation                      **(D) Habitat destruction**

188. Match the following correctly:

- |                   |              |
|-------------------|--------------|
| (a) Thiamine      | 1. Scurvy    |
| (b) Ascorbic acid | 2. Rickets   |
| (c) Calciferol    | 3. Beriberi  |
| (d) Tocopherols   | 4. Sterility |

- |     |     |     |     |     |
|-----|-----|-----|-----|-----|
|     | (a) | (b) | (c) | (d) |
| (A) | 3   | 4   | 2   | 1   |

(B) 2 1 4 3

(C) 3 1 2 4

(D) 4 3 2 1

189. Plants and animals living in an area constitutes

(A) Plantation (B) **Community** (C) Population (D) Ecosystem

190. Two spheres of radii  $r_1$  and  $r_2$  cm are joined by a wire and a total charge  $q$  is given to them. If  $q_1$  and  $q_2$  be their individual charges, then

(A)  $q_1 = q_2$  (B)  $\frac{q_1}{q_2} = \frac{r_1}{r_2}$  (C)  $\frac{q_1}{q_2} = \frac{r_2}{r_1}$  (D)  $q_1 = \frac{r_1}{q}$  and  $q_2 = \frac{r_2}{q}$

191. The potential barrier of germanium PN Junction is

(A) 1.1 eV (B) 0.7 V (C) **0.3 V** (D) 1.1 V

192. The nuclei  ${}^6_{13}\text{C}$  and  ${}^7_{14}\text{N}$  can be described as

(A) **Isotones** (B) Isobars  
(C) Isotopes of carbon (D) Isotopes of nitrogen

193. Which of the following Noble gas is used for Inflating Aeroplane tyres?

(A) **Helium** (B) Neon (C) Argon (D) Xenon

194. Inter molecular hydrogen bonding is present in

(A) O-nitrophenol (B) **Water** (C) Salicylic acid (D) Salicylaldehyde

195. Statement : There is passive movement of nearly 70% blood from auricle into ventricle. Remaining 30% is pumped into ventricles by arterial contraction

Reason : Opening of the atrio-ventricular valves

(A) Statement is correct. Reason is wrong  
(B) **Statement and reason are correct**  
(C) Statement and reason are wrong  
(D) Statement is correct but the reason is not explaining the statement

196. Fog is a colloidal solution of

(A) Gas in Liquid (B) **Liquid in gas** (C) Gas in solid (D) Solid in gas

197. A permanent birth control method in female is

(A) Copper – T (B) **Tubectomy**

- (C) Cervical cap (D) Contraceptive pills
198. Which vitamin is known as “Sunshine vitamin”?
- (A) Vitamin A (B) **Vitamin D** (C) Vitamin E (D) Vitamin K
199. Which of the following are the gaseous planets?
- (A) Mercury, Earth (B) Venus, Mars (C) **Saturn, Neptune** (D) Pluto, Earth
200. The hormone renin is produced by the
- (A) Pancreas (B) Gall Bladder (C) Liver (D) **Kidneys**
201. The system of unit accepted universally are
- (A) CGS (B) FPS (C) **MKS (or) SI units** (D) HKS
202. ‘Bunsen burner’ works, based on the principle of
- (A) De Morgan theorem (B) **Bernoulli’s theorem**  
(C) Surface Tension (D) Photo conductivity
203. The compound formed when aniline is heated with Fuming sulphuric acid at 353K is
- (A) **p-amino benzene sulphonic acid**  
(B) o-amino benzene sulphonic acid  
(C) m- amino benzene sulphonic acid  
(D) p-nitro benzene sulphonic acid
204. Find the incorrect statement:
- I. Ozone depletion will affect crop yield  
II. Ozone depletion will not cause damage to fish larvae  
III. Ozone depletion will cause skin cancer in man
- (A) **II only** (B) I only (C) III only (D) I, II and III are incorrect
205. Which salt is used in Test Tube funnel experiment?
- (A) Pottassium chloride (B) **Sodium bi carbonate**  
(C) Sodium carbonate (D) Sodium chloride
206. Which of the following is male accessory reproductive glands in mammals?



- (A) Gastric gland (B) Mushroom shaped gland  
(C) **Prostate gland** (D) Inguinal gland
207. Who discovered Rh factor?  
(A) James Watson (B) Robert Hook (C) **Landsteiner Carl** (D) William Harvey
208. Haemoglobin, haemocyanin, serum, albumin are \_\_\_\_\_ type of proteins.  
(A) Regulatory (B) **Transport** (C) Storage (D) Protective
209. Exhibition of superiority by a hybrid over both of its parents is called  
(A) **Heterosis** (B) Hybridization (C) Hypostatis (D) Recessive
210. Polymerization of which one of the following monomers produces as synthetic rubber?  
(A) **1, 3-butadiene** (B) Acrylonitrile (C) Vinyl chloride (D) Propylene
211. Which of the following rocks is different from the remaining three on the basis of its mode of origin?  
(A) Limestone (B) **Marble** (C) Sandstone (D) Shale
212. An ester used as medicine is  
(A) Ethyl acetate (B) **Methyl salicylate** (C) Ethyl benzoate (D) Methyl benzoate
213. Which organic compounds polymerize to form the polyester Dacron?  
(A) Propylene and ethylene glycol (B) Terephthalic acid and ethylene glycol  
(C) Benzoic acid and ethanol (D) **Dimethyl terephthalate and ethylene glycol**
214. The fertilizer which is called as 'nitrolim' is  
(A) Super phosphate (B) Calcium ammonium nitrate  
(C) **Calcium cyanamide** (D) Sodium nitrate
215. What type of mirror is used in solar cookers?  
(A) Plane mirror (B) Convex mirror (C) **Concave mirror** (D) Bifocal mirror
216. Why the wings of an aeroplane are shaped with lower surface being flat and the upper surface being curved?  
(A) To reduce vibrations  
(B) **To make difference in pressure to lift the plane vertically**

