KP - MEDICAL/DENTAL COLLEGES ENTRANCE TEST

ROLL NUMBER: _____ **NAME:** _____

TOTAL TIME: 3 HOURS **TOTAL MARKS: 800**

NOTE: ***THERE ARE 200 QUESTIONS, PRINTED ON 12 PAGES. PLEASE CHECK ALL THE PAGES BEFORE ATTEMPTING THE PAPER.***

1) The number of gram atoms in $3g$ Hydrogen atoms is the same as the number of gram atoms in $48g$ of:
   A) N
   B) C
   C) O
   D) O_2

2) If the required excitation voltage is given, for which element the $x-rays$ spectrum consists of three spectral lines i.e. $K_\alpha\ K_\beta\ L_\alpha$:
   A) Na
   B) $Boron$
   C) K
   D) Ca

3) SiO_2 is the only oxide that reacts with:
   A) HCl_{aq}
   B) KOH_{aq}
   C) Steam
   D) SO_3

4) I am afraid we have not got ____ sugar for making tea.
   A) some
   B) no
   C) any
   D) plenty

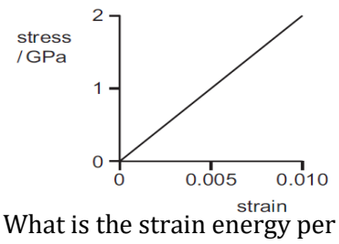
5) Alcoholic fermentation is the sole mean of respiration in:
   A) Saccharomyces
   B) Armillaria
   C) Trichonympha
   D) Balanitidium

6) The edible part of Morchella esculanta is:
   A) Ascocarp
   B) Basidiocarp
   C) Zygocarp
   D) Pseudocarp

7) XO in drosophila result in sterile:
   A) Female
   B) Male
   C) Both (A) & (B)
   D) No effect

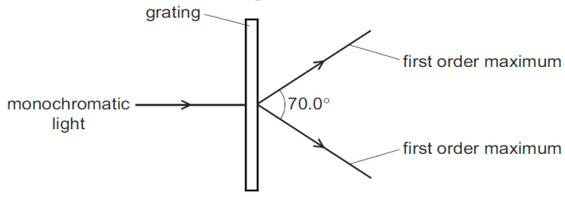
8) A stone is projected vertically upwards from the ground at an initial speed of 15 m s^{-1}. Air resistance is negligible. What is the maximum height reached by the stone?
   A) 0.76 m
   B) 11 m
   C) 23 m
   D) 110 m

9) The stress-strain graph for a metal is shown.



What is the strain energy per unit volume of a rod made from this metal when the strain of the rod is 0.010?
   A) $10\ kJ\ m^{-3}$
   B) $100\ kJ\ m^{-3}$
   C) $1.0\ MJ\ m^{-3}$
   D) $10\ MJ\ m^{-3}$

10) A diffraction grating is used to measure the wavelength of monochromatic light, as shown in the diagram.



The spacing of the slits in the grating is $1.00\ \times\ 10^{-6}m$. The angle between the first order diffraction maxima is 60.0°. What is the wavelength of the light?
   A) $287\ nm$
   B) $470\ nm$
   C) $574\ nm$
   D) $940\ nm$

11) The cation that distort the electron cloud of NO_3^- ion more and facilitates its decomposition is:
   A) Li^+
   B) Mg^{++}
   C) Cs^+
   D) Be^{++}

12) The energy of electron in the first excited state of Hydrogen atom in $J/atom$ is:
   A) 2.8×10^{-18}
   B) 0.545×10^{-18}
   C) $-2 \cdot 18 \times 10^{-18}$
   D) $-1312 \cdot 36$

13) Unhybrid "P" orbitals on linear overlape:
   A) Always form $Pi(\pi)$ bond
   B) Always form $Sigma(a)$ bond
   C) Neither form "a" nor "π" bond
   D) Form more reactive and more unstable "π" bond

14) It's raining cats and dogs. So there are ____ cars on the road today.
   A) few
   B) a few
   C) a big number of
   D) a great deal of

15) Amino acid leucine is coded by how many codons:
A) 1
B) 2
C) 4
D) 6

16) Which of the following is not a fern?
A) Pteris
B) Tmesipeteris
C) Dryopteris
D) Pteridium

17) Umbel of umbels is present in:
A) Hydrocotyl
B) Carrot
C) Iberis
D) Grapes

18) A filament lamp has a resistance of 180 Ω when the current in it is 500 mA. What is the power dissipated in the lamp?
A) 45 W
B) 90 W
C) 290 W
D) 360 W

19) Orange light in a vacuum has a wavelength of 600 nm. What is the frequency of this light?
A) 180 Hz
B) 5.0×10^{5} Hz
C) 1.8×10^{11} Hz
D) 5.0×10^{14} Hz

20) A stationary sound wave has a series of nodes. The distance between the first and the sixth node is 30.0 cm. What is the wavelength of the sound wave?
A) 5.0 cm
B) 6.0 cm
C) 10.0 cm
D) 12.0 cm

21) Whenever Pb shows inert pair effect it always form:
A) Ionic bond
B) Covalent bond
C) Co-ordinate covalent bond
D) Metallic bond

22) In the compound CO_2 and H_2O the hybridization in oxygen is respectively:
A) $Sp^2\ and\ Sp^2$
B) $Sp^2\ and\ Sp^3$
C) $Sp^3\ and\ Sp^3$
D) $Sp^3\ and\ Sp^2$

