UG-2010

Admission Ticket No.	Question Booklet Version Code	Question Booklet Sr. No.
	D	2020
MR Serial Number	*(Write this Code on your OMR Answer sheet)*	*(Write this Number on your OMR Answer sheet)*

Candidates Kindly Note

There are totally **180 questions** in this booklet. This Question Booklet contains **28 pages.**

Before commencing the examination, please verify that all pages are printed correctly. If not, please draw the attention of your room invigilator for further assistance.

The question paper and OMR (Optical Mark Reader) Answer Sheet are issued separately at the start of the examination.

Please ensure to fill in the following on your OMR answer sheet in the relevant boxes:

1. Name
2. Question Booklet Version Code
3. Question Booklet Serial Number
4. Test Admission Ticket Number

Kindly sign on your OMR answer sheet, only in the presence of the invigilator and obtain his/her signature on your OMR answer sheet.

Candidate should carefully read this instruction printed on the Question Booklet and OMR Answer sheet and make correct entries on the Answer Sheet. As Answer Sheet is designed for **OPTICAL MARK READER (OMR) SYSTEM,** special care should be taken to mark the entries accurately.

Special care should be taken to fill your **QUESTION BOOKLET VERSION CODE** and **Serial No.** and **TEST ADMISSION TICKET No**. accurately. The correctness of entries has to be cross-checked by the invigilators.

Choice and sequence for attempting questions will be as per the convenience of the candidate.

Each correct answer is awarded one mark.

There will be no Negative marking.

No mark/s will be awarded for multiple marking (marking multiple responses) of any question.

Kindly **DO NOT** make any stray marks on the OMR answer sheet.

Fill the appropriate circle completely like this ● for answering the particular question with **BLACK/BLUE BALL POINT PEN** only. **USE OF PENCIL FOR MARKING IS PROHIBITED.**

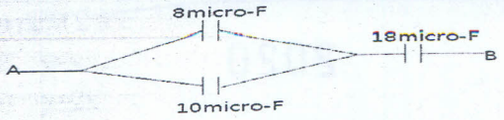
On the OMR answer sheet use of whitener or any other material to erase/hide the circle once filled is not permitted.

THINK BEFORE YOU INK.

Any calculation / rough work needs to be done only in the space provided at the bottom of each page of the question paper.

Immediately after the prescribed examination time is over, the OMR sheet is to be returned to the invigilator after ensuring that both the candidate and the invigilator have signed.

1. The effective value of the capacitance of the capacitors shown in figure in μF is



a) 34
b) 8
c) 9
d) 36

2. Insulation property of air breaks down at $E = 3 \times 10^6$ V/m. The maximum charge that can be given to a conducting sphere of diameter 0.12m is
a) 1.2 μC
b) 12 μC
c) 120 μC
d) 12 nC

3. When n identical resistors each of resistance r is connected in series effective resistance is R. When the same resistances are in parallel, effective resistance of combination is
a) r^2R
b) n^2R
c) $\frac{R^2}{r}$
d) $\frac{r^2}{R}$

4. How many electrons flowing per second constitute a current of 1.6 ampere?
a) 1.6×10^8
b) 1.6×10^{-19}
c) 10^{19}
d) 10^{20}

5. With usual notation the Kirchoff's laws are presented as
a) $\Sigma I=1, \Sigma IR=0$
b) $\Sigma IR= \Sigma E, \Sigma I=1$
c) $\Sigma I=0, \Sigma IR= \Sigma E$
d) $\Sigma IR=0, \Sigma I=0$

6. The path of a charged particle moving perpendicular to a uniform strong magnetic field is
a) a parabola
b) a hyperbola
c) a circle
d) helix

Space for calculation / rough work

7. Fraunhofer lines in the solar spectrum can be explained by
   a) Stefan's law
   b) Planck's law
   c) Kirchoff's law
   d) Newton's law

8. If I and 4I are the intensities of two interfering waves, intensity at the region of destructive interference is
   a) I
   b) Zero
   c) 3I
   d) 4I

9. The transverse nature of light is established by
   a) Refraction
   b) Interference
   c) Diffraction
   d) Polarisation

10. The diameter of the dark Newton's rings are
    a) Proportional to square root of odd number
    b) Proportional to the square of odd number
    c) Inversely proportional to the natural numbers
    d) Proportional to the square root of natural numbers

