DHAKA COACHING CENTRE

GUESS/MODEL PAPER

FOR THE YEAR 2021

As per condensed syllabus

XI SCIENCE

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PHYSICS

SECTION "A" (Multiple Choice Questions)

1) Heat engine was invented by:

A- George Stephenson B- Ptolemy C- Clausius D- Kelvin

2) The S.I unit of light intensity is:

A- Mole B- Ampere **C- Candella** D- Ohm

3) The S.I unit of amount of substance is:

A- Tesla B- Kg C- Sone **D- Mole**

4) The number of significant figures in 2.510 is:

A- 1 B- 2 C- 3 **D- 4**

5) The dimension of volume is:

A- $[L^2]$ **B- $[L^3]$** C- $[LT^{-1}]$ D- $[LT^{-2}]$

6) Physical quantities which are completely specified by their magnitude anddirection are called:

A- Thermometric property B- Scalars

C- Mechanical property **D- Vectors**

7) A vector whose magnitude is zero is called:

A- Unit vector B- Negative vector

C- Null vector D. Free vector

8) Which one of the followings are scalars:

A- Mass, Weight, Speed B- Speed, Velocity, Torque

C- Weight, Velocity, Torque **D- Mass, Speed, Time**

9) Which one of the followings are vectors:

A- Mass, Weight, Speed B- Speed, Velocity, Torque

C- Weight, Velocity, Torque D- Mass, Speed, Time

10) The arbitrary direction is for:

A- Unit vector B- Free vector

C- Null vector D- Position vector

11) If two forces each of 1N are perpendicular to each other then resultant is:

A- 1N B- 2N C- 0N **D- √2 N**

12) (**i** x **j**) x **k** = _____

A- i B- 0 C- **k** D- - i

13) (**k** x **j**) x **j** = _____

A- k **B- - k** C- 0 D- 1

14) The angle between rectangular components of a vector is:

A- 0^o **B- 90^o** C- 180^o D- 360^0

15) (**i . j**) **. k** = _____

A- **i** B- **j** C- **k** **D- 0**

16) (**j . j**) **. j** = _____

A- **i** **B- j** C- **k** D- 0

17) According to Weber Fechner law:

A- L α I B- L α 1/ I C- L α 1/Log I **D- L α Log I**

18) Light and heat of huge explosions on Sun reaches us but sound do not because:

A- of low loudness B- of low intensity

C- it is not electromagnetic D- of low energy

19) The variation of pitch due to relative motion of sound source and observer iscalled:

A- Snell's law B- Acoustics **C- Doppler's effect** D- Sonic boom

20) Velocity of light in the material medium as compared to air is:

A- same **B- lesser** C- greater D- unpredictable

21) The theoretical value for the speed of electromagnetic waves was found to be:

A- 2×10^8 m/s **B- 2.998×10^8 m/s**

C- 3.2×10^8 m/s D- 9×10^8 m/s

22) The wavelength range of visible light is:

A- 4×10^{-7} m – 7×10^{-7} m B- 4×10^{-7} m – 7.6×10^{-7} m

C- 5×10^{-7} m – 7×10^{-7} m D- 5×10^{-7} m – 7.6×10^{-7} m

23) Compton's effect supports:

A- Corpuscular theory of light B- Wave theory of lightC- Dual nature theory of light D- None of these

24) For constructive interference of light in Young's double slit experiment the pathdifference should be:

A- d sinϴ B- (m + ½) ʎ **C- m ʎ** D- (m – ½) ʎ

25) In case of interference of light fringe spacing:

A- gradually decreased B- gradually increased

C- remains same D- remains abrupt

26) Which device was invented by Michelson?

A- Compound microscope B- Interferometer

C- Telescope **D- Spectrometer**

27) The fringe spacing in case of diffraction of light:

A- gradually decreased **B- gradually increased**

C- remains same D- remains abrupt

28) The magnifying power of a magnifying glass of focal length 10 cm is:

A- 2 **B- 3.5** C- 4 D- 4.5

29) The magnitude of vector **i + j + k** is :

A- 1 B- 3 **C- √3** D- 0

30) The magnitude of vector **- i – j – k** is:

A- 1 B- 3 **C- √3** D- -1

31) Path covered by an object in a specific direction is called:

A- distance **B- displacement** C- speed D- velocity

32) Path covered by an object per unit time is called:

A- distance B- displacement C- speed **D- velocity**

33) Gradient of displacement – time graph is :

A- distance B- speed **C- velocity** D- acceleration

34) If a stationary object is accelerated with $5 m/s^2$ then after 10 sec, its velocity willbe:

A- 2 m/s B- 15 m/s C- 0.5 m/s **D- 50 m/s**

35) If an object is dropped from a height of 10 m, then just before striking the groundsurface it velocity will be:

A- 9.8 m/s **B- 14.14 m/s** C- 19.6 m/s D- 200 m/s

36) The S.I unit of momentum is:

A- N.s B- N/s C- Kgm/s^2 D- N.s/m

37) Quantity of motion present in an object is called:

A- mass B- weight C- acceleration **D- momentum**

38) If two objects of same masses are moving with same velocity then:

A- they will move with same velocity after collision.

B- the two objects will become at rest after elastic collision.

C- the two objects will move in opposite direction with the same velocity.

D- the two objects will not collide.

39) For every action there is equal and opposite reaction, it is called:

A- Law of universal gravitation B- Newton's second law of motionC-

C- Law of inertia D- Newton's third law of motion

40) If an inclined plane makes an angle of 30^o with the horizontal axis thenacceleration on it will be:

A- 4.9 m/s^2 B- 9.8 m/s^2 C- 19.6 m/s^2 D- zero

41) The coefficient of friction is:

A- product of limiting friction and normal force of surface.

B- ratio of normal force of the surface to limiting friction

C- ratio of limiting friction and weight

D- ratio of limiting friction and normal force of the surface

42) The S.I unit of coefficient of friction is:

A- Newton B- K^{-1} C- Pascal **D- No unit**

43) Rolling friction is always:

A- smaller than sliding friction **B- greater than sliding friction**

C- equal to sliding friction D- zero

44) When a metallic sphere is allowed to fall through a liquid its fluid frictionincreases up to certain depth because:

A- up-thrust increases B- weight decreases

C- velocity decreases **D- velocity increases**

45) The metallic sphere which is dropped in liquid attains a maximum velocity andthen velocity becomes uniform it is called:

A- tangential velocity B- downward velocity

C- terminal velocity D- instantaneous velocity

46) A projectile is:

A- Object moves in two dimensional coordinate system.

B- **Object moves in two dimensional coordinate system under gravity.**

C- Path covered by an object moving in two dimensional coordinate system

D- Path covered by an object in two dimensional coordinate system under gravity

47) Which one is not assumed in projectile motion?

A- Gravitational acceleration is constant over the range of motion.

B- Air resistance is negligible.

C- Velocity of projectile will remain constant.

D- Rotation of Earth does not affect the motion.

48) The equations where X and Y both are dependent on common variable the time" t " such equations are called:

A- Algebraic equations B- Common equations
C- Time equations **D- Parametric equations**

49) For the maximum range of projectile, the angle of projection must be:

A- 0^o B- 30^o **C- 45^o** D- 60^o

50) For maximum height of projectile the angle of launch will be:

A- 0^o B- 45^o C- 60^o D- 90^o

51) During projectile motion which quantity remains zero?

A- Vertical velocity B- Horizontal velocity
C- Vertical acceleration **D- Horizontal acceleration**

52) At which angle of projection height and range gained by projectile is same:

A- $\Theta = Tan^{-1}(1)$ B- $\Theta = Tan^{-1}(2)$ **C- $\Theta = Tan^{-1}(4)$** D- $\Theta = Tan^{-1}(8)$

53) At which set of angles the range of projectile will remain same.

A- 30^o and 60^o B- 40^o and 60^o C- 30^o and 70^o D- 40^o and 70^o

54) The vertical acceleration during projectile motion is:

A- 0 m / s^2 B- 4.9 m / s^2 **C- 9.8 m / s^2** D- 19.6 m / s^2

55) If a particle completes its one revolution in 4 sec then its frequency is:

A- 4 Hz B- 2 Hz C- 0.5 Hz **D- 0.25 Hz**

56) If a particle completes its one revolution in 4 sec then direction of velocitychanged in 1 sec is:

A- 30^o B- 60^o **C- 90^o** D- 120^o

57) 1 radian = ____ ^{o}

A- 30 **B- 57.3** C- 75.96 D- 180

58) Angle between centripetal and tangential accelerations is:

A- 90^o B- 180^o C- 270^o D- 360^o

59) Which one of the following is not correct for centripetal force?