- (C) To accommodate more passenger in the wing  
(D) To strengthen the wheel fitted in wings
217. Which is not true of a prokaryotic cell?
- (A) No mitotic cell division  
(B) DNA not associated with proteins in chromosomes  
(C) Typical cell organelles like mitochondria are absent  
**(D) Membrane – bound nucleus**
218. The  $C_4$  pathway of  $CO_2$  fixation was discovered by
- (A) Arnon                      **(B) Hatch and Slack**                      (C) Calvin                      (D) Hill
219. Find the correct statement/s:
- I. Signal molecule carries a message to the target cell.  
II. Target cell detects the signal molecules and receive the message.
- (A) I wrong II correct                      (B) I correct II wrong  
(C) Both I and II wrong                      **(D) Both I and II correct**
220. Mature sperms are stored here.
- (A) Vas deferens                      **(B) Seminal vesicle**  
(C) Epididymis                      (D) Seminiferous tubules
221. Match correctly the following List 1 and List 2

**List 1****List 2**

- (a) Vanadium  
(b) Molybdenum  
(c) Chromium  
(d) Copper

1.  $N_2$  and  $O_2$  Scavenger  
2. Brass and Bronze  
3. Radio valves and bulbs  
4. Chrome plating

- |            | (a)      | (b)      | (c)      | (d)      |
|------------|----------|----------|----------|----------|
| (A)        | 1        | 4        | 3        | 2        |
| <b>(B)</b> | <b>1</b> | <b>3</b> | <b>4</b> | <b>2</b> |
| (C)        | 4        | 1        | 2        | 3        |

(D) 3 4 1 2

222. Match the following:

Revolution	Production
(a) Black Revolution	1. Prawns, Onions
(b) Grey Revolution	2. Cotton
(c) Pink Revolution	3. Petroleum production
(d) Silver fiber Revolution	4. Fertilizers

	(a)	(b)	(c)	(d)
(A)	1	2	3	4
(B)	4	2	1	3
(C)	<b>3</b>	<b>4</b>	<b>1</b>	<b>2</b>
(D)	3	4	2	1

223. Betatron is a device for accelerating

(A) **Electron** (B) Neutron (C) Proton (D) Meson

224. Which of the following seismic waves has the shortest wavelength?

(A) **P-waves** (B) S-waves (C) L-waves (D) Pg-waves

225. Match List I with List II correctly and select your answer using the codes given below:

List I	List II
(a) Astronomical unit	1. Motion of objects
(b) Newton	2. Distance between the earth and sun
(c) Galileo	3. Distance travelled by light
(d) Light year	4. Law of gravitation

	(a)	(b)	(c)	(d)
(A)	1	3	2	4
(B)	<b>2</b>	<b>4</b>	<b>1</b>	<b>3</b>
(C)	2	1	3	4
(D)	3	2	4	1

226. Glass is affected by which acid?

- (A) HCl                      (B) H<sub>2</sub>SO<sub>4</sub>                      (C) HF                      (D) HNO<sub>3</sub>
227. What is the percentage of nitrogen in urea?  
(A) 50% Nitrogen      **(B) 46% Nitrogen**      (C) 80% Nitrogen      (D) 90% Nitrogen
228. A solution whose pH value is 4. Then the solution turns  
(A) Red litmus into blue                      **(B) Blue litmus into red**  
(C) Keeps red litmus as red                      (D) Keeps blue litmus as blue
229. \_\_\_\_\_ are bio indicators of environmental contamination  
(A) Parasites                      (B) Saprophytes                      (C) Fungi                      **(D) Lichens**
230. Which is the instrument used to measure relative density of milk to determine purity?  
(A) Bactometer                      **(B) Lactometer**                      (C) Pyrometer                      (D) Hydrometer
231. The \_\_\_\_\_ of the testis provide nourishment to the developing sperms.  
(A) Epididymis                      (B) Testis                      **(C) Sertoli cells**                      (D) Urethra
232. A blob of oil which has been weathered after floating on the ocean is  
(A) Crude oil                      (B) Oil Spills                      **(C) Tar Balls**                      (D) Oil Wastes
233. Two bodies of masses 10 kg and 20 kg respectively fall from a height of 10 m to ground surface in 5 sec, the ratio of kinetic energy of these two bodies  
(A) 1 : 1                      **(B) 1 : 2**                      (C) 1 : 4                      (D) 1 : 8
234. If velocity of sound is 300 m/s then taken to travel a distance equivalent to light in 1 sec  
(A) 100 sec                      (B) 3600 sec                      **(C) 10<sup>6</sup> sec**                      (D) 10<sup>4</sup> sec
235. The metal which melts at Human body temperature is  
**(A) Gallium**                      (B) Indium                      (C) Thallium                      (D) Boron
236. Artificial rain is formed by using  
(A) Silver Chloride      (B) Silver Bromide      **(C) Silver Iodide**      (D) Silver Nitrate
237. Which is an instrument used to measure the velocity and direction of wind?  
(A) Thermometer      (B) Barometer                      **(C) Anemometer**      (D) Windvane
238. Match the following:

- |                          |                    |
|--------------------------|--------------------|
| (a) Chloro fluoro carbon | 1. Green house gas |
| (b) Carbon di oxide      | 2. Ozone           |
| (c) Statosphere          | 3. Hydro carbon    |
| (d) Butane               | 4. Freon gas       |