11. Resolving power of optical instruments is limited -because of
    a) interference
    b) diffraction
    c) polarisation
    d) scattering

12. A machine gun fires a bullet of mass 50gm at a speed of 1000 m/s. If the shooter can exert an average force of 200 N against the gun, the maximum number of bullets he can fire per minute will be
    a) 240
    b) 120
    c) 60
    d) 30

13. Acceleration due to gravity is greater
    a) on the equator of the earth
    b) on the poles of the earth
    c) on the peak of the mountain
    d) inside a deep mine of the earth

Space for calculation / rough work

14. A particle starting from rest and moving with constant acceleration covers a distance x in first 2 sec and distance y in next 2 sec, then
    a) y=x
    b) y=2x
    c) y=3x
    d) y=4x

15. Which one of the following is the most elastic?
    a) Steel
    b) Rubber
    c) Gold
    d) Copper

16. Liquid crystalline phase used in liquid crystal thermometer is
    a) nematic
    b) smectic
    c) cholesteric
    d) lyotropic

17. The magnetic moment per unit volume is called
    a) Magnetic flux
    b) Intensity of magnetization
    c) Magnetic induction
    d) Magnetic field

18. In a series resonant circuit, whole supply voltage of 50V appears across resistor. Voltage across the inductor is 80V. Voltage across the capacitor is
    a) zero
    b) 40V
    c) 50V
    d) 80V

19. As the resistance in series resonant circuit increases,
    (i) resonant frequency remains constant,
    (ii) band width decreases
    a) both (i) and (ii) are correct
    b) only (i) is correct
    c) both (i) and (ii) are wrong
    d) only (ii) is correct

20. Physical quantity which cannot be changed using a transformer is
    a) current
    b) power
    c) voltage
    d) frequency

Space for calculation / rough work

21. Stopping potential of photoelectrons from a metal is maximum when incident radiation lie in
    a) Visible region
    b) U-V region
    c) IR region
    d) X-ray region

22. In the nucleus of a heavy atom, the particles present are
    a) Proton and electron
    b) Proton and neutron
    c) Electron and neutron
    d) Protons, neutrons and electrons

23. Planck's constant has the unit of
    a) energy
    b) linear momentum
    c) power
    d) angular momentum

24. The material having negative temperature co-efficient of resistance is
    a) Copper
    b) Aluminium
    c) Silicon
    d) Mercury

25. The magnetic force acting on a charged particle moving perpendicular to the magnetic field will be
    a) parallel to the field
    b) in the direction of motion
    c) zero
    d) perpendicular to both magnetic field and direction of motion of the particle.

26. A high resistance of 19.9 k ? is connected in series with a galvanometer of resistance 100 ?. Current for full scale deflection is 10 mA. Maximum voltage that can be measured using this voltmeter is
    a) 100V
    b) 150V
    c) 200V
    d) 250V

27. When no load is connected across a cell, p.d between its terminals is E. The potential drop across its terminal when a resistance R= r (where 'r' is the internal resistance) is connected is
    a) 2E
    b) E/2
    c) E/4
    d) E/3

Space for calculation / rough work

28. With increase in temperature, the probability of electron colliding with lattice ion, in a conductor
    a) does not change
    b) becomes zero
    c) decreases
    d) increases

29. An emf of 5V is induced in a coil, when current through it drops from 5A to zero in one milli second. Self inductance of the coil is
    a) 5mH
    b) 10mH
    c) 1mH
    d) 0.1mH

30. Light rays from a sodium lamp are incident normally on one side of a glass prism and emerge out grazing other surface. The angle of prism is 45^0, Refractive index of prism material is
    a) 1.6
    b) 1.8
    c) 1.4
    d) 1.2

31. For a swimmer under water, viewing obliquely, a coach standing on the bank of a lake, appears as
    a) slightly shorter
    b) slightly taller
    c) of same height
    d) half the original height

32. Two thin convex lenses of focal lengths f_1 and f_2 are kept co-axially spearated by a distance x. A parallel beam incident on this combination emerges out as a parallel beam. Then x is
    a) $(f_1 + f_2)$
    b) $(f_1 \sim f_2)$
    c) $(f_1 f_2)/(f_1 + f_2)$
    d) $(f_1 f_2)/(f_1 - f_2)$

33. Brewster's angle depends on
    (i) nature of reflecting surface
    (ii) wavelength of incident light
    a) only (i) is correct
    b) only (ii) is correct
    c) both (i) and (ii) are correct
    d) both (i) and (ii) are wrong