23) According to M.O theory the number of molecular orbitals in O_2 are:
A) 10
B) 7
C) 8
D) 9

24) I had an unexpected guest today. ___ my old classmate.
A) It was
B) It is
C) He was
D) She was

25) Male having Downs syndrome have sex chromosomes:
A) XXY
B) XY
C) XYY
D) XYYY

26) Darwins finches are found in:
A) New Zealand
B) New Guinae
C) Galapagos island
D) Australia

27) Which of the following is the most economically important plant family?
A) Poaceae
B) Asteraceae
C) Rosaceae
D) Fabaceae

28) In Simple Harmonic Motion the acceleration of the particle is zero when its:
A) Velocity is zero
B) Displacement is zero
C) Both velocity and displacement are zero
D) Both velocity and displacement are maximum

29) A typical mobile phone battery has an e.m.f. of 5.0 V and an internal resistance of 200 mΩ.
What is the terminal P.D. of the battery when it supplies a current of 500 mA?
A) 4.8 V
B) 4.9 V
C) 5.0 V
D) 5.1 V

30) Which combination of up (u) and down (d) quarks forms a neutron?
A) u u u
B) u u d
C) u d d
D) d d

31) Specie with dipole moment equal to zero is:
A) $AlCl_3$
B) CH_4
C) $1,4-Dibromobenzene$
D) All of the above

32) Aqueous KOH causes SN-reaction in alkylhalide. On which of the following alkylhalides KOH_{aq} would like to attack easily.
A) CH_3-CH_2-Cl
B) CH_3-CH_2-Br
C) CH_3-CH_2-F
D) CH_3-CH_2-I

33) Three reactions are given
i. $H_2SO_4 + 2HF \longrightarrow F_2 + SO_2 + 2H_2O$
ii. $H_2SO_4 + 2HBr \longrightarrow Br_2 + SO_2 + 2H_2O$
iii. $H_2SO_4 + 8HI \longrightarrow 4I_2 + H_2S + 4H_2O$
The strongest reducing agent in these reactions is:
A) HI
B) HF
C) HBr
D) All of the above

34) She said, "What a lovely dress it is."
[*Choose the correct indirect speech*:]
A) She exclaimed that it is a lovely dress.
B) She exclaimed that it was a lovely dress.
C) She exclaimed that what a lovely dress it was.
D) She exclaimed what a lovely dress it is.

35) The living phloem, cork and cork cambium is collectively called:
A) Periderm
B) Protoderm
C) Peribleam
D) Bark

36) All of the following acts as cloning vector except
A) BAC
B) YAC
C) Cosmids
D) EcoRI

37) How many sperms are produced from fifty secondary spermatocyte?
A) 200
B) 100
C) 50
D) 150

38) How many cubic nanometers, nm^3, are in a cubic micrometer, μm^3?
A) 10^3
B) 10^6
C) 10^9
D) 10^{12}

39) A man stands in a lift that is accelerating vertically downwards. Which statement describes the force exerted by the man on the floor?
A) It is equal to the weight of the man.
B) It is greater than the force exerted by the floor on the man.
C) It is less than the force exerted by the floor on the man.
D) It is less than the weight of the man.

40) The efficiency of a heat engine working between the freezing point and the boiling point of water is near to:
A) 50%
B) 25%
C) 12.5%
D) 6.25%

41) An unknown gas diffuses 5 times slower than that of H_2. The molecular mass of the unknown gas is:
A) 50
B) 10
C) 15
D) 25

42) Hydrogen bonding in $H-F$ is stronger than H_2O and NH_3. The highest boiling point among the three is of:
A) HF
B) NH_3
C) H_2O
D) All have equal boiling points

43) We have three test tubes having aqueous solutions of $Ca(NO_3)_2$, $Ba(NO_3)_2$ and K_2CO_3 respectively. On addition of $dil\ H_2SO_4$. Which test tube solution turns milky?
A) $Ca(NO_3)_2$ solution
B) $Ba(NO_3)_2$ solution
C) K_2CO_3 solution
D) All turned milky

44) The teacher said, "Amna, watch your steps."
[*Choose the correct indirect speech*:]
A) The teacher ordered Amna that She should watch her steps.
B) The teacher ordered Amna to watch your steps.
C) The teacher ordered Amna to watch her steps.
D) The teacher requested Amna to watch your steps.

45) Which one of the following is a shrub?
A) Parmelia
B) Aster
C) Rhus
D) Banana

46) In nitrogen fixing bacteria, the nitrogenase complex is sensitive to:
A) O_2
B) CO_2
C) NO_2
D) NO_3

47) Over eating psychological disorder is called:
A) Dyspepsia
B) Septecemia
C) Anorexia
D) Bulimia

48) Two railway trucks of masses m and $3m$ move towards each other in opposite directions with speeds $2v$ and v respectively. These trucks collide and stick together. What is the speed of the trucks after the collision?
A) $v/4$
B) $v/2$
C) v
D) $5v/4$

49) A thin horizontal plate of area $0.036\ m^2$ is beneath the surface of a liquid of density $930\ kg\ m^{-3}$. The force on one side of the plate due to the pressure of the liquid is $290\ N$. What is the depth of the plate beneath the surface of the liquid?
A) $0.88\ m$
B) $1.1\ m$
C) $1.8\ m$
D) $8.7\ m$

50) An electron and a proton enter a magnetic field with equal velocities which one of them experiences more force:
A) Electron
B) Proton
C) Both experience same force
D) Cannot be predicted