A- $m v^2 / r$ B- $m r \omega^2$ C- $4 \pi^2 m r / T^2$ **D- $4 \pi^2 m r / f^2$**

60) 1^o = _____ rad

A- $\pi / 90$ B- $2\pi / 90$ **C- $\pi / 180$** D- $2\pi / 270$

61) The line about which a body rotates is:

A- Axis of rotation B- orbit of rotation
C- orbital motion D- circular motion

62) If the axis of rotation passes through the body its self-corresponding motion iscalled:

A- circular motion **B- spin motion**
C- vibratory motion D- linear motion

63) Which one of the following is correct?

$\rightarrow \rightarrow \rightarrow$ $\rightarrow \rightarrow \rightarrow$ $\rightarrow \rightarrow$ $\rightarrow \rightarrow$

A- $\tau = r \times F$ B- **$\tau = F \times r$** C- $\tau =$ **$r . F$** D- $\tau =$ **$F . r$**

64) Counter clockwise and clockwise rotations are respectively:

A- -ve and -ve B- +ve and +ve **C- +ve and -ve** D- -ve and +ve

65) Two forces having equal magnitudes but opposite in direction, and not acting along the same line constitute:

A- Torque B- Momentum C- Entropy **D- Couple**

66) If an object is at rest or moving with uniform velocity, then it is called:

A- At equilibrium B- Uniform motion C- At inertia D- Uniform acceleration

67) Which one of the following is not correct?

A- $\vec{L} = \vec{r} \times \vec{p}$ B- $\vec{L} = m\vec{r} \times \vec{v}$ C- $\vec{L} = \vec{p} \times \vec{r}$ **D- $\vec{L} = \vec{r} \cdot \vec{p}$**

68) The dimension of angular momentum is:

A- $[ML^2T]$ **B- $[ML^2T^{-1}]$** C- $[MLT^2]$ D- $[ML^{-1}T]$

69) Angle between linear momentum and angular momentum is:

A- 0^0 B- 45^0 **C- 90^0** D- 180^0

70) If the distance between the two objects is doubled the gravitational force between them will be:

A- twice B- half C- 4 times **D- ¼ times**

71) If mass of the object is doubled the gravitational acceleration will be:

A- unchanged B- doubled C- 4 times D- half

72) Time required by Moon to complete one revolution around the Earth is:

A- 30 days B- 28 days **C- 27.3 days** D- 24 hrs

73) If masses of two objects become doubled the gravitational force between themwill be:

A- half **B- Four times** C- doubled D- ¼ times

74) The value of universal gravitational constant is :

A- $6.673 \times 10^{-11}\ Nm^2/Kg^2$ B- $1.67 \times 10^{-31}\ Nm^2/Kg^2$

C- $1.6 \times 10^{-19}\ Nm^2/Kg^2$ D- $9.11 \times 10^{-27}\ Nm^2/Kg^2$

75) The value of gravitational acceleration at centre of Earth is:

A- $9.8\ m/s^2$ B- $4.9\ m/s^2$ C- $2\ m/s^2$ **D- zero**

76) The value of gravitational constant on Moon is:

A- $6.673 \times 10^{-11}\ Nm^2/Kg^2$ B- $9.8\ Nm^2/Kg^2$

C- $1.62\ Nm^2/Kg^2$ D- zero

77) The weight of an object at pole of Earth is:

A- same as equator B- smaller than equator

C- greater than equator D- unpredictable

78) The Sun exerts a force of attraction on the planets, thus keeping them in their:

A- axes B- radii **C- orbits** D- state of motion

79) If an object is falling freely then its weight is:

A- 9.8N B- 19.6 N **C- zero** D- 4.9 N

80) If an object is at a height Equal to Earth's radius gravitational acceleration will be:

A- $9.8\ m/s^2$ B- half of $9.8\ m/s^2$ **C- ¼ of $9.8\ m/s^2$** D- twice.

81) Ability of doing work is called:

A- Power B- Momentum C- Force **D- Energy**

82) Dot product of force and displacement is:

A- Power B- Momentum **C- work** D- Energy

83) Dot product of force and velocity is:

A- Power B- Momentum C- work D- energy

84) If $\vec{F} = 2\hat{i} + 2\hat{j} + 2\hat{k}$ and $\vec{d} = \hat{i} + \hat{j} + \hat{k}$ then work will be:

A- 12 J **B- 6 J** C- 3 J D- 1J

85) If force and velocity are perpendicular then power is:

A- zero watt B- zero Kilo hour C- Zero watt hour D- zero Kwh

86) 1 BTU = _____ J

A- 1055 B- 746 C- 1000 D- 100

87) 1 eV = _____ J

A- 1000 B- 100 **C- 1.6×10^{-19}** D- 746

88) A field in which work is independent of path is called:

A- Magnetic B- Electric C- Gravitational **D- Conservative**

99) Kgm^2 / s^3 = _____

A- Nm B- Pascal C- Watt D- Joule

100) Commercial unit of energy is:

A- Joule B- Watt C- Kilowatt **D- Kilowatt hour**

101) 1 HP = _____ Watt

A- 746 B- 100 C- 1000 D- 1055

102) When work is done against gravitation force then it is converted into:

A- Kinetic energy **B- Potential energy** C- Heat energy D- Magnetic energy

103) Remnants of plants and animals which died millions of years ago is:

104) A- Geothermal energy B- Fossil fuel

C- Tidal energy D- Chemical energy

105) If the object is thrown vertically upward with some kinetic energy then heightgained by object can be written as:

A- $v / 2g$ **B- v^2 / g** C- $2v^2 / g$ D- $v^2 / 2g$

106) According to Hooke's law restoring force is directly proportional to:

A- Tension in spring **B- displacement**

C- mass of object D- material of spring

107) Since $a \alpha -x$, negative sign indicates that acceleration is:

A- towards extreme positions B- towards centre of Earth

C- towards mean position D- towards point of suspension

108) Total energy of particle executing simple harmonic motion is:

A- maximum at extreme position B- minimum at extreme positionC- maximum at mean position **D- remains same everywhere**

109) If an object rotates with 2 revolutions per second, then time period will be:

110) A- 2 sec B- 1 sec C- 0.5 sec D- 0.25 sec

111) In case of mass spring system time period T is:

A- $2\pi\sqrt{m/k}$ B- $(1/2\pi)\sqrt{k/m}$ C- $2\pi\sqrt{k/m}$ D- $(1/2\pi)\sqrt{m/k}$

112) In case of simple pendulum frequency of vibration is :

A- $2\pi\sqrt{l/g}$ B- $2\pi\sqrt{g/l}$ C- $(1/2\pi)\sqrt{l/g}$ **D- $(1/2\pi)\sqrt{g/l}$**

113) Which one of the following can be passed through vacuum?

A- Sound B- Travelling waves **C- Heat** D- Matter waves

114) Audible frequency range is:

A- 4000Hz – 40000Hz B- 400Hz – 4000Hz

C- 20Hz – 20000Hz D- 200Hz – 2000Hz

115) Newton's formula for speed of sound was wrong because he proposed that, theprocess of sound wave propagation is:

A- isobaric B- isochoric C- adiabatic **D- isothermal**

116) Laplace corrects Newton's formula by stating that, the process is:

A- isobaric B- isochoric **C- adiabatic** D- isothermal

117) Quality of sound depends upon:

A- intensity B- frequency C- wavelength **D- wave form**

118) Pitch of sound depends upon:

A- intensity **B- frequency** C- wavelength D- wave form

119) Loudness of sound depends upon:

A- intensity B- frequency C- wavelength D- wave form

120) The unit of loudness is:

A- decibel **B- sone** C- watt / m^2 D- Hertz

121) The unit of intensity level is:

A- decibel B- sone C- watt / m^2 D- Hertz

122) The least intense sound that a normal human ear can detect is:

A- 10^{-4} watt/m^2 B- 10^{-7} watt/m^2 **C- 10^{-12} watt/m^2** D- 10^{-16} watt/m^2

SECTION B (SHORT-ANSWER QUESTION) 25 MARKS

Q2: Attempt any five questions.

(i) Show that a) Dot product obeys commutative law.
b) Cross product do not obey commutative law.

OR

a) Dot product obey distributive law
b) i x i = j x j = k x k = 0

(ii) For what value of p are the two vectors A= i -p j+3k & B= 3i+2j – 4k perpendicular to each other.