Space for calculation / rough work

34. An air bubble in water shines well because of
    a) Dispersion of light
    b) Reflection of light
    c) Refraction of light
    d) Total internal reflection

35. A logic gate whose output will be in logic 1 state only when the two inputs are dissimilar is
    a) OR gate
    b) NOR gate
    c) NAND gate
    d) XOR gate

36. The only particle in the Baryonic group which is quite stable is
    a) neutron
    b) Xi particle
    c) omega particle
    d) proton

37. Which of the following series is found in the visible region?
    a) Lyman
    b) Balmer
    c) Paschen
    d) Pfund

38. The ratio of the half-life T of a radioactive sample to its mean life 'τ' is
    a) 0.693
    b) 1
    c) 1.44
    d) 1.386

39. In case of Ge doped with As, at room temperature, n_e=number of electrons, n_h =number of holes.
    a) $n_e = n_h$
    b) $n_e > n_h$
    c) $n_e < n_h$
    d) $n_e >< n_h$ depending on room temperature

40. If 'h' is Planck's constant, the momentum of a photon of wavelength 0.01 Å in terms of Planck's constant 'h'
    a) 10^{-2}
    b) 10^{10}
    c) 10^{2}
    d) 10^{12}

Space for calculation / rough work

41. The radius of the first Bohr orbit in case of H is 0.52 Å. The radius of second orbit in case of He^+
    a) 0.52 Å
    b) 1.04 Å
    c) 2.08 Å
    d) 0.26 Å

42. When cathode rays are stopped by metals of high atomic number
    a) Protons are generated
    b) γ-rays are produced
    c) Neutrons are generated
    d) X-rays are produced

43. In semiconductor laser diode population inversion is for
    a) Electrons
    b) Semiconductor atoms
    c) Donor impurity atoms
    d) Acceptor impurity atoms

44. Size of an electron orbit in an atom is largely dependant on the
    a) Principal quantum number
    b) Angular momentum quantum number
    c) Spin quantum number
    d) Magnetic quantum number

45. A decrease in wavelength due to scattering is observed only in
    a) Rayleigh scattering
    b) Mie scattering
    c) Raman scattering
    d) Fluorescence

46. A candle flame gives
    a) continuous emission spectrum
    b) line emission spectrum
    c) line absorption spectrum
    d) band spectrum

47. One kilo mole of a substance contains
    a) 1.38×10^{23} molecules
    b) 6.25×10^{34} molecules
    c) 6.023×10^{23} molecules
    d) 6.023×10^{26} molecules

Space for calculation / rough work

48. An ideal heat engine, rejecting heat at 47°C is to have efficiency 40%. It must take heat at approximately,
    a) 260°C
    b) 448°C
    c) 320°C
    d) 640°C

49. Heat is transferred from a point of higher temperature to a point of lower temperature even in the absence of a medium by the process of
    a) Radiation
    b) Conduction
    c) Convection
    d) by conduction and convection

50. A source emitting sound of frequency 450Hz is moving towards a stationary listener with $1/10^{th}$ of velocity of sound. The apparent frequency as heard by the listener is
    a) 500 Hz
    b) 550 Hz
    c) 400Hz
    d) 450Hz

51. The intensity level of sound is one bel (standard intensity corresponds to threshold of hearing) when its intensity is
    a) equal to the standard intensity
    b) twice the standard intensity
    c) ten times the standard intensity
    d) half the standard intensity

52. Longitudinal mechanical waves are not audible if wavelength in air (V_s=350m/s) is
    a) 18m
    b) 1.75m
    c) 5m
    d) 3.5m

53. The velocity of light is maximum in
    a) Diamond
    b) Water
    c) Free space
    d) Glass

54. An electric charge 'q' is placed at the centre of the line joining two equal charges 'Q'. The system of three charges is in equilibrium. Then the charge 'q' is
    a) -Q/2
    b) -Q/4
    c) -4Q
    d) +Q/2

Space for calculation / rough work

55. Two equal and opposite charges are separated by a distance (r/4). To have the dipole moment 2qr, the magnitude of each charge is
    a) q/r
    b) q^2
    c) 8q
    d) 2q

56. A charged conductor plate A of capacity C -at potential V is placed near an uncharged, similar conductor plate B. Then for the conductor plate A
    a) C remains constant V increases
    b) C increases V decreases
    c) C decreases V decreases
    d) C increases V remains constant