- |     |          |          |          |          |
|-----|----------|----------|----------|----------|
|     | (a)      | (b)      | (c)      | (d)      |
| (A) | 1        | 2        | 4        | 3        |
| (B) | 2        | 1        | 3        | 4        |
| (C) | <b>4</b> | <b>1</b> | <b>2</b> | <b>3</b> |
| (D) | 3        | 2        | 4        | 1        |

239. Ninhydrin oxidizes many amino acids and produce

- |  |   |
|--|---|
| (i) Carbondioxide                          | (ii) Ammonia and Aldehyde                                   |
| (iii) CO <sub>2</sub> and H <sub>2</sub> O | (iv) CO <sub>2</sub> , SO <sub>2</sub> and H <sub>2</sub> O |
| (A) (i) and (ii) are correct               | (B) (i) and (iv) are correct                                |
| (C) (iii) and (iv) are correct             | (D) (i) is correct  |

240. Which gas has not been transported by blood?

- |                                |                     |
|--------------------------------|---------------------|
| (A) Oxygen                     | (B) Carbon-di-oxide |
| (C) Oxygen and carbon-di-oxide | <b>(D) Nitrogen</b> |

241. When a mature egg leaves the ovary, it enters in the

- |                    |              |                 |                        |
|--------------------|--------------|-----------------|------------------------|
| (A) <b>Oviduct</b> | (B) Follicle | (C) Endometrium | (D) Interstitial cells |
|--------------------|--------------|-----------------|------------------------|

242. In which year, X-rays was invented?

- |                 |          |          |          |
|-----------------|----------|----------|----------|
| (A) <b>1895</b> | (B) 1899 | (C) 1905 | (D) 1925 |
|-----------------|----------|----------|----------|

243. Positron was discovered by

- |                     |              |                |          |
|---------------------|--------------|----------------|----------|
| (A) <b>Anderson</b> | (B) Chadwick | (C) Rutherford | (D) Bohr |
|---------------------|--------------|----------------|----------|

244. The geometry of Ni(CO)<sub>4</sub> is

- |                   |                         |
|-------------------|-------------------------|
| (A) Square-planar | <b>(B) Tetrahedral</b>  |
| (C) Octahedral    | (D) Trigonal bi-pyramid |

245. DDT is an insecticide, which is prepared from  
(A) Chlorobenzene + Trichloroacetone  
**(B) Chlorobenzene + Trichloroacetaldehyde**  
(C) Benzene + Trichloroacetone  
(D) Benzene + Trichloroacetaldehyde
246. Identify the pairs of longer and shortest waves in terms of wavelength?  
**(A) Radio-waves, Gamma rays** (B) Infrared waves, Gamma rays  
(C) Gamma rays, X-rays (D) UV waves, Infrared waves
247. Which one of the following is not a communicable disease?  
(A) Zika (B) STP (C) Ebola **(D) Cataracts**
248. The fungus, neurospora has been extensively used as an experimental material in the study of  
(A) Physiology (B) Pathology (C) Cytology **(D) Genetics**
249. The disease characterized by high levels sugar in blood and urine due to inadequate supply of insulin in body is  
(A) Peptic ulcer (B) Diverticulosis (C) Obesity **(D) Diabetes**
250. Which of the following has the least specific charge?  
(A) Electron (B) Proton **(C)  $\alpha$  – particles** (D)  $\beta$  – particles
251. The operating frequency of a Wien bridge oscillator is given by  
(A)  $\frac{1}{2\pi\sqrt{LC}}$  (B)  $\frac{1}{4\pi\sqrt{LC}}$  (C)  $\frac{1}{2\pi RC}$  (D)  $\frac{1}{29 RC}$
252. If the source is kept at infinity, the shape of the wave front will be  
(A) Spherical (B) Cylindrical (C) Elliptical **(D) Plane**
253. What happens in oxidation reaction?  
**(A) Loss of electrons** (B) Gain of electrons  
(C) Loss of oxygen (D) Gain of hydrogen
254. Identify the ore of iron  
(A) **Magnetite** (B) Felspar (C) Bauxite (D) Cuprite

255. Which one of the following metal is not present in steel?  
(A) Cr – Chromium (B) Ni – Nickel (C) V – Vanadium (D) **Zn – Zinc**
256. The Ozone Depletion is mainly caused by the gas  
(A) **CFCs** (B) SO<sub>2</sub> (C) Na<sub>2</sub> (D) CO<sub>2</sub>
257. The compound which is called ‘Common salt’ is  
(A) **NaCl** (B) CaCl<sub>2</sub> (C) AlCl<sub>3</sub> (D) LiCl
258. Ganong’s respirometer can measure the following  
(A) Photosynthetic efficiency of plants  
(B) **R.Q. of respiratory substrates**  
(C) Q<sub>10</sub> of respiratory metabolism  
(D) Rate of CO<sub>2</sub> evolution during respiration
259. The average length of human pregnancy is  
(A) 34 – 36 weeks (B) **36 – 38 weeks** (C) 38 – 40 weeks (D) 34 – 40 weeks
260. Which diseases have been eliminated in India?  
(A) Malaria and Dengue (B) Typhoid and Tuberculosis  
(C) **Small Pox and Plague** (D) Chicken Pox and Leprosy
261. The chemical name of ‘Vinegar’ which is used as preservative is  
(A) Formic acid (B) Acrylic acid (C) **Acetic acid** (D) Maleic acid
262. As per Bronsted concept, acid is  
(A) Accepting a proton (B) Accepting an electron  
(C) Donating an electron (D) **Donating a proton**
263. Consider the following statements with reference to the ocean food:  
(i) They have amino acids  
(ii) They are a better source of Vitamin B – 12  
(iii) They are high in cholesterol  
(iv) They are improving body metabolism

Which of the statements given above are correct?