51) The chelating ligand out of the following is:
A) CH_3COO^-
B) $(CH_2)_2(NH_2)_2$
C) SCN^-
D) NO_2^-

52) Evaporation depends upon:
A) Surface area
B) Temperature
C) Both (A) & (B)
D) None of the above

53) Students were heating $CaCO_3$ in an open container to produce CO_2 gas,
$$CaCO_{3(s)} \longrightarrow CaO_{(s)} + CO_{2(g)}$$
If we increase pressure on this system the:
A) Equilibrium will shift towards right
B) Equilibrium will shift towards left
C) Equilibrium will not be disturbed
D) System does not obey equilibrium rules

54) Saba was sick <u>on the bus</u>.
[*The underlined prepositional phrase functions as a ___ in this sentence*:]
A) Adjunct
B) Disjunct
C) Conjunct
D) Adverbial

55) The first successful surgery of heart was performed by Dr. Ludwig by repairing a wound on which part:
A) Right auricle
B) Right ventricle
C) Left auricle
D) Left ventricle

56) Lignin could not be expected in which part of the plant cell wall:
A) Secondary cell wall
B) Middle lamella
C) Cell membrane
D) Primary cell wall

57) The following statement is true for the absorption spectra of photosynthesis:
A) Chlorophyll a and b have same absorption spectra
B) Chlorophyll a and b have different absorption spectra
C) Chlorophyll a and carotenoids have same absorption spectra
D) Carotenoids and chlorophyll b have same absorption spectra

58) An electromagnetic wave travels in a straight line through a vacuum. The wave has a frequency of 6.0 THz. What is the number of wavelengths in a distance of 1.0 m along the wave?
A) 5.0×10^{-5}
B) 2.0×10^{1}
C) 2.0×10^{4}
D) 5.0×10^{7}

59) What is the magnitude of a point charge which produces an electric field of $2\frac{N}{C}$ at a distance of 60 cm?
A) $8 \times 10^{-11} C$
B) $2 \times 10^{-12} C$
C) $3 \times 10^{-11} C$
D) $6 \times 10^{-10} C$

60) The speed v of a liquid leaving a tube depends on the change in pressure ΔP and the density ρ of the liquid. The speed is given by the equation
$$v = k\left(\frac{\Delta P}{\rho}\right)^n$$
where k is a constant that has no units. What is the value of n?
A) $1/2$
B) 1
C) $3/2$
D) 2

61) The oxidation state of platinum in $[Pt(NH_3)_4(NO_2)Cl]SO_4$ is:
A) III
B) II
C) 0
D) IV

62) The outer electronic configuration of Cu^+ion is $4S^0 3d^{10}$ with this configuration the aqueous solution of copper (I) compound is:
A) Blue
B) Greenish blue
C) Bluish green
D) Colourless

63) For the reaction,
$$CO_{(g)} + \frac{1}{2}O_{2(g)} \longrightarrow CO_{2(g)}$$
A) $K_p > K_c$
B) $K_p < K_c$
C) $K_p = K_c$
D) $K_p \geq K_c$

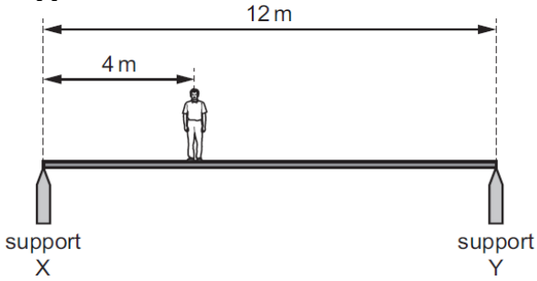
64) <u>Which</u> way shall we go?
[*The underlined word is*:]
A) Demonstrative adjective
B) Interrogative pronoun
C) Interrogative adjective
D) Exclamatory adjective

65) An autoimmune disorders in which stiffness and inflammation of vertebrae occurs is called as:
A) Lupus
B) Scleroderma
C) Ankylosis spondylotis
D) Juvenile dermatomyositis

66) The study of fishes is:
A) Ornithology
B) Ichthyology
C) Herpetology
D) Serpetology

67) Which of the following is absent in $C4$ Plants:
A) Calvin Cycle
B) Bundle Sheath cells
C) Pepco
D) CO_2 Fixation in Mesophyll

68) A uniform horizontal footbridge is 12 m long and weighs 4000 N. It rests on two supports X and Y as shown.



A man of weight 600 N is at a distance of 4 m from support X. What is the upward force on the footbridge from support X?

A) 2200 N
B) 2300 N
C) 2400 N
D) 2600 N

69) A wire of diameter d and length l hangs vertically from a fixed point. The wire is extended by hanging a mass M on its end. The Young modulus of the wire is E. The acceleration of free fall is g. Which equation is used to determine the extension x of the wire?

A) $x = \frac{Ml}{E\pi d^2}$
B) $x = \frac{Mgl}{E\pi d^2}$
C) $x = \frac{2Mgl}{E\pi d^2}$
D) $x = \frac{4Mgl}{E\pi d^2}$

70) A sound wave has a frequency of 2500 Hz and a speed of 1500 $m\ s^{-1}$. What is the shortest distance from a point of maximum pressure in the wave to a point of minimum pressure?