57. The capacitance of a parallel plate capacitor does not depend upon
    a) Area of the plates
    b) Medium between the plates
    c) Distance between the plates
    d) Nature of the material of the plates

58. Which one of the following cannot be used as dielectric in a capacitor
    a) Water
    b) Mica
    c) Air
    d) Aluminium oxide

59. Two nicols are in crossed position. One of the nicol is turned through 30^0. Percentage of incident light transmitted through the combination is
    a) 12.5%
    b) 37.5%
    c) 50%
    d) 25%

60. The bending of a ray of light when it travels from one medium to another of different optical density is known as
    a) Diffraction
    b) Reflection
    c) Refraction
    d) Polarisation

Space for calculation / rough work

61. IUPAC name of

a) p - toluidine
b) 4 methyl Benzenamine
c) p - methyl aniline
d) p - amino toluene

62. Acetophenone is prepared by dry distillation of
a) Calcium Benzoate and Calcium acetate
b) Calcium Benzoate and Calcium formate
c) Calcium acetate
d) Calcium Benzoate

63. Which are of the following is strongly acidic
a) Phenol
b) p - chloro phenol
c) p - nitro phenol
d) p - cresol

64. In the reduction of acetophenone to ethyl Benzene, the reducing agent used is,
a) Zinc amalgum and Con HCl
b) Zinc and dil HCl
c) Lithium Aluminium Hydride
d) Sodium and alcohol

65. –I effect is shown by
a) $-(CH_3)_2\ CH$
b) $-CH_3$
c) $-NO_2$
d) $-C_2H_5$

66. When methyl amine is heated with chloroform and alc KOH, we get
a) methyl iso cyanide
b) methyl cyanide
c) methyl cyanate
d) methyl thiocyanate

67. In a first order reaction, 90% of the reaction is completed in 7 minutes. The velocity constant is
a) 0.0329
b) 0.329
c) 3.29
d) 0.00329

Space for calculation / rough work

68. The lowest osmotic pressure is exhibited by
a) 0.1 M Potassium Chloride
b) 0.1M Magnesium Chloride
c) 0.1M Potassium Ferricyanide
d) 0.1M Glucose

69. Lyophilic sols are more stable because
a) particles are heavily hydrated
b) particles carry +ve charges
c) particles have no charge
d) particles repel each other

70. 3g of urea is dissolved in 100g water. Molality of the solution is
a) 0.4
b) 0.3
c) 0.1
d) 0.5

71. When H^+ ion concentration of a solution increases its
a) pH increases
b) pH decreases
c) OH^- ion concentration increases
d) pH remains constant

72. Selivanoff's reagent is
a) Resorcinol in water
b) Resorcinol in HCl
c) α naphthol in alcohol
d) β naphthol in NaOH

73. Hydroxy amino acid is
a) Tyrosine
b) Serine
c) alanine
d) lysine

74. The amino acid which has no chiral C atom is
a) Alanine
b) Tyrosine
c) Cystein
d) Glycine

75. Benedict solution contains
a) Copper sulfate, Rochelle salt and NaOH
b) Copper Sulfate, Rochelle salt and sodium carbonate
c) Copper Sulfate, sodium citrate and NaOH
d) Copper Sulfate, sodium citrate and sodium carbonate

Space for calculation / rough work

76. With HNO_2 yellow oily liquid is formed by
    a) Aniline
    b) Methyl amine
    c) Dimethyl aniline
    d) Di methylamine

77. When Isopropyl chloride is boiled with alcoholic KOH we get propene. It is an example for
    a) dehydration
    b) dehalogenation
    c) dehydro halogenation
    d) dehydrogenation

78. The coordination number of sodium in sodium metal is
    a) 4
    b) 8
    c) 6
    d) 12

79. The Conjugate base of OH^- ion is
    a) O^{--}
    b) H_2O
    c) H_3O+
    d) H

80. Oswald's dilution law is not obeyed by
    a) Ammonium chloride
    b) Oxalic acid
    c) Acetic acid
    d) Ammonium hydroxide

81. The pH of 0.1M HCl is 1, assuming complete ionization. The molarity of sulfuric acid having the same pH is
    a) 0.5M
    b) 0.05M
    c) 1M
    d) 2M

82. Which one of the following solution has PH value above 7
    a) Sodium Phosphate
    b) Sodium Chloride
    c) Potassium Nitrate
    d) Sodium Sulfate