- (A) i, ii, iii                      (B) ii, iii, iv                      (C) i, iii, iv                      **(D) i, ii, iv**

264. Arrange the salt dissolved in the sea water in descending order:

- (a) Chloride, Sodium, Sulphate, Magnesium  
(b) Sodium, Sulphate, Magnesium, Chloride  
(c) Magnesium, Sodium, Sulphate, Chloride  
(d) Sulphate, Magnesium, Sodium, Chloride

- (A) a**                      (B) b                      (C) c                      (D) d

265. Mitochondria are known as “Power houses” of the cells. Because

- (A) They supply energy rich ATP**  
(B) They supply enough CO<sub>2</sub> to body  
(C) They protects cells from photo-oxidation  
(D) They act as autophagic vacuoles

266. Which of the following devices makes use of piezo – electric property of a crystal?

- (A) Wall clock                      (B) Atomic clock  
(C) Electronic clock                      **(D) Quartz clock**

267. Gametogenesis is the important event of sexual reproduction in any organism. Which of the following type of cell division controls this process?

- (A) Mitosis                      (B) Amitosis                      **(C) Meiosis**                      (D) Binary fission

268. What is an aplanatic lens?

- (A) A lens free from coma  
**(B) A lens free from spherical aberration and coma**  
(C) A lens free from spherical aberration  
(D) Combination of two lenses

269. Discovery of \_\_\_\_\_ instrument revolutionized in the field of genetic engineering.

- (A) Electrophoretic apparatus



(B) AAS – Atomic Absorption Spectrophotometer

(C) SEM – Scanning Electron Microscope

**(D) PCR – Cyclor**

270. DNA transcribes different types of RNAs. Find out the coding RNA

(A) tRNA

(B) rRNA

**(C) mRNA**

(D) snRNA

271. Which of the following Indian State has the World's first-ever thermal battery plant?

(A) Tamil Nadu

**(B) Andhra Pradesh**

(C) Karnataka

(D) Kerala

272. The medicine for Typhoid is

(A) Chloroquin

(B) Vitamin A

**(C) Chloromycelin**

(D) Sulpha-drugs

273. "TESS" is a

(A) Polestar

**(B) Space craft**

(C) Comet

(D) Sensor

274. The rate of diffusion is large in

**(A) Gas**

(B) Liquid

(C) Solid

(D) Metal

275. The rate of Cooling of a body is proportional to

(A) difference between initial and final temperature

(B) Final temperature

**(C) Mean excess of temperature**

(D) Initial temperature

276. What is the unit of momentum?

**(A) Kgms<sup>-1</sup>**

(B) Newton

(C) Kgms

(D) Kgms<sup>-1</sup>s<sup>-1</sup>

277. Super phosphate of lime contains

(A) Ca<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>

(B) CaHPO<sub>4</sub>

(C) H<sub>3</sub>PO<sub>4</sub>

**(D) Ca(H<sub>2</sub>PO<sub>4</sub>)<sub>2</sub>**

278. Who are the major primary producers of marine environment?

(A) Sea anemons

(B) Sea grasses

**(C) Phyto planktons**

(D) Zoo planktons

279. The total contribution of ATP per glucose oxidized through Kreb's cycle

**(A) 30**

(B) 38

(C) 4

(D) 8

280. There are 46 chromosomes in a normal human cell, compare to the numbers given below with the special structures in human body:

1. Ovum-23
2. Sperm-46
3. Kidney-46
4. Urinary bladder-23

Which one is correct match?

- (A) 1, 2 and 4      (B) 2, 3 and 4      (C) **1 and 3**      (D) 1, 3 and 4

281. The disease sickle-cell anaemia, is caused by

- (A) Iron deficiency      (B) Malarial infection      (C) Poor hygiene      (D) **Genes**

282. Which of the following is called as 'King of Oil seeds'?

- (A) Olive      (B) Castor      (C) **Groundnut**      (D) Sesame

283. The frequency of radio wave is about \_\_\_\_\_ Hz.

- (A)  $10^{15}$       (B)  **$10^6$**       (C)  $10^{10}$       (D)  $10^2$

284. If the quantity of energy radiated by the sun is  $6.3 \times 10^7 \text{ W m}^{-2}$ . What is the surface temperature of the sun by considering sun as a black body. Stefan's constant is  $5.7 \times 10^{-8} \text{ W m}^{-2} \text{ K}^{-4}$