(iii) Drive an expression for the Variation of "g" with depth.

OR

Drive an expression for range of projectile.

(iv) How is the magnifying power of the (i) Astronomical telescope and (ii) compound microscope affected by increasing the focal length of their objectives?

OR

Why there are two angle of projections for same range of projectile.

(v) Prove that following equations are dimensionally correct.

a) $2as = V_f^2 - V_i^2$ b) $T = 2\pi\sqrt{l/g}$ c) $f = \frac{1}{2\pi}\sqrt{g/l}$

d) $s = V_i t + \frac{1}{2} at^2$ e) $\frac{1}{f} = \frac{1}{p} + \frac{1}{q}$ f) L = mvr

(vi) Two coherent sources are placed 1.8cm apart. Interference fringes are obtained on screen80cm away. The fourth bright fringe is at a distance of 1.08 cm from the central fringe. Calculate the wavelength of the light used.

OR

How far apart the diffracting planes in a sodium chloride crystals for which X-rays of wavelength 1.54A^o make a glancing angle of 15^{o}54'in the 1st order.

(vii) Note of frequency of 500 Hz is being emitted by an ambulance moving towards a listener at rest. If the listener detects a frequency of 526 Hz, calculate the speed of the ambulance. Speed of sound is 340 m/s at that moment.

OR

Calculate speed of sound wave in air at atmospheric pressure P=1.01 x 10^5 N/m^2 taking γ = 1.40 & ρ = 1.2Kg/m^3

(viii) A truck starts from rest at the top of a slope which is 1 m high and 49 m long. Find its acceleration and speed at the bottom of the slope assuming that friction is negligible.

OR

A pump is needed to lift water through a height of 2.5 m at the rate of 500 g/min. What must the minimum horse power of pump be?

(ix) A diver leaps from a tower with an initial horizontal velocity component of 7 m/s and upward velocity component of 3 m/s. Find the component of her position after 1 second.

OR

A car is travelling on a circular track of radius 200m at 20m/s & centripetal acceleration 4.5m/s^2 .

a) If mass of car is 1000Kg, what frictional force is required to provide acceleration?

b) If coefficient of static friction is 0.8, what is the maximum speed at which the car can circle the track?

SECTION C (DETAILED ANSWER QUESTIONS) (18 Marks)

NOTE: Attempt any One question from this section.

Q3a) Derive expressions for i) Maximum range of projectile
ii) Height gained by projectile. (06)

OR

Derive relationships i) between linear and angular velocities
ii) between linear and angular accelerations

b) Prove that motion of simple pendulum is simple harmonic. (06)

OR

What is Hooke's law? Prove that mass spring system has simple harmonic motion

c) Give Newton's formula for speed of sound. What corrections made by Laplace in it, Discuss. (06)

OR

What is Doppler's effect? Derive expressions for frequency heard by listener if,
i) Listener is moving towards sound source.
ii) sound source is moving towards listener.

Q4a) What is an inclined plane? A block of mass "m" is placed on an inclined surface; derive the expression for its acceleration when the block is sliding down in presence and absence of friction. (06)

OR

Derive work energy principle.

b) What is X-ray diffraction? How can it be used to measure wavelength of monochromatic light? (06)

OR

Describe Michelson's interferometer. How we can find monochromatic light by using it.

c) With the help of ray diagram. Derive relation for magnifying power of Astronomical telescope.(06)

OR

Derive thin lens formula for real image formed by convex lens.

CHEMISTRY

SECTION "A" (M.C.Q'S)

Q1. Choose the correct answers for each from the given options:

1. The addition of a catalyst to a reaction changes:
   * Internal energy *** Activation energy** * Threshold energy * Gibb's free energy
2. The change in concentration of reacting substances in a unit time called:
   *** Rate of reaction** * Rate constant * Rate law * Velocity constant
3. Hess's law may be used to determine:
   ***ΔH** * ΔS * ΔE *ΔV
4. The symbol for an uranium atom is $_{92}U^{238}$.How many neutrons are present in this atom?
   * 192 * 238 *** 146** * 330
5. Wave of visible radiation ranges from:
   *400nmto500nm * 400nm to 600nm *** 400nm to 700nm** *400nm to 800nm
6. 'No two electrons in an atom can have all the four Quantum numbers identical' is the statement of:
   *** Pauli's exclusion principle** * Hund's rule * Aufbau rule * (n+l) rule
7. The quantitative relationship between the substance according to balance equation describes.
   * Percentage compound * Limiting reactant *** Stoichiometry** * Reversible reaction
8. Capillary action of liquid is due to:
   * Viscosity *** Surface tension** * Density * Fluidity
9. On kelvin scale, absolute zero is equal to:
   * 273.16^0C * 0^0C * 20 K *** -273.16^0C**
10. In which of the following is not an intensive property?
    * Pressure * Concentration * Density *** Volume**
11. Which one has high bond energy:
    * H–H *C–C * H–C *** N ≡ N**
12. A plot of volume versus the reciprocal of the pressure is
    * Hyperbola * Parabola ***Straight line** * Curvilinear
13. Phenolphthalein is a weak:
    *** Acid** * Base * Salt * Both a and b
14. When NH_4Cl is hydrolyzed, the solution will be:
    *** Acidic** * basic * neutral * amphoteric
15. For decomposition of $H_2O_2$is used as negative catalyst.
    * MnO_2 * iron powder *** glycerin** * all of these
16. Real gases don't obey gas laws at:
    *** Low temperature and high pressure** * Low pressure and high temperature
    * Low pressure and low temperature *High temperature and high pressure
17. For a nexothermic reaction, Kc with the rise of temperature
    * Remain constant *Increases ***decreases** *None of these

18. Which of the following has the same value of Kc and Kp:
    * $N_2+3H_2 \rightleftharpoons 2NH_3$ ***$H_2+I_2 \rightleftharpoons 2HI$** *$PCl_5 \rightleftharpoons PCl_3 + Cl_2$ *$2SO_2+O_2 \rightleftharpoons 2SO_3$
19. Glass is a/an:
    * Crystal solid *** Amorphous solid** * Covalent solid * Ionic solid
20. This one of the following colors has the shortest wavelength:
    * Red * Green *** Violet** * Orange
21. Two substances have the same crystal structure are said to be:
    * Allotropes ***Isomorphus** *Polymorphus *None of these
22. The number of significant figures in 0.023 is
    *** 2** * 3 * 4 * 5
23. The empirical formula of a compound is CH_2O and molecular mass is 60, so its molecular formula is:
    * CH_2O *** $C_2H_4O_2$** * $C_3H_6O_3$ * $C_4H_8O_4$
24. The atmospheric pressure recorded in different places at the same time are given below:

Nathiagali	Hunza	Muree	Gilgit
700 torr	650 torr	710 torr	600 torr

    Water boils first in:
    * Nathiagali * Hunza * Muree *** Gilgit**
25. For the reaction $2NH_3 \text{=====} N_2 + 3H_2$, the relationship between K_c and K_p is:
    * $K_p = K_c$ *** $K_p > K_c$** * $K_p < K_c$ * $K_p < K_c$
26. The oxidation number of Sulphur in $NaHSO_4$ is:
    * -2 * 0 * +4 *** +6**
27. Unit of viscosity is:
    * N/m^2 * dynes/cm *** Poise** * all of these
28. One mission of α particles, $_{92}U^{238}$ changes into:
    *** $_{90}Th^{234}$** * $_{88}Ra^{226}$ * $_{84}Po^{210}$ * $_{91}Pa^{231}$
29. The following pair of ions is isoelectronic:
    *** Na^+ & Mg^{2+}** * F^-&Cl * Li^+&Na^+ * S^{2-}&O^2
30. If K_c is very small:
    *** reverse reaction will occur** * more products will be formed
    * forward reaction will occur * none of these
31. The strength for sigma bond is highest for:
    * s – s overlap * s – p overlap *** p – p overlap** * sp^3 – s overlap
32. In ethane (C_2H_4) molecules, there are:
    *** Five sigma bonds and one pie bond** * four sigma bonds and two pie bond
    * Five sigma bonds *** None of these**
33. Which of the compounds has sp^2 hybridization?
    * NH_3 * C_2H_2 *** C_2H_4** * H_2O
34. Moseley found that wave length of x-rays emitted decreased regularly with increasing:
    *** Atomic number** * Atomic mass * Mass number * Atomic size
35. The color of universal indicator in neutral solution is:
    * Red *** Green** * Blue * Pink
36. According to n+l which sub energy level field first:
    *** 3d** * 5s * 4p * 4f
37. A closed system one which cannot transfer matter but transfer:
    *** Heat** * Radiations * Work * All of these.
38. The energy of each quantum of radiation is directly proportional to its:
    * Wavelength *** Frequency** * Wave number * Source of energy