Space for calculation / rough work

83. The half life of a reaction is 5 hrs. The amount of the substance left behind at the end of 20th hour is

a) $\frac{1}{32}$

b) $\frac{1}{16}$

c) $\frac{1}{4}$

d) $\frac{1}{8}$

84. Molecular Orbitals having highest energy is

a) $\sigma^* 2P_x$

b) $\pi 2P_y$

c) $\pi^* 2P_z$

d) $\sigma 2P_x$

85. Which one of the following shows least magnetic moment?

a) Mn^{++}

b) Ni^{++}

c) Fe^{++}

d) Cu^{++}

86. Which of the following is a positive ligand?

a) Nitro

b) Nitrosyl

c) Nitrosonium

d) Acetato

87. The Oxidation state of Mercury in $K_2[HgI_4]$ is

a) + 1

b) + 2

c) + 3

d) + 4

88. The adsorption of inert gases on activated charcoal increases with

a) decrease of pressure

b) increase of temperature

c) increase of atomic mass

d) increase of pressure

89. In contact process, the Tyndall box is used to

a) remove traces of moisture

b) detect dust particles

c) remove dust particles

d) remove acidic impurities

Space for calculation / rough work

90. Which one of the following is a saturated fatty acid?
    a) Linoleic acid
    b) Linolenic acid
    c) Myristic acid
    d) Oleie acid

91. Cresols are present in
    a) light oil fraction
    b) middle oil faction
    c) green oil fraction
    d) heavy oil fraction

92. ΔH is always negative in the case of
    a) enthalpy of formation
    b) enthalpy of solution
    c) enthalpy of combustion
    d) enthalpy of transition

93. Which one of the following is an isolated system?
    a) exchange of both matter and energy
    b) exchange of energy only
    c) no exchange of both energy and matter
    d) exchange of matter only

94. In the manufacture of soap the substance used is
    a) Washing soda
    b) Caustic soda
    c) Soda lime
    d) Quick lime

95. The lowest pH is exhibited by
    a) 0.5M Sulfuric acid
    b) 0.1M Hydrochloric acid
    c) 0.1M Sodium Hydroxide
    d) 0.2M Nitric acid

96. In the reaction, $PC1_5 \rightleftarrows PC1_3 + C1_2$ more of PCl_5 dissociates
    a) at high pressure
    b) at low pressure
    c) pressure has no effect
    d) on addition of an insert gas

97. The Standard reduction potentials of 4 metal electrodes A, B, C, D are, – 0.13 V, – 2.92 V, – 0.44 V, – 2.37 V, respectively. The most powerful reducing agent is
    a) A
    b) C
    c) D
    d) B

Space for calculation / rough work

98. When ammonium nitrite Crystals are heated we get
    a) Nitric oxide
    b) Nitrous oxide
    c) Nitrogen dioxide
    d) Nitrogen

99. 4g of a nonvolatile solute dissolved in 36g of water, produces relative lowering of vapour pressure of 0.05. The molecular mass of the solute is
    a) 40
    b) 20
    c) 80
    d) 100

100. 2 molecules of isopropyl chloride with sodium in ether forms
    a) 2 : 3 dimethyl butane
    b) 2 – methyl pentane
    c) 3 – methyl pentane
    d) Hexane

101. Maximum boiling point is shown by
    a) 0.1M Potassium Ferrocyanide
    b) 0.1M Ferric chloride
    c) 0.1M Potassium Nitrate
    d) 0.1 M Sucrose

102. The Temperature coefficient of reaction is 2. If the velocity of the reaction at 55^0C is 64. The velocity at 25^0C is
    a) 16
    b) 4
    c) 32
    d) 8

103. The radius ratio of a crystal is 0.82. Its coordination number & crystalline structure are
    a) 4 & tetra hedral
    b) 8 & body centred
    c) 6 & face centred
    d) 6 & body centred

104. Degree of dissociation of 0.1M solution of weak acid is 0.01. The pH of the solution is
    a) 2
    b) 3
    c) 1
    d) 4

105. 20 ml of 0.125N Mohr salt solution is oxidized by 25 ml of $KMnO_4$ in acid medium. The amount of $KMnO_4$ present in 250 ml of solution is
    a) 0.79g
    b) 7.9g
    c) 9.7g
    d) 0.97g