- (A) 5667 K      (B) 7566 K      (C) **5766 K**      (D) 6756 K

285. The hardest naturally occurring substance is

- (A) Iron      (B) Graphite      (C) **Diamond**      (D) Astatine

286. Bonding present between the carbon atoms in graphite is

- (A) Metallic      (B) Ionic      (C) **Covalent**      (D) Vanderwaal's forces

287. The percentage of Nitrogen present in the atmosphere is

- (A) 45 %      (B) 28%      (C) **78%**      (D) 8%

288. In human beings, sex is determined by sex chromosomes X and Y. the female human is represented by sex chromosomes

- (A) XO      (B) **XX**      (C) XY      (D) YY

289. The pH of a fertile soil is usually around

- (A) 2-3                      **(B) 6-7**                      (C) 8-10                      (D) 11-12
290. In normal persons, the blood plasma will not contain this ion.  
(A) **Mercury**                      (B) Sodium                      (C) Calcium                      (D) Magnesium
291. Progesterone hormone is secreted by  
(A) **Corpus luteum**                      (B) Pituitary gland                      (C) Pineal gland                      (D) Placenta
292. Energy center of a sperm is  
(A) **Middle piece**                      (B) Head                      (C) Tail                      (D) Entire Sperm
293. The cell wall formation begins at the telophase stage of the cell division fine granular structure called as  
(A) Plasma desmata                      **(B) Phragmoplast**  
(C) Symplast                      (D) Apo plast
294. Select correctly matched pair:  
1. Mercury                      - Cinnabar  
2. Aluminium                      - Bauxite  
3. Titanium                      - Limonite  
4. Iron                      - Heamatite  
(A) 1, 2, 3 and 4                      (B) 2, 3 and 4                      **(C) 1, 2 and 4**                      (D) 1, 2 and 3
295. Mature graffian follicle is generally present in the ovary of healthy human female around  
(A) 5 – 8 days of menstrual cycle                      **(B) 11 – 17 days of menstrual cycle**  
(C) 18 – 23 days of menstrual cycle                      (D) 24 – 23 days of menstrual cycle
296. Which year, Dolly the sheep was born, the first mammal to be cloned from an adult cell?  
(A) 1994                      (B) 1995                      **(C) 1996**                      (D) 1997
297. Electroencephalography (EEG) is a study about?  
(A) **Brain**                      (B) Heart                      (C) Lungs                      (D) Liver
298. A problem with development of Red blood cell called as  
(A) Anemia                      (B) Polycythemia                      **(C) Dyserythropoiesis**                      (D) Yolk sac

299. From where the Zika virus was first identified?  
(A) Rat (B) Cat (C) **Monkey** (D) Donkey
300. Most of the energy during aerobic respiration is produced by the  
(A) **Electron transport chain** (B) Glycolysis  
(C) Krebs's cycle (D) pyruvic acid oxidation
301. Aquatic plants lost most of their metabolic wastes by \_\_\_\_\_ in their surroundings.  
(A) Evaporation (B) Combine with ions and precipitation  
(C) **Direct diffusion** (D) Periodic removal as their parts fall off
302. Oxidation number of Mn in  $\text{KMnO}_4$  is  
(A) 6 (B) **7** (C) 5 (D) 2
303. The isoelectric point of an amino acid is the  
(A) **pH at which no net migration occurs during electrophoresis**  
(B) pH at which all the functional groups are protonated  
(C) Same as the pka for that acid  
(D) All of the above
304. Which is used as moderator?  
(A)  $\text{H}_2\text{O}$  (B)  **$\text{D}_2\text{O}$**  (C)  $\text{T}_2\text{O}$  (D)  $\text{H}_2\text{O}_2$
305. The value of escape velocity in the earth is \_\_\_\_\_  
(A) 1.12 km/s (B) 11.2 m/s (C) **11.2 k/s** (D) 1.12.m/s
306. The net work done by the forces acting on a body is equal to the change in its  
(A) **Kinetic energy** (B) Potential energy  
(C) Kinetic energy and potential energy (D) Momentum
307. In an optical fiber communication, the light is guided through the fiber by the principle of  
(A) Refraction (B) Diffraction  
(C) Dispersion (D) **Total internal reflection**
308. Who performed First Heart transplant in (1967)

- (A) **Christian Barnard** (B) Jan Donald  
(C) Willem Kolff (D) Ian Donald
309. Four identical copper cylinders are painted differently. If they are all heated to the same temperature and left in vacuum, which will cool rapidly?  
(A) Painted shiny white (B) **Painted rough black**  
(C) Painted shiny black (D) Painted rough white
310. Ohm's law does not apply to  
(A) A.C. Circuits (B) Conductors  
(C) **Semi-conductors** (D) Conductors when there is a change in temperature
311. Symbiosis is an interaction between two species in which  
(A) **Both live together in direct contact**  
(B) Both are benefited  
(C) One benefits and other is neither benefited nor harmed  
(D) One benefits and other is harmed
312. Which of the following is incorrectly matched?  
(A) Turner's syndrome - 44 autosome + XO  
(B) Klinefelter's syndrome - 44 autosome + XXY  
(C) **Down's syndrome - 44 autosome + XYY**  
(D) Super female - 44 autosome + XXX
313. Nitrous acid, oxalic acid and acidified solution of  $\text{FeSO}_4$  examples for  
(A) **Reducing agents** (B) Oxidizing agents  
(C) Additive agents (D) Both (A) and (B)
314. Blister copper is  
(A) **98% pure copper** (B) 96% pure copper  
(C) 90% pure copper (D) 92% pure copper
315. Trace elements required for plant growth

- (A) N, P, K    (B) Ca, Mg, Fe    (C) **Mn, Zn, Cu**    (D) C, H, O
316. The principal genetic material of living beings  
(A) DNA    (B) RNA    (C) **Both 'A' and 'B'**    (D) Nucleolus
317. The Chief component of fungal cell wall is  
(A) Mucoprotein    (B) Cellulose  
(C) **Mucopolysaccharide**    (D)  $\alpha$  - D glucopyranose
318. Raman effect is due to  
(A) Incoherent Scattering    (B) **Coherent Scattering**  
(C) No Scattering    (D) Refraction
319. Hydraulic lift, hydraulic press and hydraulic break work on  
(A) Newton's law    (B) Archimede's law  
(C) **Pascal's law**    (D) Bernoulli's law
320. The male honeybee has \_\_\_\_\_ set of chromosome.  
(A) Diploid    (B) **Haploid**    (C) Tetraploid    (D) Polyploid
321. Which of the following could act as a propellant for rockets?  
(A) Liquid hydrogen + Liquid nitrogen    (B) Liquid oxygen + Liquid argon  
(C) **Liquid hydrogen + Liquid oxygen**    (D) Liquid nitrogen + Liquid oxygen
322. Which of the following is not a Lewis acid?  
(A)  $\text{BF}_3$     (B)  $\text{AlCl}_3$     (C)  $\text{BeCl}_2$     (D)  **$\text{BaCl}_2$**
323. Which organ growth requires thyroid hormone?  
(A) Heart    (B) Lungs    (C) **Brain**    (D) Kidney
324. During DNA replication, the Okazaki fragments on the lagging strand and joined together by  
(A) **DNA ligase**    (B) DNA polymerase    (C) Primase    (D) Helicase
325. Red data book contains data of  
(A) All plant species    (B) All animal species  
(C) Economically important species    (D) **Threatened endangered species**