A) 0.15 m
B) 0.30 m
C) 0.60 m
D) 1.20 m

71) Initially one mole each N_2 and O_2 were made to react as,

$N_{2(g)} + O_{2(g)} \underset{}{\overset{2000°C}{\rightleftharpoons}} 2NO_{(g)}$

If at equilibrium $0 \cdot 25$ moles of O_2 is present the equilibrium concentration of NO will be:

A) 0.50 moles
B) 0.125 moles
C) 1.50 moles
D) 1.75 moles

72) The compound of manganese with zero reducing power is:

A) $KMnO_4$
B) MnO_2
C) $MnCl_2$
D) $Mn_2(SO_4)_3$

73) Chemical reactions associated with hydro-carbons is/are:

A) Electrophilic addition
B) Electrophilic substitutions
C) Free radical substitutions
D) All are possible

74) He said to me, "traitor".
[*Choose the correct indirect speech*:]

A) He said to me that I was a traitor.
B) He told me that I have been a traitor.
C) He called me a traitor.
D) He exclaimed with anger that I was a traitor.

75) The stage of plasmodium life cycle not related to human body is:

A) Merozoite
B) Ookinetes
C) Trophozoites
D) Gametozoites

76) In protein synthesis the initiator tRNA carrying amino acid methionine land on which site of ribosome:

A) E site
B) P site
C) A site
D) C site

77) Goblets cells are:

A) Unicellular exocrine gland
B) Unicellular endocrine glands
C) Multicellular exocrine gland
D) Multicellular endocrine glands

78) The instantaneous current in a circuit is given by $I = \sqrt{2}\sin(\omega t + \emptyset)$ ampere what is the rms value of the current?

A) 2 A
B) $\sqrt{2}\ A$
C) 1 A
D) $\frac{1}{\sqrt{2}}\ A$

79) Which list shows electromagnetic waves in order of increasing frequency?

A) radio waves → gamma rays → ultraviolet → infra-red
B) radio waves → infra-red → ultraviolet → gamma rays
C) ultraviolet → gamma rays → radio waves → infra-red
D) ultraviolet → infra-red → radio waves → gamma rays

80) What is the momentum of X −rays having wavelength $0.001nm$?

A) $6.63 \times 10^{-22}\ kg\ m\ s^{-1}$
B) $6.63 \times 10^{-27}\ kg\ m\ s^{-1}$
C) $6.63 \times 10^{-31}\ kg\ m\ s^{-1}$
D) $6.63 \times 10^{-34}\ kg\ m\ s^{-1}$

81) Henderson-Hasselbalch equation is used to calculate the p^H of a buffer solutions. The correct representation of the equation is:

A) $p^{K_a} - log\frac{[Salt]}{[Acid]}$
B) $p^{K_a} \times log\frac{[Acid]}{[Salt]}$
C) $K_a + log\frac{[Salt]}{[Acid]}$
D) $p^{K_a} + log\frac{[Salt]}{[Acid]}$

82) If the p^H of the solution is 9 its OH^-ions concentration is:

A) 10^{-5}
B) 5
C) 10^{-9}
D) 9

83) During the formation of addition polymerization, which smaller molecules you think are eliminated:
A) H_2O
B) HCl
C) NH_3
D) No one is eliminated

84) My mother offered me milk. <u>But for my life</u>, I could not drink it.
[*The underlined expression means*:]
A) However hard I may try
B) Because of my life
C) For the sake of my life
D) During my life

85) Which process of cell division is involved in gametes formation in *Funaria*:
A) Mitosis
B) Meiosis
C) Amitosis
D) Binary Fission

86) Closed vascular system is the characteristic of:
A) Lycopsida
B) Sphenopsida
C) Dicot
D) Monocot

87) Common name of the *Loligo pealeii* is:
A) Squid
B) Laligo
C) Slug
D) Oyster

88) The maximum energy of the electrons released in photocell is independent of:
A) Frequency of incident light
B) Intensity of incident light
C) Nature of cathode surface
D) Wavelength of light

89) A mass m is suspended from a spring of spring constant k. The angular frequency of oscillations of the spring is:
A) $\frac{k}{m}$
B) $\sqrt{\left[\frac{k}{m}\right]}$
C) $\frac{m}{k}$
D) $\sqrt{\left[\frac{m}{k}\right]}$

90) Which expression using SI base units is equivalent to the volt?
A) $kg\ m^2\ s^{-1}A^{-1}$
B) $kg\ m\ s^{-2}\ A$
C) $kg\ m^2\ s^{-1}\ A$
D) $kg\ m^2\ s^{-3}A^{-1}$

91) If the overlap of Sp^3 hybrid orbitals in carbon atoms is smaller the bond so formed is:
A) Weak
B) Strong
C) Less energetic
D) More stable

92) The minimum energy below which no reaction occur in reactants molecules is:
A) Average $K.E$ of the molecules
B) Potential energy of the molecules
C) Free energy of the molecules
D) Activation energy of the molecules

93) Reactants in a transition state:
A) Always change to product
B) Return back to reactants
C) May return to reactants or proceeds to form products
D) Are of low energy

94) Out of the following indicate the matching item for PUPPIES.
A) School
B) Litter
C) Covey
D) Group

95) Tornaria larva resembles with:
A) Bipinnaria larva
B) Trochopore larva
C) Glochidium larva
D) Instar larva

96) *Taxus baccata* is the botanical name of:
A) Fever tree
B) Deadly nightshade
C) English Yew
D) Daffodils

97) Venous flower basket belong to which group of organisms:
A) Angiosperms
B) Sponges
C) Marine Algae
D) Fungus like protists