39. The number of orbitals in each energy level in given by the formula:
    * $2n^2$ *** (2l+1)** * 2(2l+1) *n^2
40. The S.I unit of the dipole moment is:
    * dyne/cm * poise * Debye *** Coulomb-meter**
41. The bond found in fluorine molecule is due to this overlap of orbital:
    * s – s * s – p *** p – p** * None of these
42. This is not extensive property:
    * Entropy *** Viscosity** * Enthalpy * Internal energy
43. A thermos is used to keep things either cold or hot, it is an example of:
    *** Isolated system** * open system * Closed system * reversible system
44. Kinetic energy of the molecules of a gas is directly proportional to:
    *** Temperature** * Pressure * Volume * Density
45. The collision between the gases molecules is:
    * Perfectly inelastic *** Perfectly elastic** * Conserve K.E only * None of these
46. An ideal gas obeys gas laws under this condition:
    * High pressure * High temperature * Low temperature *** All temperature and pressure**
47. Which one of the following gas has high rate of diffusion?
    * NO * NO_2 *** H_2** * N_2O
48. The process in which solvent molecules surround and interact with solute ions or molecules is called
    *** Hydration** * Solvation * Hydrolysis * Dehydration
49. When the value of Kc is very high than it predicted that:
    *** Product is stable** * reactant is unstable * forward reaction is almost completed * all of these
50. The minimum amount of energy required to start a reaction is:
    * Entropy * Enthalpy * Free energy * **Activation energy.**

SECTION B
(SHORT ANSWER SECTION)

Q2. Attempt any 5 parts. (25-marks)

i. Derive General gas equation and calculate the value of Universal gas constant **(R)** in the S.I unit

OR

The empirical formula of a compound is CO_2H. 1.8g of this compound in gaseous occupies 448 cm^3 at S.T.P. find its molecular formula

ii. Calculate the Standard Heat of Formation of the methyl alcohol from its elements from the following data:

(1) $C + 2H_2 + \frac{1}{2}O_2 \longrightarrow CH_3OH$ **; ΔH = ?**

(2) $C + O_2 \longrightarrow CO_2$ **; ΔH = – 394 *kJ/mole***

(3) $H_2 + \frac{1}{2}O_2 \longrightarrow H_2O$ **; ΔH = – 286 *kJ/mole***

(4) $CH_3OH + \frac{3}{2}O_2 \longrightarrow CO_2 + 2H_2O$ **; ΔH = – 726 *kJ/mole***

OR

Determine ΔH from the following data:

(1) $2Na + \frac{1}{2}O_2 + H_2O$ $2NaOH$; $\Delta H = ?$

(2) $Na + \frac{1}{4}O_2$ $\frac{1}{2} Na_2O$; $\Delta H = -50$ k cal

(3) $Na_2O + H_2O$ $2NaOH$; $\Delta H = -56$ k cal

iii. State and explain Hess's law of constant heat summation. Give its applications

OR

Differentiate between the following:

- Sigma and pi bond
- Hydration and hydrolysis

iv. Write short notes on any one of the following:
(a) Surface tension (b) Viscosity.

v. Calculate the volume of Oxygen at 39°C and 1200 torr pressure, when 170 gm of $KClO_3$ is heated to redness, according to following reaction.

$$2KClO_3 \xrightarrow{MnO_2 \ heat} 2KCl + 3O_2$$

vi. (a) 400$cm^3$of Helium gas effuses from a porous container in 20 sec. How long will SO_2 gas take to effuse from the same container ?
(Atomic weights: S = 32, He = 4)

(b) What is the density of methane (CH_4) gas at 127^0 and 3.5 atm?

vii. State and explain First law of thermodynamics. When 5400J of heat is added to a system of gas at constant pressure of $2x10^5$ N/m^2, its Internal increases by 1000 joules. Calculate the change in the volume of the system.

viii. Write a short note on indicators OR Arrhenius theory of ionization

ix. Make list of factors which affect the rate of a reaction. Discuss the following factors
Surface area Temperature

OR

Discuss the effect of increase in temperature and pressure on the following systems at equilibrium

$N_2 + 3H_2$ ==== $2NH_3$ + Heat $N_2 + O_2$ + Heat ==== 2NO

x. (a) Which rule or principle is violated in the following electronic configurations?
$1s^2,2s^3$ $1s^2,2s^2,3s^2,3p^6$ $1s^2,2s^2,2px^2$

(b) Write electronic configuration of

Cu(Z=29) Ag(Z=47)

SECTION C

(DESCRIPTIVE QUESTIONS)

Note:- Attempt any *One* question. (18-marks)

Q3. (a) Acetic acid contains C, H and O. 2.14 gm of a sample of acetic acid on complete combustion give 3.105 gm of CO_2 and 1.27 gm of H_2O. The molecular mass of acetic acid is 60. Find its empirical and molecular formula?

(b) Write the postulates of Bohr's atomic theory. Derive the expression for the radius of n^{th} orbit of a hydrogen.

OR

Define Oxidation and Reduction? Balance any one of the following:

$Cr(OH)_3 + SO_4^{-2} \longrightarrow CrO_4^{-2} + SO_3^{-2}$ *(Basic Medium)*

$Cr_2O_7^{-2} + I_2 \longrightarrow Cr^{+3} + IO^-_3$ *(Acidic Medium)*

$MnO_4^- + Cl^-$ ---------- $Mn^{+2} + Cl_2$(acidic medium)

$MnO_4^- + SO_3^{-2}$ ---------- $MnO_4^{-2} + SO_4^{-2}$(basic medium)

(c) State and explain the law of equilibrium. Derive the expression of equilibrium constant.

Q4. (a) Give postulates of electron pair repulsion model and draw molecular shapes of BF_3 and H_2O on the basis of this model.

OR

What are cathode rays. Write the experiment for their discovery. Write their properties. What conclusions were drawn from these properties

(b) 6.0 gm of acetic acid and 4.6gm of ethyl alcohol are mixed with each other at constant temperature and are allowed to attain the equilibrium. At equilibrium 2.0gm of acetic acid remain unused. Find the equilibrium constant (K_c).

OR

The K_c for the reaction $2HI_{(g)}$ + is $H._{2(g)} + I_{2(g)}$ is 1.3×10^{-2}. If there are 0.5 mole/dm^3 H_2, 1.5 mole/$dm^3 I_2$, and 5 moles/drn^3 HI, predict the direction in which the reaction moves so as to achieve the equilibrium

(c) Define orbital hybridization. Explain the shape of Ethene(C_2H_4), on the basis of hybridization

OR

For the reaction, PCl_5 ---------- $PCl_3 + Cl_2K_c$ is 0.041, calculate the concentration of equilibrium mixture when 1 mole of PCl_5 is heated to 250°C in a 10 litre flask.

MATHEMATICS

SECTION "A" (MULTIPLE CHOICE QUESTIONS)