326. If a tea leaves are kept in hot water for longer time, the liquid becomes bitter because
- (A) The volatile oil in the leaves dissolves out
- (B) The tannin dissolve out**
- (C) The thein dissolves out
- (D) Of the defect in the tea leaves
327. Hydrolysis of protein give
- (A)  $\alpha$  – amino acids only                      (B)  $\beta$  – amino acids only
- (C)  $\gamma$  – amino acids only                      (D) Mixture of all
328. Nuclei acids are high molecular weight polymers containing
- (A) Phosphate group
- (B) Pentose sugar + Phosphate group
- (C) Heterocyclic Base + Pentose sugar
- (D) Phosphate group + Pentose sugar + Heterocyclic Base**
329. Where is the strongest muscle of the human body located?
- (A) **Jaw**                      (B) Nose                      (C) Ear                      (D) Neck
330. \_\_\_\_\_ is the storage form of carbohydrate in plants and comprises the primary source of energy in the diet.
- (A) **Starch**                      (B) Glucose                      (C) Glycogen                      (D) Cellulose
331. Which of the following instrument is used to find the depth of Ocean?
- (A) Galvanometer                      (B) Fluxmeter                      (C) Endoscope                      **(D) Fathometer**
332. Which of the following colour rays has the highest wavelength?
- (A) Yellow rays                      **(B) Red rays**                      (C) Green rays                      (D) Blue rays
333. Instrument used for measuring wind speed is
- (A) Thermo meter                      (B) Baro meter                      **(C) Anemo meter**                      (D) Seismo meter
334. The highly resistant bodies produced within the cells of certain gram positive bacteria are
- (A) Granules                      (B) Globules                      **(C) Endospores**                      (D) Plasmid

335. No indicator is suitable for the titration of  
(A) Strong acid Vs strong base (B) Strong acid Vs Weak base  
(C) **Weak acid Vs weak base** (D) Weak acid Vs strong base
336. The increasing order of lattice energy of the following NaF, NaCl, NaBr, NaI is  
(A)  $\text{NaI} > \text{NaBr} > \text{NaCl} > \text{NaF}$  (B)  **$\text{NaI} < \text{NaBr} < \text{NaCl} < \text{NaF}$**   
(C)  $\text{NaF} > \text{NaBr} > \text{NaCl} > \text{NaI}$  (D)  $\text{NaBr} < \text{NaI} < \text{NaF} < \text{NaCl}$
337. How many time the stomach takes to the brain that it is full and that one should stop eating?  
(A) 5 minutes (B) 10 minutes (C) 15 minutes (D) **20 minutes**
338. How many years sun takes to complete one revolution round its galactic centre, called cosmic year?  
(A) 550 million years (B) 450 million years  
(C) 350 million years (D) **250 million years**
339. Fermentation is similar to  
(A) Aerobic respiration (B) **Anaerobic respiration**  
(C) Photosynthesis (D) Transpiration
340. Einstein's photoelectric equation is  
(A)  $h\nu = \frac{1}{2} m v^2$  (B)  $h\nu_0 = h\nu + \frac{1}{2} m v^2$   
(C)  **$h\nu = h\nu_0 + \frac{1}{2} m v^2$**  (D)  $2h\nu = h\nu_0 + m v^2$
341. If the earth stops rotating suddenly, the value of 'g' at a place will be  
(A) **Increase** (B) Decreases (C) Becomes zero (D) Remain unchanged
342. The upper limit of the troposphere is called  
(A) **Tropopause** (B) Stratopause (C) Ozonosphere (D) Exosphere
343. Suppose a planet went around the sun twice as fast as earth. What would be its orbital size as compared to that of the earth?  
(A) **63% that of the earth** (B) 53% that of the earth  
(C) 43% that of the earth (D) 33% that of the earth
344. Which of the following statements about transistor amplifiers are incorrect?



$$\text{I. } \beta = \frac{\alpha}{1-\alpha}$$

$$\text{II. } \frac{1}{\alpha} - \frac{1}{\beta} = 1$$

III. Gain increases with negative feedback

IV. Gain decreases with positive feedback

- (A) I and II                      (B) II and III                      (C) **III and IV**                      (D) II and IV

345. Which of the following is not a 'blue copper protein'?

- (A) Stellacyanin                      (B) **Ferritin**                      (C) Plastocyanin                      (D) Azurin

346. The equivalent conductance of an electrolyte with dilution

- (A) Does not vary  
(B) **Increases till it reaches a limiting value**  
(C) decreases  
(D) First decreases and then increases

347. Which bacterium contains the crystal protein (endotoxin) that kills Lepidoptera insects?

- (A) Xanthomonas campestris                      (B) **Bacillus thuringiensis**  
(C) Pseudomonas syringae                      (D) Bacillus anthracis

348. Carnivorous adaptation of plants mainly compensate for soil that has a relatively low content of

- (A) Potassium                      (B) **Nitrogen**                      (C) Phosphate                      (D) Calcium