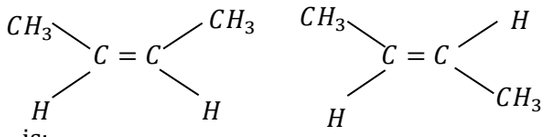
98) On a planet, a vertically-launched projectile takes 12.5 s to return to its starting position. The projectile gains a maximum height of 170 m. The planet does not have an atmosphere. What is the acceleration of free fall on this planet?
A) $2.2\ m\ s^{-2}$
B) $8.7\ m\ s^{-2}$
C) $27\ m\ s^{-2}$
D) $54\ m\ s^{-2}$

99) The ionization potential of a hydrogen atom is $13.6V$ what will be the energy of the electron in the second orbit?
A) $-10.2\ eV$
B) $-3.40\ eV$
C) $+3.40\ eV$
D) $-1.51\ eV$

100) A man has a mass of 80 kg. He ties himself to one end of a rope which passes over a single fixed pulley. He pulls on the other end of the rope to lift himself up at an average speed of 50 $cm\ s^{-1}$. What is the average useful power at which he is working?
A) 40 W
B) 0.39 kW
C) 4.0 kW
D) 39 kW

101) Compound in which addition takes place through Markovnikov's rule is:
A) $CH_3 - CH = CH - CH_3$
B) $CH_3 - C(CH_3) = CH - CH_3$
C) $C_2H_5 - CH = CH - CH_3$
D) $CH_3 - CH = CH - C_3H_7$

102) The type of isomerism present in the compound given,



is:
A) Structural
B) Optical
C) Stereo
D) None of the above

103) The main difference between catalysts and enzymes is:
A) Enzymes are sharp in action than catalyst
B) Catalysts used in large amount than enzymes
C) Catalysts are inorganic while enzymes are organic in nature
D) Enzymes need p^H while catalysts do not

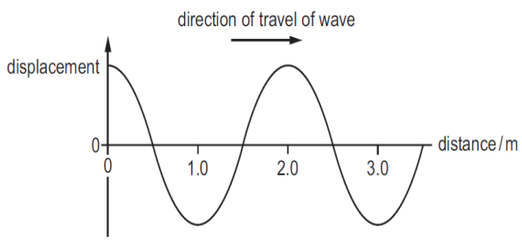
104) Choose the related word for *Broom* on the analogy of Water : Splash.
A) Whisper
B) Gush
C) Swish
D) Screech

105) The first hormone to be discovered was:
A) Secretin
B) Testosterone
C) Insulin
D) Thyroxin

106) For defense against virus attack, body produces:
A) Antibodies
B) Histamines
C) Antigens
D) Interferons

107) Short life cycle is a plant adaptation to survive in:
A) High temperature
B) Low temperature
C) High soil pH
D) Low soil pH

108) A transverse wave travels along a rope. The graph shows the variation of the displacement of the particles in the rope with distance along it at a particular instant.



At which distance along the rope do the particles have maximum upwards velocity?
A) 0.5 m
B) 1.0 m
C) 1.5 m
D) 2.0 m

109) Which of the following will be a better shield against γ-rays?
A) Ordinary water
B) Heavy water
C) Lead
D) Aluminum

110) In a uniform electric field, which statement is correct?
A) All charged particles experience the same force.
B) All charged particles move with the same velocity.
C) All electric field lines are directed towards positive charges.
D) All electric field lines are parallel.

111) During the formation of aqueous solution of any electrolyte:
A) Heat is evolved
B) Heat is absorbed
C) Heat may evolved or absorbed
D) Electrolyte do not dissolve in water

112) The compound with more than 10% solubility in pure water is:
A) $MgCO_3$
B) $Al_2(CO_3)_3$
C) K_2CO_3
D) $ZnCO_3$

113) The mass of $NaOH$ needed to prepare 0.2 molal solution in $500g$ pure water at 4°C is:
A) $0.4g$
B) $4.0g$
C) $1.5g$
D) $1.0g$

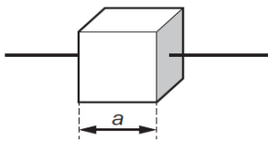
114) Choose the related word for *Rat* on the analogy of Elephant : Stride.
A) Scamper
B) Loiter
C) Whimper
D) Gallop

115) Baroceptors are the sensors in body responsible for determination of:
A) Blood Glucose
B) Blood Ammonia
C) Blood pH
D) Blood flow

116) Which one of the following is not a draught animal?
A) Buffalo
B) Mule
C) Elephant
D) Yak

117) Which of the following is not isotonic to sea water?
A) Myxine
B) Skates
C) Sharks
D) Teleost

118) A metal cube with sides of length "a" has electrical resistance R between opposite faces.



What is the resistance between the opposite faces of a cube of the same metal with sides of length $3a$?

A) $9R$
B) $3R$
C) $R/3$
D) $R/9$

119) Which particle is a fundamental particle?

A) Electron
B) Hadron
C) Neutron
D) Proton

120) The nuclear equation shown has a term missing.

$$^{14}_{6}C \rightarrow {}^{14}_{7}N + {}^{0}_{-1}\beta + \ldots\ldots\ldots.$$

What is represented by the missing term?