1. 0! = _____.
   a) 1 b) 0 c) -1 d) none of these
2. In how many way r different objects can be arranged out of n different objects.
   a) n! (n – 1)! b) $\frac{n!}{(n-r)!}$ **c)** $\frac{\boldsymbol{n!}}{\boldsymbol{r!(n-r)!}}$ d) none of these
3. If r = n then ${}^{n}P_{n}$ = _____.
   a) n! b) 0! c) (n – 1)! d) none of these
4. In factorial form n (n – 1) (n – 2) ……. 3.2.1 = _____.
   a) (n – 3)! b) n! c) $\frac{n!}{(n-3)!}$ d) none of these
5. If "n" is a negative integer then n! = _____.
   a) zero b) ∞ **c) does not exist** d) none of these
6. ${}^{n}C_{r}$ x r! = _____.
   a) ${}^{n}C_{r}$ b) (a – 1)! C) r = n **d)** ${}^{n}P_{r}$
7. If r = n then ${}^{n}C_{r}$ = _____.
   a) -1 b) n! c) 0 **d) 1**
8. If r = 0 then ${}^{n}C_{r}$ = _____.
   a) 0! **b) 1** c) n! d) -1
9. The _____ is used to denote the number of elements in the set A.
   a) A **b) 0 (A)** c) A (0) d) 0 x A
10. Sum of the first n natural numbers 1 + 2 + 3 + 4 + …….n = ∑n = _____.
    a) $\frac{\boldsymbol{n(n+1)}}{\boldsymbol{2}}$ b) $\frac{n(n+1)(2n+1)}{6}$ c) $\frac{n^2(n+1)^2}{2}$ d) n^2
11. Which number satisfied the relation $2^n > n^2$.
    a) n = 5 b) n = 4 c) n = 3 d) n = 2
12. If $(a^{2n} – b^{2n})$ is divisible by (a+b) when n = _____.
    a) $\frac{1}{3}$ b) – 1 c) – 2 **d) 1**
13. A powerful method of proof frequently used in mathematics is _____.
    a) Binomial theorem b) probability c) Inductive logic **d) Mathematical induction**
14. 1 + $Cot^2\,\theta$ = _____.
    a) $Cos^2\,\theta$ b) $Cosec^2\,\theta$ **c)** $\boldsymbol{Sec^2\,\theta}$ d) $–Cosec^2\,\theta$
15. Let P (x_1, y_1) and Q (x_2, y_2) be two points. If d be the distance between them then d = _____.
    a) $\sqrt{(\boldsymbol{x_2 - x_1})^2 + (\boldsymbol{y_2 - y_1})^2}$ b) $\sqrt{(x_1 - x_2) + (y_2 - y_1)}$
    c) $\sqrt{(x - x_2)^2 + (y - y_2)^2}$ d) $\sqrt{(x - x_1)^2 + (y - y_1)^2}$
16. Cos $(\alpha - \beta)$= **_____.**
    a) CosαCosβ + Sin$\alpha Sin\beta$ b) CosαCosβ – Sin$\alpha Sin\beta$
    c) SinαCosβ + Cos$\alpha Sin\beta$ d) SinαCosβ – Cos$\alpha Sin\beta$
17. Cos $(\alpha + \beta)$= _____.
    a) CosαCosβ + Sin$\alpha Sin\beta$ **b) CosαCosβ – Sin$\alpha Sin\beta$**
    c) SinαCosβ + Cos$\alpha Sin\beta$ d) SinαCosβ – Cos$\alpha Sin\beta$
18. Sin $(\alpha + \beta)$= _____.
    a) CosαCosβ + Sin$\alpha Sin\beta$ b) CosαCosβ – Sin$\alpha Sin\beta$
    c) SinαCosβ + Cos$\alpha Sin\beta$ d) SinαCosβ – Cos$\alpha Sin\beta$

19. Sin $(\alpha - \beta)$= _____.
a) CosαCosβ + Sin$\alpha Sin\beta$ b) CosαCosβ – Sin$\alpha Sin\beta$
c) SinαCosβ + Cos$\alpha Sin\beta$ **d) SinαCosβ – Cos$\alpha Sin\beta$**

20. tan $(\alpha + \beta)$= _____.
a) $\frac{tan\alpha - tan\beta}{1+tan\alpha\ tan\beta}$ **b)** $\frac{\boldsymbol{tan\alpha + tan\beta}}{\boldsymbol{1-tan\alpha\ tan\beta}}$ c) $\frac{Sin\alpha + Cos\beta}{1-Sin\alpha\ Cos\beta}$ d) $\frac{Sin\alpha - Cos\beta}{1+Sin\alpha\ Cos\beta}$

21. tan $(\alpha - \beta)$= _____.
a) $\frac{tan\alpha + tan\beta}{1-tan\alpha\ tan\beta}$ **b)** $\frac{\boldsymbol{tan\alpha - tan\beta}}{\boldsymbol{1+tan\alpha\ tan\beta}}$ c) $\frac{Sin\alpha + Cos\beta}{1-Sin\alpha\ Cos\beta}$ d) $\frac{Sin\alpha - Cos\beta}{1+Sin\alpha\ Cos\beta}$

22. $f(\theta)$ = Cos θ, then Range of $f(\theta)$is _____.
a) -1< Sin θ < 1 **b) -1≤ Sin $\boldsymbol{\theta} \leq$ 1** c) R d) R^+

23. $f(\theta)$ = tan θ, then Domain of $f(\theta)$is _____.
a) R - $\left\{\frac{n\pi}{2} \mid n\ is\ odd\ integer\right\}$ b) R - $\left\{\frac{n\pi}{2} \mid n\ is\ even\ integer\right\}$
c) R - $\{\boldsymbol{n\pi \mid n\ is\ odd\ integer}\}$ d) R - $\{n\pi \mid n\ is\ even\ integer\}$

24. A circle touches all the sides of a triangle is called _____.
a) e-Circle **b) in-Circle** c) Circum-Circle d) Ortho Circle

25. The radius of in-circle is called in-radius and is denoted by r = _____.
a) $\frac{4\Delta}{abc}$ b) $\frac{a}{4\Delta}$ **c)** $\frac{\Delta}{\boldsymbol{8}}$ d) $\frac{\Delta}{s-a}$

26. If $\alpha, \beta\ and\ \gamma$ are angles of any triangle than $\alpha + \beta + \gamma$= _____.
a) 360^0 b) 270^0 c) 90^0 **d) 180^0**

27. A triangle with one angle of measure 90^0 is called _____ angle triangle.
a) Obtuse b) Acute **c) Right** d) Oblique

28. Area of triangle when measured of all of its three sides is given by.
a) $\Delta = \sqrt{\boldsymbol{s(s+a)(s+b)(s+c)}}$ b) $\Delta = \sqrt{s(s-a)(s-b)(s-c)}$
c) $\Delta = \sqrt{s(s-a)}$ d) $\Delta = \sqrt{s(s-b)}$

29. For an e-circle r_1 = _____.
a) $\frac{\Delta}{s-a}$ **b)** $\frac{\Delta}{\boldsymbol{s+a}}$ c) $\frac{\Delta}{s-b}$ d) $\frac{\Delta}{s-c}$

30. For an e-circle r_2 = _____.
a) $\frac{\Delta}{s}$ **b)** $\frac{\Delta}{\boldsymbol{s-b}}$ c) $\frac{\Delta}{s-a}$ d) $\frac{\Delta}{s-c}$

31. $f(x)$= $Cosec^{-1}$ x then what is the domain of f = ?
a) R b) $[0, \pi]; x \neq \frac{\pi}{2}$ c) x ≥ -1(or) x ≤1 **d) x ≤ -1(or) x ≥1**

32. $f(x)$= Cot^{-1} x then what is the range of f = ?
a) 0 < x < $\boldsymbol{\pi}$ b) $-\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$ c) $-\frac{\pi}{2} < x < \frac{\pi}{2}$ d) R

33. $f(x)$= Cot^{-1} x then what is the domain of f = ?
a) R (or) (-∞, ∞) b) 0 < x < π c) $-\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$ d) $-\frac{\pi}{2} < x < \frac{\pi}{2}$

34. The function tan (Sin^{-1} ½) = _____.
a) $\frac{\boldsymbol{1}}{\boldsymbol{\sqrt{3}}}$ b) $\frac{1}{2}$ c) $\frac{\sqrt{3}}{2}$ b) $\frac{1}{3}$

35. In generally Sin^{-1} x _____ $(Sinx)^{-1}$.
a) < b) ≠ **c) =** d) >

36. $Cos^{-1}(0)$ = _____ Radians.
a) "0" **b)** $\frac{\boldsymbol{\pi}}{\boldsymbol{2}}$ c) $-\frac{\pi}{2}$ d) $\pm\frac{\pi}{2}$

37. $Cos^{-1}(1)$ = _____ Radians.
a) "0" b) $\frac{\pi}{2}$ c) $\frac{-\pi}{2}$ d) $\pm\frac{\pi}{2}$

38. $Cos^{-1}(-1)$ = _____ Radians.
a) "0" **b)** $\frac{\boldsymbol{\pi}}{\boldsymbol{2}}$ c) $-\frac{\pi}{2}$ d) $\pm\frac{\pi}{2}$

39. $Cos^{-1}\left(\frac{1}{2}\right)$= _____ Radians.
a) π **b)** $\frac{\boldsymbol{\pi}}{\boldsymbol{3}}$ c) $\frac{\pi}{4}$ d) $\frac{\pi}{6}$

40. 2 + 4 + 6 + …… 2n + = _____.

a) n (n – 1) **b)** $\frac{n(n-1)}{2}$ c) n (n + 1) b) $\frac{n(n+1)}{2}$

41. An angle is said to be positive if the rotation is _____

a) Clockwise b) Horizontal c) Vertical **d) Anti-Clockwise**

42. An angle is said to be negative if the rotation is _____

a) Clockwise b) Horizontal c) Vertical d) Anti-Clockwise

43. The greek letters $\alpha.\beta.\gamma.0$ are used to denote

a) set **b) angle** c) side d) none of these

44. 2π radian is equal to _____.