Space for calculation / rough work

106. The quantity of electricity required to deposit 1 mole of Aluminium from aluminimum sulfate is
   a) 1 faraday
   b) 3 faradays
   c) 10 faradays
   d) 2 faradays

107. Conc. H_2SO_4 with PCl_5 gives
   a) Sulfuryl Chloride
   b) Thionyl Chloride
   c) Phosphorus oxy Chloride
   d) Sulfur tetra Chloride

108. Which one of the following does not give a ppt with excess of NaOH
   a) Ferrous Sulfate
   b) Zinc Sulfate
   c) Magnesium Sulfate
   d) Silver nitrate

109. In the manufacture of paper the substance used is
   a) Washing soda
   b) Caustic soda
   c) Baking soda
   d) Soda lime

110. The amount of $CaCO_3$ neutralized by 200cc of 0.5N HCl is
   a) 5g
   b) 10g
   c) 50g
   d) 2.5g

111. Entropy is expressed in the unit of
   a) $J^{-1}K^{-1}$
   b) KJ
   c) KJ^{-1}
   d) JK^{-1}

112. 5 liters of NaOH solution contains 200mg of NaOH. The pH of the solution is
   a) 10
   b) 12
   c) 11
   d) 14

113. Siderite is
   a) Sulfide ore
   b) Carbonate ore
   c) Oxide ore
   d) Halide ore

Space for calculation / rough work

114. Magnatite is
   a) Fe_2O_3
   b) $2\ Fe_2O_3.3H_2O$
   c) Fe_3O_4
   d) FeO

115. Ferro cyanide ion is having
   a) Sp^2 hybridization
   b) Sp^3 hybridization
   c) dsp^2 hybridization
   d) d^2sp^3 hybridization

116. NO^+ is called
   a) Nitrosonium
   b) Nitronium
   c) Nitroso
   d) Nitro

117. An anionic complex is
   a) Sodium Argentocyanide
   b) Hexa amino Platinum Chloride
   c) Nickel Carbonyl
   d) Cuprammonium Sulfate

118. The number of ions formed by Potassium ferricyanide
   a) 2
   b) 6
   c) 4
   d) 5

119. 18g of glucose is dissolved in 180g of water. Relative lowering of vapour pressure is
   a) 0.1
   b) 0.01
   c) 0.02
   d) 0.2

120. Invertase converts
   a) glucose into fructose
   b) sucrose into glucose and fructose
   c) starch into glucose
   d) fructose into alcohol

Space for calculation / rough work

121. The most common antibodies found in man are _____
    a) IgM
    b) IgG
    c) IgA
    d) IgD

122. The chlorophyll P.680 has its electron "holes" filled by electrons from
    a) Ps-I
    b) Chl-b
    c) Water
    d) Ps-II

123. In one of the following plants transpiration is absent
    a) *Cactus*
    b) *Helianthus annus*
    c) *Elodea*
    d) *Vanda*

124. A flower having both sepals and petals
    a) Achlamydeous
    b) Dichlamydeous
    c) Monochlamydeous
    d) Diclinous

125. Select the correct match from the list
    a) *Trypanosoma brucei* – yellow fever
    b) *Plasmodium falciparum* – Cerebral malaria
    c) *Entamoeba histolytica* – plague
    d) *Fasciola hepatica* – Leishmaniasis

126. Auxin is a metabolic product of _____.
    a) Leucine
    b) Threonine
    c) Tryptophan
    d) Phenylalanine

127. Conjunctive tissue is a part of
    a) Stem
    b) Endodermis
    c) Epidermis
    d) Stele

128. With reference to nerve impulse spot the correct sequence
    a) Axon → Cell body → Dendrite
    b) Axon → Dendrite → Cell body
    c) Dendrite → Cell body → Axon
    d) Dendrite → Axon → Cell body

Space for calculation / rough work

129. Hydathodes are small aerating pores, which
   a) Are found on the roots
   b) Guarded by subsidiary cells
   c) Are always open
   d) Are always closed

130. In Epigynous flowers, ovary is_____
   a) Half inferior
   b) Half superior
   c) Superior
   d) Inferior

131. Find the incorrect match from the following
   a) Cytology – Robert Hook
   b) Palaeontology – Leonardo Davinci
   c) Anatomy – Marcello Malpighi
   d) Genetics – H.J. Muller

132. Genetic drift can be related to one of the following
   a) Large population size
   b) Sampling error
   c) Extinct population
   d) Marine fauna