A) An antineutrino
B) An electron
C) A neutrino
D) A positron

121) The Fridel crafts catalyst "$AlCl_3$" used in the substitution reactions of Benzene is a good:

A) Electrophile
B) Lewis acid
C) Electron deficient specie
D) Bear all properties

122) The most reactive compound out of the following is:

A) Ortho hydroxy toluene
B) Ortho chloro ethyl benzene
C) Phenol
D) Para ethyl benzoic acid

123) Addition of soluble impurities into a liquid and solid respectively causes:

A) Increase in boiling point of liquid and decrease in melting point of solid
B) Increase in both boiling and melting points
C) Decrease in boiling point of liquid and increase in melting point of solid
D) Decrease in both boiling and melting points

124) Which of the following is correct in all respects?

A) I have done matric in 2010.
B) This is an utensil.
C) The population of the world rises.
D) This is the best peach producing valley.

125) Which of the following is not the part of first line of defense?

A) Sebum
B) Perspiration
C) Interferon
D) Epidermis

126) Which one of the following is not an insect?

A) Ticks
B) Honey bee
C) Beetle
D) Wasp

127) A condition called Goose pimples, are caused by:

A) Overcooled body
B) Bacteria
C) Environmental changes
D) Pollution

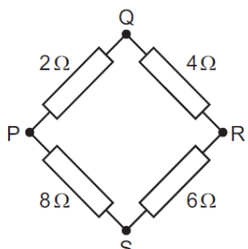
128) Two wave sources are oscillating in phase. Each source produces a wave of wavelength λ. The two waves from the sources meet at point X with a phase difference of 90°.What is a possible difference in the distances from the two wave sources to point X?

A) $\lambda/8$
B) $\lambda/4$
C) $\lambda/2$
D) λ

129) The activity of a certain nuclide is governed by the relation $\frac{\Delta N}{\Delta t} = -\lambda N$ where $\lambda = 2.4 \times 10^{-8}\ s^{-1}$ what is the half-life of the nuclide?

A) $2.9 \times 10^{7} s$
B) $1.3 \times 10^{7} s$
C) $1.2 \times 10^{-8}\ s$
D) $3.4 \times 10^{-8}\ s$

130) Four resistors are connected in a square as shown.



The resistance may be measured between any two junctions. Between which two junctions is the measured resistance greatest?

A) P and Q
B) Q and S
C) R and S
D) S and P

131) The elevation in boiling point ΔT_b is equal to ebullioscopic constant K_b when the Molarity (M) of the solution is:

A) $0.1m$
B) $1.0m$
C) $10.0m$
D) Statement is wrong

132) $OH^- + C_2H_5 - I \longrightarrow C_2H_5 - OH + I^-$
One of the specie in the above reaction is a substrate. It is:

A) OH^-
B) $CH_3 - CH_2 - OH$
C) I^-
D) $CH_3 - CH_2 - I$

133) Cyclic alkanes with greater angle strain are always:
A) More stable
B) Less energetic
C) More reactive
D) Obey the general formula of normal alkanes

134) Which one of the following is opposite in meaning to the word SYMPATHY?
A) Apathy
B) Pathos
C) Empathy
D) Jealousy

135) Piriformis syndrome is associated with which of the following disorder:
A) Arthritis
B) Sciatica
C) Spondylosis
D) Disc slip

136) Which one of the following is not an exclusive trait of arthropoda?
A) Presence of wings
B) Jointed appendages
C) Haemocoel
D) Chitinous exoskeleton

137) Locomotary organ in leech is called?
A) Setae
B) Chatae
C) Parapodia
D) None of the above

138) The power loss P in a resistor is calculated using the formula.

$$P = \frac{V^2}{R}$$

The uncertainty in the potential difference V is 3% and the uncertainty in the resistance R is 2%. What is the uncertainty in P?
A) 4%
B) 7%
C) 8%
D) 11%

139) A quantity x is to be determined from the equation, $x = P - Q$. P is measured as $(1.27 \pm 0.02)\, m$ and Q is measured as $(0.83 \pm 0.01)\, m$. What is the percentage uncertainty in x to one significant figure?
A) 0.4 %
B) 2 %
C) 3 %
D) 7 %

140) The number of electrons in one coulomb of charge are:
A) 6.25×10^{21}
B) 1.6×10^{19}
C) 6.25×10^{18}
D) 9.1×10^{31}

141) Students were decomposing $CaCO_3$ placed in a China dish by heating using burner in the laboratory. The "system" in this experiment is:
A) China dish
B) Burner
C) Laboratory
D) $CaCO_3$

142) The process that can both be endothermic and exothermic out of the following is:
A) Formation
B) Crystallization
C) Bond breaking
D) Condensation

143) The amine which is more reactive towards HI is:
A) Diethyl methyl amine
B) Dimethyl amine
C) Methyl propyl amine
D) Butyl amine

144) He said, "What is the matter"?
[*Choose the correct indirect speech*:]
A) He said what the matter was.
B) He asked what the matter was.
C) He enquired that what was the matter.
D) He asked that what the matter had been.