a) 3 right angles b) 2 right angles **c) 4 right angles** d) none of these

45. An angle subtended at the centre of a circle by an arc equal to its radius is _____.

a) Degree **b) Radian** c) Angle d) none of these

46. If an arc of the circle of radius r has length "S" and subtended an angle "θ" then S will be _____.

a) $\frac{r}{\theta}$ b) $\frac{\theta}{r}$ c) $\theta \infty \frac{1}{r}$ **d) r $\boldsymbol{\theta}$**

47. 300^0 angle in radian is equal to _____.

a) $\frac{\pi}{6}$ b) $\frac{3\pi}{8}$ **c)** $\frac{\boldsymbol{5\pi}}{\boldsymbol{3}}$ d) $\frac{13\pi}{8}$

48. A full circle is equal to 2π radian and also equal to 360^0 then _____.

a) 360^0 = 2rad b) $360^0 = \frac{\pi}{3} rad$ **c) $\boldsymbol{360^0 = 2\pi}$ rad** d) $360^0 = 4\pi$ rad

49. 1^0 is equal to _____.

a) a) 0.011475 rad b) 0.01745 rad **c) 0.01745 rad** d) 0.01545 rad

50. The degree measure of one radian is approximately equal to _____.

a) 57^0 b) 57.1^0 **c) $\boldsymbol{57.2^0}$** d) 57.3^0

51. One degree is equal to _____ radian.

a) $\frac{\boldsymbol{180^0}}{\boldsymbol{\pi}}$ b) $\frac{3\pi}{180}$ c) $\frac{\pi}{180}$ d) none of these

52. One radian is equal to _____ degree.

a) $\frac{\boldsymbol{\pi}}{\boldsymbol{180}}$ b) $\frac{180}{\pi}$ c) $\frac{3\pi}{180^0}$ d) $\frac{4\pi}{180^0}$

53. A sequence in which each term is formed by adding fixed number to one proceeding is called _____ sequence.

a) Geometric b) Harmonic c) permutation **d) Arithmetic**

54. The formula for nth term i-e T_n of arithmetic sequence is _____.

a) a – (n – I)d b) a + (n + I)d **c) a + (n – I)d** d) a + (I - n)d

55. The formula for the sum of the terms of Arithmetic sequence is _____.

a) $S_n = \frac{n}{2}$ {2a + (n – 1) d} b) $S_n = \frac{n}{2}$ {2a + (n + 1) d}

c) $S_n = \frac{n}{2}$ {2a - (n – 1) d} d) $S_n = \frac{n}{2}$ {2a - (n + 1) d}

56. The formula for the sum of the terms of the Arithmetic sequence in terms of first and last terms are given _____.

a) $S_n = \frac{n}{2}$ (a -) **b) $S_n = \frac{n}{2}$ (a + $\boldsymbol{l}$)** c) S_n = 2n (a + l) d) S_n = 2n (a - l)

57. When three terms are in A.P then the middle term is called _____.

a) Median b) Mode c) Geometric Mean **d) Arithmetic Mean**

58. If A is A.M between the numbers a and b then A = _____.

a) $\frac{\boldsymbol{a+b}}{\boldsymbol{2}}$ b) $\frac{a-b}{2}$ c) 2 (a + b) d) 2 (a – b)

59. If A_1, A_2, A_3, …… A_n be the "n" Arithmetic mean between two given numbers a and b then d = _____.

a) $\frac{a-b}{n+1}$ **b)** $\frac{\boldsymbol{b-a}}{\boldsymbol{n+1}}$ c) $\frac{a+b}{n+1}$ d) $\frac{n+1}{b-a}$

60. If three terms are in A.P then they are denoted by _____.

a) a, a – d, a + d b) d – a, a, a – d **c) a – d, a, a + d** d) a + a, a, a + 2d

61. If five numbers are in A.P they are usually denoted by _____.

a) a + 2d, a + 3s, a, a + 2d, a – d b) a – 2d, a + d, a + 3d, a + 5d

c) a + d, a – d , a + 2d, a – 2d **d) a – 2d, a – d , a, a + d, a + 2d**

62. A.M of (a + b) and (a – B) is _____.
a) b **b) a** c) 2a d) 2b

63. a, ar, ar^2, ar^3, …….ar^{n-1} represents.
a) Arithmetic sequence b) Harmonic sequence
c) Arithmetic series **d) Geometric sequence**

64. T_n i – e nth term of a G.P is _____.
a) ar^n **b) ar^{n-1}** c) ar^{n+1} d) ar^{2n}

65. The solution set of the system $3x^2 – y^2 = 12$; $3x^2 + 4y^2 = 192$
a) (-4 . -6) b) 6, 4) **c) (4, 6)** d) (0, 0)

66. The solution set of the system $5x^2 \div 4y^2 = 16$; $13x^2 – 5y^2 = 57$
a) (I , 2) b) (2 , i) c) (-2 , -i) **d) none of these**

67. The solution set of the system $x^2 + y^2 = 85$; $x^2 – 6xy + 8y^2 = 0$
a) $(-4\sqrt{5} , -\sqrt{5})$ b) $(\sqrt{5} , 4\sqrt{5})$ c) $(4\sqrt{5} , \sqrt{5})$ **d) none of these**

68. The solution set of the system $4x^2 + y^2 = 25$; $y^2 – 2x = 5$
a) (3, 2) **b) (2, 3)** c) (-2, -3) d) (0 , 0)

69. Let two positive numbers which differ by 18 and whose product is 208. Convert in system of equations.
a) x – y = 18 b) x + y = 18 c) $x^2 + y^2 = 18$ d) none of these
xy = 208 x – y 208 xy = 208

70. The difference of two numbers is 5 and the difference of their square is 275. Find the smaller number.
a) 25 b) – 25 c) 20 d) – 15

71. The sum of two numbers is 32 and the sum of their squares is 904. Find the greater number.
a) – 30 b) 25 **c) 30** d) 35

72. The sum of the squares of two numbers is 925 and the difference of their squares is 875. Convert in system of equation.
a) $x^2 + y^2 = 925$ **b) $x^2 + y^2 = 925$** c) xy = 925 d) none of these
$x^2 + 2y^2 = 875$ **$x^2 – y^2 = 875$** $x^2 + y^2 = 875$

73. The sum of the circumferences of two circles is 24πm and the sum of their areas is 8π m^2 convert in system of equations.
a) $2\pi r_1 - 2\pi r_2 = 24\pi$ b) $2\pi r_1 - 2\pi r_2 = 24\pi$ **c) $2\pi r_1 + 2\pi r_2 = 24\pi$** d) none of these
$\pi r_1^2 + \pi r_2^2 = 80\pi$ $\pi r_1^2 - \pi r_2^2 = 80\pi$ **$\pi r_1^2 + \pi r_2^2 = 80\pi$**

74. If a,b,c be the sides of a triangle then perimeter = _____.
a) $\frac{(a+b+c)}{3}$ **b) $\frac{(a+b+c)}{2}$** c) $\frac{(a+b+c)}{4}$ d) (a x b x c)

75. If x and y be the sides of a rectangle then perimeter = _____.
a) $\left(\frac{x+y}{2}\right)$ **b) $\left(\frac{x+y}{3}\right)$** c) 3x + 3y d) 2x + 3y

76. If the radius of a circle be "r" then circumference c = _____.
a) $2\pi r$ b) πr c) πr^2 d) 3 πr

77. If the radius of a circle be "r" then area _____.
a) 2 πr b) πr c) 3 πr **d) πr^2**

78. A= (2, 4, 8} and B = (2^1, 2^2, 2^3} are _____ Sets.
(a) Equivalent (b) Sub **(c) Equal** (d) Null

79. Generally (a, b)_____ (b, a) .
(a) = (b) < (c) > (d) ≠

80. Let A = {2,3} , B = {3,4}, C = {4,5} then A x (B∩C) = _____.
a) Ø **b) { (2,4) , (3,4) }**
b) c) { (3,4) , (4,5) } d) { (2,4) , (2,5) }