133. The first and third cleavage patterns in the egg of frog is
   a) Meridional and latitudinal
   b) Latitudinal and meriodional
   c) Meriodional and equatorial
   d) Two meriodional divisions at right angles to each other

134. The cause for trisomy of 21st Chromosome in Down's syndrome is
   a) Translation
   b) Nondisjunction
   c) Paracentric inversion
   d) Absence of pachytene

135. _____ hormone can be employed to induce super ovulation in cattle
   a) Leutinizing hormone
   b) Vasopressin
   c) Testosterone
   d) Progesterone

136. Which one of the following part of the respiratory system has the smallest diameter?
   a) Primary bronchus
   b) Bronchiole
   c) Trachea
   d) Respiratory bronchiole

Space for calculation / rough work

137. From the given group identify the unrelated one
   a) *Falco peregrinus*
   b) *Bubo bubo*
   c) *Python malurus*
   d) *Gallus gallus*

138. The photosystem – I and photosystem – II with reference to photosynthesis was proposed by
   a) Blackman
   b) Arnon
   c) Emerson
   d) Robert Hill

139. _____ is a hormone employed in the formulation of oral contraceptives
   a) LH
   b) MSH
   c) Estrogen
   d) ADH

140. Prokaryotic m-RNAs are
   a) Monocistronic
   b) Polycistronic
   c) Acistronic
   d) Split cistronic

141. In a marriage involving a man with 'O' group and lady with 'AB' group, what are the possible blood groups in children?
   a) O only
   b) AB only
   c) O or AB
   d) A or B

142. Plants with no secondary growth is
   a) *Helianthus annus*
   b) *Saccharum officinalis*
   c) *Hibiscus rosasinensis*
   d) *Plumenia alba*

143. The Casparian strip prevents water from entering stelar region through ____
   a) Plasmodesmata
   b) Symplast
   c) Passage cells
   d) Apoplast

144. Pepsin is an example for _____ group of enzymes
   a) Isomerases
   b) Transferases
   c) Hydrolases
   d) Lyases

Space for calculation / rough work

145. Which one of the anthropogenic activity will cause soil erosion?
   a) Flowing water
   b) Wind action
   c) Deforestation
   d) Floods

146. Pick the correct match from the following list.
   a) PSTV - Potato fungal disease
   b) Scrapie - Prions
   c) Zoophages - Bacteria
   d) HIV - Viroid

147. Mouth parts of cockroach are designed for
   a) Piercing and sucking
   b) Cutting and chewing
   c) Only sucking
   d) Suctioning

148. Find out a fungal pathogen of ground nut.
   a) *Cercospora archidocola*
   b) *Rhizopus stolonifer*
   c) *Neurospora crassa*
   d) *Penicillium notatum*

149. In Lac operon z gene codes for
   a) Galactosidase permease
   b) Beta galactosidase
   c) Thiogalactoside transacetylase
   d) Acetyl Co-A

. Gene for sickle-cell anaemia is different from normal haemoglobin gene because of _____
   a) Base deletion
   b) Frame shift mutation
   c) Base substitution
   d) Chromosomal aberration

Space for calculation / rough work

151. Identify the palindrome sequence from the list
    a) AATTGCC
       TTAACGG

    b) CCGTTAA
       GGCAATT

    c) GGCCTTAA
       CCGGAATT

    d) CGATCG
       GCTAGC

152. _____ is the milk curdling enzyme
    a) Trypsin
    b) Lactase
    c) Pepsin
    d) Rennin

153. Which one of the following is a National park?
    a) Anshi
    b) Ranganathittu
    c) Sharavathi valley
    d) Brahmagiri

154. Which one of the following is commonly found in both monocot and dicot plants?
    a) Sepals and petals in multiples of three
    b) Reticulate venation
    c) Presence of annual rings
    d) Well developed xylem

155. Monochromatic light of more than 600nm shows short reduction in photosynthetic yield. It is known as
    a) Red drop
    b) Arnon effect
    c) Calvin effect
    d) Cytochrome effect

Space for calculation / rough work

156. Uptake and incorporation of DNA fragments from an extraneous medium by a bacterium is called
   a) Specialized transduction
   b) Generalized transduction
   c) Transformation
   d) Conjugation

157. With regard to developmental biology point out the irrelevant match
   a) Ectoderm – Nervous system
   b) Mesoderm – Muscles
   c) Endoderm – Skin
   d) Mesoderm – Skeleton