145) The number of Hyoid bone in human skull region is:
A) 1
B) 6
C) 22
D) 206

146) Which factor is not involved in release of Oxytocin in females:
A) Stretching of uterus
B) Stretching of Cervix
C) Low level of testosterone
D) Low level of progesterone

147) Chymotrypsin acts upon:
A) Starch in duodenum
B) Proteins in stomach
C) Proteins in duodenum in acidic medium
D) Proteins in duodenum in alkaline medium

148) Which of the following series lie in the visible region?
A) Lyman
B) Paschen
C) Balmer
D) Pfund

149) Two springs of spring constant $K_1$and K_2 are arranged in parallel and a body of mass m is attached to it then calculate the time period of the system:
A) $2\pi\sqrt{\frac{m}{K_1+K_2}}$
B) $2\pi\sqrt{\frac{2m}{K_1+K_2}}$
C) $2\pi\sqrt{\frac{mK_1K_2}{K_1+K_2}}$
D) $2\pi\sqrt{\frac{K_1+K_2}{m}}$

150) To determine the resistance of a voltmeter by discharging a capacitor through it, the instantaneous voltage is then given by the relation:
A) $V_o e^{-t/RC}$
B) $V_o e^{t/RC}$
C) $V_o/2$
D) $V_o/\sqrt{2}$

151) The alcohol given $CH_3 - CH_2 - C(CH_3)_2 - OH$. If oxidized with a strong oxidizing agent given:
A) Aldehyde
B) Ketone
C) Ether
D) None of the above

152) The amount of heat required to raise the temperature of 10 moles of water from $70K$ to $80K$ (molar heat capacity of water $75.24J$) is:
A) $0.7524J$
B) $7524J$
C) $95.24J$
D) $752.4J$

153) The aqueous solution of which of the following electrolyte will conduct electric current to large extent:
A) $Mg(OH)_2$
B) H_2CO_3
C) NH_4Cl
D) NH_4OH

154) You are called names by him.
[*Choose the correct voice*:]
A) He is calling you names
B) He calls you names
C) He called you names
D) You are being called names by him

155) In E.C.G QRS complex represent:
A) Atrial systole
B) Arial diastole
C) Ventricle systole
D) Ventricle diastole

156) The common name of rubella is:
A) Whooping cough
B) German measles
C) African sleeping Sickness
D) Tay Sach's Disease

157) A heterozygote fruit fly has more florescent pigments in their eyes than a wild homozygote fruit fly, this is an example of:
A) Co-dominance
B) Incomplete dominance
C) Over dominance
D) Complete dominance

158) To determine Young's modulus of a material of a given wire of length L we use:
A) Melde's Apparatus
B) Young's Apparatus
C) Searle's Apparatus
D) Cavendish Apparatus

159) An electron is projected horizontally from south to north in uniform horizontal magnetic field acting from west to east. The direction along which it will be deflected is:
A) Northwards
B) Southwards
C) Vertically upwards
D) Vertically downwards

160) When we are measuring the internal resistance of a cell by potentiometer, the emf of the battery must be greater than the:
A) emf of the cell
B) P.D in the circuit
C) Current in the cell
D) Current in the circuit

161) Upon hydrolysis compound "X" in the presence of $NaOH$ we get C_2H_5OH
$$CH_3 - \overset{\overset{O}{||}}{C} - O^-Na^+$$
.Compound "X" is:
A) $C_2H_5 - CH_2 - OH$
B) $CH_3 - \overset{\overset{O}{||}}{C} - OH$
C) $CH_3 - \overset{\overset{O}{||}}{C} - O - C_2H_5$
D) $C_2H_5 - \overset{\overset{O}{||}}{C} - O - CH_3$

162) The compound which you think is not the derivative of acetic acid is:
A) $CH_3 - \overset{\overset{O}{||}}{C} - Cl$
B) $CH_3 - CO - O - CO - CH_3$
C) $CH_3 - \overset{\overset{O}{||}}{C} - NH_2$
D) None of the above

163) The reducing agent in the reaction given, $KMnO_4 + KI + H_2SO_4 \longrightarrow MnSO_4 + K_2SO_4 + I_2 + H_2O$ is:
A) $KMnO_4$
B) KI
C) H_2SO_4
D) KI and H_2SO_4 both

164) Don't poke your nose ___ my affairs.
A) in
B) on
C) into
D) by

165) A vein differs from an artery in having:
A) Strong muscular walls
B) Narrow lumen
C) Valves control direction of blood flow opposite to heart
D) Valves control direction of blood flow towards heart

166) Expiratory centre in medulla is:
A) Dorsal
B) Ventral
C) Lower part
D) All of the above

167) Polyploidy is more common in:
A) Plants
B) Animals
C) Bacteria
D) Virus

168) The young's modulus of a given rod of uniform length L is given by the relation:
A) FL/A
B) FA/L
C) $FL/\pi r^2 l$
D) $Fl/\pi r^2 L$

169) The inward and outward electric flux from a closed surface are respectively 8×10^3 units and 4×10^3 units then the net charge inside the closed surface is:
A) $\frac{-4\times10^3}{\epsilon_0}\ coulomb$
B) $-4 \times 10^3 \epsilon_0\ coulomb$
C) $\frac{4\times10^3}{\epsilon_0}\ coulomb$
D) $4 \times 10^3\ coulomb$

170) A radioactive isotope has a half-life of 3 days. The time after which its activity is reduced to 6.25% of its original activity is:
A) 6 days
B) 8 days
C) 12 days
D) 16 days

171) Students calculated the cell voltage for the reaction,
$$Br_2 + 2NaCl \longrightarrow 2NaBr + Cl_2$$
through the formula $E^{\circ}_{cell} = E^{\circ}_{red} + E^{\circ}_{oxd}$ the answer was negative. It means that:
A) The reaction is non spontaneous and feasible
B) The reaction is non spontaneous and not feasible
C) The reaction is spontaneous and feasible
D) The reaction is spontaneous and not feasible

172) The non-carbonyl compound out of the following is:
A) $CH_3 - \underset{\underset{|}{OH}}{CO} - CH_3$
B) $C_2H_5 - \underset{\underset{|}{NH_2}}{CH} - CH_3$
C) $CH_3 - \underset{\underset{|}{OR}}{C} = O$
D) $CH_3 - C = O$