81. A set with no element is called the _____ set.
a) Equal b) Sub **c) Null** d) Power

82. $(A^/)^/$= _____.
a) $B^/$ b) U c) $U^/$ **d) A**

83. In generally Cartesian product of Sets A and B; A x B _____ B x A.
a) = b) > c) ≠ d) <

84. If E = {2, 4, 6, …… } and O = { 1, 3, 5, …….} are _____ sets.
a) Equal b) Equivalent c) Sub **d) Null**

85. AU ∅ = ∅ UA = _____.
a) **A** b) A/ c) ∅ d) ∪

86. If $Z_1 = 4 - 3i \; and Z_2 = -1 + 2i \; then \frac{Z_1}{Z_2} =$ _____
a) 4 + 3i b) 2 – I c) -2 – 1 **d) – 2 + i**

87. If $Z_1 = 1 + i \; and \; Z_2 = 3 - 2i$ then find the vlue of $|5Z_1 - 4Z_2|$= _____.
a) $\sqrt{218}$ b) 310 c) $\sqrt{312}$ d) 218

88. The conjugate and Modulus of the Complex number – 7 + I are _____ and _____
a) – 7 – I, $5\sqrt{2}$ b) 3/5 , 7 c) 320 d) – 252 , $\sqrt{2}$

89. $\sqrt{2}$ is _____ a / an number.
a) Rational **b) Irrational** c) odd d) even

90. A number x is an _____ if x ∈ N, x = 0 or x ∈ - N.
a) Integers b) Whole c) Prime d) Even

91. (0 , 0) is the identity in complex number w.r. to _____.
a) Addition b) Subtraction **c) Multiplication** d) division

92. (1 , 0) is the identity in complex number w.r. to _____.
a) Addition b) Subtraction c) Multiplication d) division

93. The number $\sqrt{n}$, when n is even positive number is _____.
a) Rational b) Irrational c) Imaginary **d) Integer**

94. Who introduced the symbol 0 (zero) _____
a) British b) French **c) Arabs** d) German

95. The rational numbers were introduced by _____
a) Arabs (1550 BC) **b) Greek (1550 BC)**
c) Egyptian (1550 BC) d) Indian (1550 BC)

96. "π" is a/an _____ number.
a) odd ` b) prime c) Rational **d) Irrational**

Section 'B'
Short Answer Question
Complex Number and Algebra

Q2i) Solve the following complex equations:
$(x + 2yi)^2 = xi$ OR $(x , y) . (2,3) = (-4, 7)$ OR $(x + 3i)^2 = 2yi$

Q2ii) Show that $1 + i$ and $1 - i$ satisfy the equation
$z^2 - 2z + 2 = 0$ OR
Solve by example that $(1 + z)^2 = (1 + 2z + z^2)$

Q2iii) Find all the cube roots of 125. Also show that their sum is equal to zero and their product is 125.
OR
Find m if the sum of the roots of $6z^2 – 3mz + 5 = 0$ is equal to the product its roots.
OR
$\alpha \; and \; \beta$ are the roots of $x^2 – 6x + 8 = 0$ for a quadratic equation whose roots are reciprocal of this equation.

Q2iv) If α, β are the roots of 8x2 – 6x + 3 = 0 form an equation whose roots are α^3, β^3 or $\alpha + 2, \beta + 2$
OR $\frac{1}{\alpha^3} - \frac{1}{\beta^3}$

Q3i) If ${}^nP_3 = 12 \; . \; {}^2P_3$, find n OR ${}^{2n}P_3 = 2 \; . \; {}^nP_4$ find n OR ${}^{2n+1}P_{n-1} : {}^{2n-1}P_n = 3.5$

Q3ii) The 2nd , 31st and the last term of an A.P are $\frac{31}{\mu}$, $\frac{1}{2}$ and - $\frac{13}{2}$ respectively.

OR

In a G.P , the first term is 7, the lat term is 448, and sum is 889. Find common ratio and number of terms.

OR

In A H.P the 10th term is 35 and 24th term is 25 if the last term is 2. Find the number of terms.

Q3iii) Find the sum of 1st n-terms of 3 +56 + 5537 ……. OR

Find the sum of infinite geometric series is $\frac{1}{5}+\frac{1}{15}+\frac{1}{45}+$……. OR

Find the sum of series .9 + .09 + .009 + .0009 + …….. to n terms

Q3iv) Prove by mathematical induction $1^2 + 3^2 + 5^3$ + …….. $(2n-1)^2 = \frac{1}{3}$ n (2n-1) (2n+1) OR

4 + 5 + 12 + ……. + 4n = 2n(n+1) OR 2 + 6 + 12 -1 ……..n (n+1) = $\frac{1}{3}$ (n + 1) (n + 2)

TRIGNOMATRY

Q4i) How far does a boy on a bicycle turned in 10 revolution if the diameter of the wheels of his bicycle each equal to 56cm.

OR

If a point on the rim of a 21cm diameter fly wheel travels 5040m in a minute through. How many radians does the wheel turns in a second.

Q4ii) Prove thattan-1θ = Sin-1 $\frac{\theta}{\sqrt{1+\theta^2}}$ OR $= 1 - Sin\theta$ OR (Cosec θ- Cos θ)^2 = $\frac{1-Cos\theta}{1+Cos\theta}$

Q4iii) For any triangle ABC, Derive law of sine or law of cosine or law of tangent.

Q4iv) Solve : Cos θ - 2 Sin $\theta = 0$ OR tan 2 θ cot θ =3 OR Cos θ + Cos θ + 1 = 0

Section 'C'
Detailed Answer Question

Q5i) Which term of the H.P to 6 , 2 , $\frac{6}{5}$, a equal to , $\frac{2}{33}$ OR

In a G.P (j+k)th term is x and (j-k)th term is y. Prove that jth term is $\sqrt{xy}$

OR

The sum of the first ^ terms of two are in the ratio 3n + 31: 5^-3. Show that 9th terms are equal.

Q5ii) Find the term independent of x in $(\sqrt{x} - \frac{2}{x^2})^{10}$ OR $(x - \frac{2}{x})^{10}$ OR $(\frac{4x^2}{3} - \frac{3}{2x})^9$

Q5iii) Find the middle term in the expression of $(1 - \frac{1}{2}x^2)^{14}$ OR $(\frac{a}{y} - \frac{y}{a})^{12}$ OR $(1 - \frac{1}{x})^{2n}$

Q6i) A piece of a plastic strip 1m long is bent to form on isosceles triangle with 950 as measure of its largest angle find the length of the side?

OR

Two hikers start from the same point are walks 9km heading east the other one 10km heading 550 north east. How far apart are they as the end of their walks?

OR

Three points A,B,C form a triangle such that the ration of the measures of their angles 1:2:3. Find the ratio of the lengths of the sides?

Q6ii) Solve the system of equation:

$4x + 3t = 25$ OR $2x^2 + y^2 = 13$ OR $x + y = 5$

$\frac{4}{x} + \frac{3}{t} = 2$ $5x^2 - 2y^2 + 8 = 0$ $\frac{3}{x} + \frac{2}{y} = 2$

Q7i) Prove that

a) $\text{Cos } 4x = 8 \text{ Cos}^4x - 8 \cos^2 r + 1$ b) $\frac{Sin\theta + Sin\emptyset}{Sin\theta - Sin\emptyset} = \frac{tan\theta + \emptyset/2}{tan\frac{\theta - \emptyset}{2}}$ c) $\frac{tan\theta + Sin\theta}{Cosec\theta - Cot\theta} = tan\theta \ Sin\theta$

d) $\text{Sin}3\theta = 3\sin\theta - 4 \sin^{-3}\theta$

Q7ii) The measure of the two sides of a triangle are 4 and 5 units. Find the third side so that the area of triangle in 6 square unit. OR

In aΔABC prove that area of triangle $\Delta = \frac{1}{2}$ ab $\sin\theta$.