349. The Compton shifts ( $\Delta \lambda$ ) in wavelength is given by

- (A)  $\frac{h}{m_0 c} (1 - \cos \theta)$                       (B)  $\frac{h}{m_0 c^2} (1 - \cos \theta)$                       (C)  $\frac{hc}{\lambda} - \frac{hc}{\lambda_0}$                       (D)  $\frac{h}{m_0 c} (1 - \sin \theta)$

350. If we assume, the mass of an electron is  $9 \times 10^{-31}$  kg, the number of electrons required for 1 kg would be

- (A)  $10^{31}$                       (B)  **$10^{30}$**                       (C)  $10^{32}$                       (D)  $10^{29}$

351. What is the study of soil called?

- (A) Pomology                      (B) Phycology                      (C) **Pedology**                      (D) Mycology

352. The first synthetic polymer produced in 1909 is

(A) Rayon (B) Polystyrene (C) **Bakelite** (D) Polyethylene

353. Phosgene is

(A)  $\text{CCl}_4$  (B)  **$\text{COCl}_2$**  (C)  $\text{CS}_2$  (D)  $\text{NOCl}$

354. Match the following types of cancer based on the tissue:

(a) Carcinoma	1. Cancer of the Lymphatic System
(b) Sarcoma	2. Cancer of the white blood cells or bone marrow
(c) Lymphoma	3. Cancer of the bone and soft tissues
(d) Leukemia	4. Cancer of the epithelial cells

	(a)	(b)	(c)	(d)
(A)	2	3	1	4
(B)	3	4	1	2
(C)	4	2	1	3
<b>(D)</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>2</b>

355. The motion of the earth around the sun is a

(A) Linear motion (B) Wave motion  
(C) **Uniform circular motion** (D) Uniform linear motion

356. The concept of elliptical orbits of an electron in an atom was proposed by

(A) J.J. Thomson (B) Rutherford (C) Neil Bohr (D) **Sommerfeld**

357. The absolute zero is the temperature at which

(A) Water freezes  
(B) All substance exist in solid state  
(C) **All the particles in a body would be completely at Rest**  
(D) Water vaporizes

358. In the following compounds,

(i).  $\text{N}_2\text{O}$  (ii)  $\text{NO}$  and (iii)  $\text{N}_2\text{O}_3$

Calculate the ratio of oxygen that combines with 14 gms of nitrogen.

- (A) 3 : 2 : 1                      (B) 1 : 3 : 2                      (C) **1 : 2 : 3**                      (D) 2 : 1 : 3

359. The instrument used to measure the humidity is

- (A) Thermometer      (B) Thermistor      (C) **Hygrometer**      (D) Anemometer

360. Typhoid fever can be confirmed by which of the following test

- (A) **WIDAL test**                      (B) Mantoux test  
(C) Van Den Berg test                      (D) Southern blotting technique

361. Which of the following is taken by athletes to increase their muscle power and efficiency?

- (A) Glucose                      (B) Insulin      (C) **Anabolic steroids**                      (D) Epinephrine

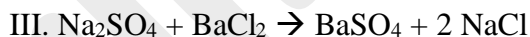
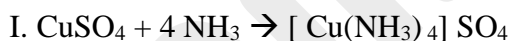
362. Following are the nucleotides and amino acid involved in protein synthesis

- (a) tRNA  
(b) mRNA  
(c) rRNA  
(d) amino acid (Alanine)

(d) DNA

- (A) **e, b, a, d**                      (B) a, b, c, d, e                      (C) a, b, c                      (D) a, d, b, e

363. Which of the following reactions are redox reactions



- (A) I and III                      (B) **II and IV**                      (C) I and IV                      (D) II and III

364. Which one is not an organo phosphorous insectide?

- (A) Diazinon                      (B) Malathion                      (C) **Carbaryl**                      (D) Chlorpyrifos

365. The pH scale runs from a pH of \_\_\_\_\_ to pH of \_\_\_\_\_

- (A) 0, 7                      (B) 1, 14                      (C) 7, 14                      (D) **0, 14**

366. The five kingdom proposed by Whittaker are

- (A) Monera, Protista, Algae, Fungi, Animalia  
 (B) Monera, Protozoa, Fungi, Plantae, Animalia  
 (C) Monera, Protozoa, Bacteria, Plantae, Animalia  
**(D) Monera, Protista, Fungi, Plantae, Animalia**

367. Which of the following is the correct sequence in Kreb's cycle?

- (A) Isocitric acid → Oxalosuccinic acid →  $\alpha$  Ketoglutaric acid  
 (B) Oxalosuccinic acid →  $\alpha$  Ketoglutaric acid → Isocitric acid  
**(C) Isocitric acid →  $\alpha$  Ketoglutaric acid → Oxalosuccinic acid**  
 (D)  $\alpha$  Ketoglutaric acid → Isocitric acid → Oxalosuccinic acid

368. Pick out the correct reasons:

Oil mixed with petrol for two wheelers due to the following reason(s):

- (1) It lubricates the engine parts  
 (2) It remove heat inside two engines  
 (3) It allows for the deposit of carbon on the spark plug
- (A) (1), (2) and (3)                      **(B) (1) and (2) only**  
 (C) (2) and (3) only                      (D) (1) and (3) only

369. Match the following:

- |              |                                   |
|--------------|-----------------------------------|
| (a) Osmium   | 1. Best conductor of electricity  |
| (b) Lithium  | 2. Heaviest metal                 |
| (c) Tungsten | 3. Lightest metal                 |
| (d) Silver   | 4. Highest melting point – 3300°C |

- |            | a        | b        | c        | d        |
|------------|----------|----------|----------|----------|
| (A)        | 1        | 2        | 3        | 4        |
| (B)        | 2        | 1        | 4        | 3        |
| <b>(C)</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>1</b> |
| (D)        | 3        | 4        | 1        | 2        |