158. In Drosophila yellow body colour is a sex-linked recessive trait. In a cross involving yellow body male and normal female what will be the F_1 phenotypes?
   a) All normal males and females
   b) 50% males yellow and all females normal
   c) 50% females yellow and all males normal
   d) 50% males and 50% females yellow

159. Monoclonal antibodies can be employed for the diagnosis of
   a) Leukemia
   b) Haemopilia
   c) Food poisoning
   d) Colour blindness

160. Respiratory centre in the brain responds to changes in
   a) Oxygen concentration of the blood
   b) CO_2 concentration of the blood
   c) HDL – level of the blood
   d) Blood glucose

161. Find the region of the digestive system in which only water and electrolytes are absorbed
   a) Stomach
   b) Duodenum
   c) Small intestine
   d) Colon

Space for calculation / rough work

162. Oxidative phosphorylation and synthesis of metabolic water occur during _____
    a) Electron transport system
    b) Photolysis of water
    c) Endergonic reaction
    d) Anabolic reaction

163. Which one of the following is not related to cyanosis?
    a) Pulmonary disease
    b) Congenital heart disease
    c) Right to left shunting of blood
    d) Hyper oxygenation of blood

164. Which part of a drupaceous fruit is edible?
    a) Epicarp
    b) Mesocarp
    c) Endosperm
    d) Endocarp

165. Caffeine can obtained from _____ plant
    a) *Thea sinensis*
    b) *Papaver somniferon*
    c) *Erythroxylon coca*
    d) *Cannabis indica*

166. A circulatory vessel with lowest CO_2 concentration in blood is
    a) Pulmonary artery
    b) Pulmonary vein
    c) Superior venacava
    d) Inferior venacava

167. The sperms stored in epididymis will next pass on to _____
    a) Urethra
    b) Testis
    c) Penis
    d) Vasdeferns

Space for calculation / rough work

168. Which of the following can act as a viable codon?
   a) TAC
   b) ATG
   c) CUG
   d) GCT

169. The hexaploid cell of a diploid organism with 2n = 8 will have _____ chromosome number.
   a) 32
   b) 24
   c) 48
   d) 12

170. Point out the possible vector employed in recombinant DNA technology
   a) Plasmodium
   b) Transposons
   c) Oncogenes
   d) DEN Virus

171. Which of the following can be related to fibrinogen?
   a) Thrombin
   b) Hemoglobin
   c) Platelet
   d) RBC

172. What is the new title of IUCN?
   a) World Conservation Union (WCU)
   b) World National History Society (WNHS)
   c) World Conservation Society (WCS)
   d) World Conservation Consortium (WCC)

173. Which of the following is not a threatened animal?
   a) *Python molurus*
   b) *Bubo bubo*
   c) *Canis lupus*
   d) *Felis domestica*

Space for calculation / rough work

174. In a dicotyledonous stem, the sequence of tissues from the outside to the inside is_____
   a) phellum – pericycle – endodermis – phloem
   b) phellum – phloem – endodermis – pericycle
   c) phellum – endodermis – pericycle – phloem
   d) pericycle – phellum – endodermis – phloem

175. Overgrowth of facial jaws and unproportionate growth of hands and feet are symptoms of
   a) Myxoedema
   b) Acromegaly
   c) Cri-du Chat syndrome
   d) Usher's syndrome

176. Which one of the following is not a major factor in the movement of xylem sap in tall trees?
   a) Transpiration
   b) Plasmodesmata
   c) Adhesion and Cohesion
   d) Tension

177. Conversion of Phosphoenol pyruvic acid from 2 – phosphoglycerate is
   a) Dehydrogenation
   b) Oxidation
   c) Dehydration
   d) Hydration

178. Which one of the following is a derived protein?
   a) Haemoglobin
   b) Casein
   c) Collagen
   d) Peptones

179. What is the number of CO_2 molecules generated in Kreb's cycle from each molecule of Acetyl Co-A?
   a) 01
   b) 02
   c) 04
   d) 36

180. _____ and _____ are characteristic features of m-RNA
   a) Poly 'A' tail at the 5^1 end and a cap at 3^1end
   b) A cap at 5^1 end and a poly 'A' tail at 3^1end
   c) A cap at 5^1 end and another cap at 3^1end
   d) A poly 'A' tail at 5^1 end and a poly 'U' tail at 3^1 end

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