173) The empirical formula of the compound was found to be CH_2O. If the molar mass of the compound is $150 g/mol$. The molecular formula of the compound is:
A) $C_6H_{12}O_6$
B) $C_4H_8O_2$
C) $C_5H_{10}O_4$
D) $C_5H_{10}O_5$

174) 'Enlarge upon' means:
A) Explain in more detail
B) To make taller
C) To become large
D) To measure

175) The first stage in development of Xerosere is appearance of:
A) Foliose lichens
B) Crustose lichens
C) Fruticose lichens
D) Climax stage

176) Mg^{++} and Ca^{++} are excreted in fishes through:
A) Kidney
B) Gills
C) Skin
D) All of the above

177) Vomit centre is located in:
A) Pons
B) Mid brain
C) Cerebellum
D) Medulla

178) There are two charges $+3\mu C$ and $+8\mu C$ the ratio of the force acting on them will be:
A) $3:1$
B) $1:1$
C) $11:8$
D) $3:8$

179) Two radioactive samples S_1 and S_2 have half-lives 3 hours and 7 hours respectively. If they have the same activity at certain instant t, what is the ratio of the number of atoms of S_1 to S_2 at instant t?
A) 9: 49
B) 49: 9
C) 3: 7
D) 7: 3

180) The reciprocal of the conductance is called:
A) Conductivity
B) Resistivity
C) Resistance
D) Inductance

181) The volume of CO_2 produced by heating $33.5g\ Li_2CO_3$ at room temperature and pressure is ($Mr\ Li_2CO_3 = 67g/mol$):
A) $22.4\ dm^3$
B) $12.0\ dm^3$
C) $11.2\ dm^3$
D) $24.0\ dm^3$

182) The equation used to describe the behavior of ideal gases under standard conditions is:
A) $PV = nRT$
B) $PM = dRT$
C) $PVM = mRT$
D) All of the above

183) The nuclei you think is invisible in NMR spectroscopy is:
A) N^{14}
B) P^{31}
C) Cl^{35}
D) C^{13}

184) 'To the letter' means:
A) Cursory
B) Enveloping a letter
C) Precisely
D) Reporting a problem

185) Which of the following is a summer variety:
A) Figs
B) Cabbages
C) Oranges
D) Pears

186) The amount of methane in Biogas is approximately:
A) 10-30 %
B) 50-90%
C) 50-75%
D) 60-75%

187) Depolarization of neuron is characterized by:
A) Na^+ into the axon and K^+ out of the axon
B) K^+ into the axon and Na^+ out of the axon
C) Na^+ and K^+ within the axon toward the axon terminal
D) None of the above

188) Doubly ionized atoms X and Y of two different elements are accelerated through the same P.D. on entering a uniform magnetic field they describe circular paths of radii R_1 and R_2. The masses of X and Y are in the ratio of:
A) $R_1 : R_2$
B) $R_2 : R_1$
C) $R_1^2 : R_2^2$
D) $R_2^2 : R_1^2$

189) The rest mass of Photon is m_o. Its linear momentum, when it moves with the speed equal to half of the speed of light in space, will be:
A) $3m_oc/4$
B) $2m_oc/4$
C) $m_oc/\sqrt{3}$
D) $2m_oc/\sqrt{3}$

190) The charge on the electron and proton is reduced to half. If the present value of Rydberg constant is R, then the new value of Rydberg constant will be:
A) $R/2$
B) $R/4$
C) $R/8$
D) $R/16$

191) By the absorption of visible light, which of the following compounds gives smogy air its brown tint?
A) NO
B) SO_3
C) NO_3^-
D) NO_2

192) Regarding reactivity of the compounds having carbonyl group. The most reactive compound out of the following is:
A) $CH_3 - CH_2 - \overset{\overset{O}{\|}}{C} - CH_3$
B) $C_2H_5 - \overset{\overset{O}{\|}}{C} - OH$
C) $CH_3 - \overset{\overset{O}{\|}}{C} - H$
D) $CH_3 - \overset{\overset{O}{\|}}{C} - OH$

193) Whenever nitrile group is hydrolysed ($dil\ HCl$) with water it always produces:
A) Alcohol
B) Carboxylic acid
C) Amines
D) Amides

194) A person who leaves his country and settles in another country is called:
A) Emigrant
B) Immigrant
C) Migrant
D) Aborigine

195) The center of porphyrine in the head region of hemoglobin is occupied by:
A) Potassium
B) Sodium
C) Magnesium
D) Iron

196) Syphilis is caused by:
A) Treponema pallidum
B) Helicobacter spp
C) Neisseria spp
D) Bacteroides spp

197) The organism developed with two heads and one trunk is called:
A) Identical twins
B) Dizygotic twins
C) Fraternal twins
D) Siamese twins

198) The paratrooper of mass 80 kg descends vertically at a constant velocity of 3 $m\ s^{-1}$ taking the acceleration of free fall as 10 $m\ s^{-2}$. Find out what is the net force acting on him?
A) Zero
B) 8.00 N upward
C) 8.00 N downward
D) 240 N downward

199) The dimensional formula for change in momentum is same as that for:
A) Force
B) Impulse
C) Acceleration
D) Velocity

200) What is NOT true of 2 forces that give rise to a couple?
A) They act in opposite directions
B) They both act at the same point
C) They both act on the same body
D) They both have the same magnitude

THE END