370. Match List I with List II correctly:

List I (Solution)	List II (pH value)
(a) Blood	1. 6.5
(b) Urine	2. 7.3 – 7.5
(c) Vinegar	3. 5.5 – 7.5
(d) Milk	4. 2.4 – 3.4

	a	b	c	d
(A)	2	3	4	1
(B)	2	4	1	3
(C)	4	2	3	1
(D)	3	1	4	2

371. Match the following:

#### Deficiency diseases

(a) A	1. Pellagra
(b) B <sub>1</sub>	2. Nictalopia
(c) B <sub>6</sub>	3. Pernecious Anaemia
(d) B <sub>12</sub>	4. Beri Beri

	a	b	c	d
(A)	2	3	1	4
(B)	1	4	2	3
(C)	4	1	3	2
(D)	2	4	1	3

372. Which of the following pairs are incorrect?

I. Chlorofluorocarbons	- Refrigerators
II. Methane	- Ploughing of fields
III. Nitrous oxide	- Enteric fermentation in cows

IV. Carbon dioxide - Burning of fossil fuels

- (A) I and II (B) **II and III** (C) III and IV (D) I and IV

373. The respiratory quotient of glucose in anaerobic respiration is

- (A) One (B) Four (C) **Infinity** (D) Less than one

374. A man sitting in the revolving chair with stretched hands, suddenly bend his hands, the angular velocity

- (A) Decreases (B) **Increases** (C) Zero (D) Constant

375. Which of the following device converts light signals into electrical (or) electronic signals?

- (1) Digital camera (2) Fax machine (3) Optical transmitter

- (A) **(1) and (2) only** (B) (2) and (3) only (C) (1) and (3) only (D) (1), (2) and (3)

376. Which of the following statements is/are wrong?

(1) Light year is a unit of time

(2) Astronomical unit (AU) is a unit of distance

(3) Parsec is a unit of mass

- (A) (2) and (3) (B) (1) and (3) (C) (3) only (D) **(1) only**

377. Identify the incorrect pair:

I. Washing soda -  $\text{Na}_2\text{CO}_3$

II. Bleaching powder -  $\text{CaO}$

III. Plaster of paris -  $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$

IV. Baking soda -  $\text{NaHCO}_3$

- (A) I (B) **II** (C) III (D) IV

378. What are the chemicals present in match stick?

(A) Red phosphorous, glue, sulphur

(B) **Antimony sulphate, sulphur, potassium chlorate**

(C) Antimony sulphide, red phosphorous, glue

(D) Antimony sulphide, phosphorous, sulphur

379. Which group of plants species are lower in number in the plant kingdom?  
(A) Fungi (B) Pteridophyta (C) Bryophytes (D) **Oymnosperms**
380. Which class of algae is used in the manufacture of dynamite?  
(A) Chlorophyceae (B) **Chrysophyceae** (C) Cryptophyceae (D) Pheophyceae
381. Which is an example for chemosynthetic heterotroph?  
(A) **Man** (B) Viscum (C) Nitrosomonas (D) Beggiatoa
382. What is the basic concept of Raman effect?  
(A) Reflection (B) Incoherent scattering (C) **Coherent scattering** (D) Refraction
383. The Epsom salt which is used as laxative is  
(A) **MgSO<sub>4</sub>.7H<sub>2</sub>O** (B) CaSO<sub>4</sub>.2H<sub>2</sub>O (C) ZnSO<sub>4</sub>.7H<sub>2</sub>O (D) CuSO<sub>4</sub>.5H<sub>2</sub>O
384. Which one of the following is the correct composition of Brass?  
(A) Cu-50% ; Sn – 50% (B) **Cu-60% ; Zn – 40%**  
(C) Zn – 70% ; Sn – 30% (D) Fe – 40 % ; Ni – 60%
385. 1 Femto is equal to \_\_\_\_m.  
(A) 10<sup>-6</sup> (B) **10<sup>-15</sup>** (C) 10<sup>-5</sup> (D) 10<sup>-9</sup>
386. What is phototropism?  
(A) Movement of plants towards chemicals (B) **Movements of plants towards light**  
(C) Movement of plants towards soil (D) Response of plants for day length
387. What is the value of gravitational field at the center of the sphere?  
(A) **Zero** (B)  $\frac{Mr}{G}$  (C)  $\frac{GM}{r}$  (D)  $-GM/r^2$
388. Which of the following is sensitive to ultrasonic waves?  
(A) Man (B) **Bat** (C) Bird (D) Fish
389. What happens in the reduction process?  
(A) Loss of electrons (B) **Gain of electrons**  
(C) Loss of hydrogen (D) Gain of oxygen

390. Galena is the ore of which of the following metals?  
(A) Silver                      **(B) Lead**                      (C) Gold                      (D) Iron
391. A preparation of living (or) killed micro-organism (or) viruses used in prevention of diseases through immunization is called  
(A) Toxoid                      **(B) Vaccine**                      (C) Viremia                      (D) Anti – toxin
392. In higher plants the sporophytic phase is formed after growth and development of the zygote. Point out the type of cell division in this growth.  
(A) **Mitosis**                      (B) Meiosis                      (C) Amitosis                      (D) Zygotic meiosis
393. The source of energy in any eco system are  
(A) Osmotrophs                      **(B) Autotrophs**                      (C) Lithotrophs                      (D) Heterotrophs
394. Kuhne's tube can demonstrate the process of  
(A) **Fermentation**                      (B) Germination of seed  
(C) Growth of plants                      (D) Aerobic respiration
395. The Acid Rain destroys the vegetation, because it contains  
(A) Nitrates                      (B) Ozone                      (C) Carbon monoxide                      **(D) Sulphuric acid**