BOTANY

SECTION "A" (Multiple Choice Questions)

1. Organisms which do not contain bounded nucleus called:
   *** Prokaryotes** * Eukaryotes * Both * None
2. Cellulose is used to manufacture:
   * Plastic * Fibre * Gel *** Paper**
3. Fluid Mosaic Model was given by:
   * Schleiden & Schwann * Robert Brown
   *** Singer & Nicholson** * Robert Hooke
4. Number of chromosomes in human being is:
   *** 46** * 26 * 23 * 43
5. Chromosomes having equal arms called:
   *Acrocentric *Sub metacentric ***Metacentric** *Telocentric
6. Chromosomes with unequal arms called:
   *Telocentric *Metacentric ***Sub metacentric** *Acrocentric
7. Lysosomes are originated by:
   *Mitochondria *Ribosomes
   *Endoplasmic reticulum ***Golgi Bodies**
8. _____ is the energy converting organelle.
   *E.R *Nucleus ***Chloroplast** *Mitochondria
9. Mitochondria is the site of:
   *Anaerobic respiration ***Aerobic Respiration**
   *Both a & b *None of them
10. Thylakoid stacked together to form:
    *Lamella *Stroma ***Grana** *Both b & c
11. _____ detoxify alcohol in the cell.
    ***Peroxisomes** *Glyoxisomes *Both of them *None of them
12. Various components of the cell can be isolatyed by:
    *Fragmentation *Fractionation ***Centrifugation** *All of these
13. Modification of protein and lipids into glycoprotein and glycolipids occurs in:
    *E.R *Mitochondria ***Golgi bodies** *Ribosomes
14. Blindness and death by age 3 is caused in _____ disease.
    ***TaySach's** *Gaucher's *Kreb's *All of these
15. The following process is/are passive transport:
    *Diffusion * Osmosis *** Both of these** * None of these
16. Which is not membrane bound organelles:
    *Ribosomes * Centrosomes * Vacuole *** All of these**
17. Endocytosis involves digestion of solid particles called:
    ***Phagocytosis** * Pinocytosis * Osmosis * Cell drinking process

18. Closely related orders grouped together to form:
*Family ***Class** *Genera *Division
19. Yellow fever & dengue are caused by:
*Paramyxovirus *Rhabdovirus *Rhinovirus ***Arbovirus**
20. Kaposi's sarcoma is also known as:
*Lung cancer ***Skin cancer** *Mouth cancer *None of them
21. Blood poisoning is called
*Anemia *Hemiplegia *Leukaemia ***Septicaemia**
22. _____ kingdom is called rag-bag
*Monera ***Protoctista** *Fungi *Plantae
23. Colds in human caused
*Retroviruses *Rahobovirus ***Rhinoviruses** *Arbvirus
24. TMV was discovered by
*Wendell Stanley *Iwanowsky
***Leeuwenhoek** *Robert Whittaker
25. HIV destroys _____ in the body of man.
*Liver *Kidneys ***Immune system** *Lungs
26. The five kingdom system of classification was proposed by
***Robert Whittaker** *Ernest Hackel *MargulisSchwartz *Linnaeus
27. Which of the following is an infections protein particle
*Viroid *Virus ***Prion** *Capsid
28. Retrovirus cause the disease
*Malaria *Sleeping sickness *Thphoid ***AIDS**
29. Temperate phage may exist as
*Retrovirus *capsid ***Prophage** *virioid
30. Hepatitis is an inflammation of
***Liver** *kidney *Spleen *Lungs
31. Pararmyxovirus cause the disease
*Colds *Rabies ***Measle and mumps** *Poliomyelitis
32. Vaccine is not yet available for
*Hepatitis B virus ***Hepatitis C virus**
*Hepatitis Avirus *All of these
33. Bacteria is considered as the
*Largest and simplest organism *Smallest and complicated organism
***Smallest and simplest organism** *Largest and complicated organism
34. Bacteria without flagella referred as
***Artichous** *Monotrichous
*Amphitrichous *Lophotrichous
35. Feed on dead organic matter, bacteria is called
***Saprophytic** *Parasitic
*Symbiotic *Autotrophic
36. Type of respiration which do not require oxygen is called
*Aerobes ***Anaerobic** *Cutaneous *None of them
37. Bacteria asexually reproduce under favorable condition by
***Fission** *Spore formation *Parthenogenesis *Conjugation
38. Laderberg and Tatum in 1946 experimentally carried out
***Conjugation** *Fission *Spore formation *None of them

39. Fred Griffith in 1928 notified the principal that is called
***Conjugation** *Transformation *Spore formation *Transduction
40. Bacteria of alimentary canal help in herbivores digestion of
***Cellulose** *Protein *Fat *Lipid
41. Riboflavin is a vitamin that is produced by
*Amoeba ***Clostridium** *Cynobacteria *Plasmodium
42. Different ways of immunization is commonly called
***Vaccination** *Sterilization *Tablets *Injection
43. Typical example of Blue green algae is
***Nostoc** *Bacteria *Virus *RNA virus
44. A cube of eight Cocci is known as:
*Staphylococcus ***Sarcina** *Tetrad *Streptococcus
45. The bacteria possessing tufts of flagella at both their poles are called
*Lophotrichous ***Amphitrichous** *Peritrichous *Atrichous
46. The autotrophic bacteria may be
*Chemosynthetic only *Photosynthetic only
***Photosynthetic as well as Chemosynthetic** *None of above
47. Bacterial death rate is equal to bacterial reproduction during the
*Log phase ***stationary phase** *Death phase *lag phase
48. The hydrogen source used by autotrophic bacteria is the
*Hydrogen peroxide *Water ***Hydrogen Sulphide** *All of above
49. Reserved food material in cyanobacterium is
***Starch** *Lipid *Protein *Glycogen
50. The body of the fungi is called:
* Thallus * Hyphae *Fragment *** Mycelium**
51. The organisms with no chlorophyll but having cell wall called:
* Animals * Plants *Algae *** Fungi**
52. Multinucleated non septate hyphae called:
* Lichen * Mycorrhiza ***Coenocytic** * Mycelium
53. The fungal cell-wall is composed of:
* Cellulose * Hemicellulose ***Chitin** * All of these
54. Fungi obtain their food from living tissues called:
* Saprotrophs *** Parasites** *Predators * All of these
55. The bioindicators of air pollution are:
* Breadmolds *** Lichen** *Mycorrhiza * Rhizopus
56. Saprophytic fungi and bacteria are the _____ of ecosystem.
* Producers * Consumers *Predators *** Decomposers**
57. Plants with _____ association show batter growth.
* Lichen *** Mycorrhiza** *Coenocytic * Algal
58. The breadmolds are called:
* Rust and smut *** Mucor and Rhizopus**
*Slime mold * Penicillium and Phytophthora
59. Yeast belongs to:
* Zygomycota * Basidiomycota ***Ascomycota** * Deuteromycota
60. The largest division of fungi called:
* Zygomycota * Basidiomycota ***Ascomycota** * Deuteromycota
61. The smallest division of fungi called:
* Ascomycota * Deuteromycota *Basidiomycota *** Zygomycota**

62. The beak like outgrowth of ascogonium is known as:
* Operculum * Ostiole *Perithecium *** Trichogyne**
63. Mushrooms belong to:
*** Basidiomycota** * Ascomycota *Deuteromycota * Zygomycota
64. Fungi imperfecti are called:
* Zygomycota * Basidiomycota *Ascomycota *** Deuteromycota**
65. The antibiotic penicillin is obtained from:
* Yeast * Aspergillus ***Penicillium** * Rhizopus
66. _____ ascospores are formed in ascomycota.
* 4 * 6 ***8** * 10
67. Rust and smut disease are found in:
* Rice * Barley ***Bajra** * Wheat
68. The fungi in which sexual reproduction is absent.
* Zygomycota * Basidiomycota *Ascomycota *** Deuteromycota**
69. Parasexuality is found in:
* Zygomycota * Basidiomycota *Ascomycota *** Deuteromycota**
70. Severe infection of lungs called:
* Aspergillosis * Moniliasis ***Histoplasmosis** * Torulosis
71. Mycotoxin, a carcinogenic aflatoxin is produced by:
* Yeast * Penicillium ***Aspergillus** * Mildew
72. Which chemical substance is more resistant to decay?
* Cutin * Cellulose *lignin *** chitin**
73. Ascocarp having small opening at the apex are called:
* Apothecium *** Perithecium** *Cleistothecium * None of these
74. Plant like character found in Euglena:
* Flagella * Pellicle ***Pyrenoid** * Photoreceptor
75. Euglena has:
* Cell wall * Chlorophyll ***Both of these** * None of these
76. Ulva reproducing by quadriflagellated zoospores which has:
*** 13 chromosomes** * 26 chromosomes *14 chromosomes * 28 chromosomes
77. Animal like phase of slime mold:
*** Plasmodium** * fruiting bodies *Spores * Sporangia
78. Ulva has _____ alternation of generation.
* Heteromorphic * heterogametic ***Isomorphic** * Conjugating
79. The amoeboid stage of Slime mold is:
* Water mold * Sporangia ***Plasmodium** * Chlorella
80. Example of water mold is:
* Aspergillus * Rhizopus ***Phytophthora** * Mucor
81. Phytophthora causes:
* Tuberculosis * Early blight of potato
***late blight of potato** * Fire blight of potato
82. Plant like Protoctists are:
* Fungi *** Algae** *Bryophytes * Pteridophytes
83. Ulva is marine alga called:
* Sea feather * Sea spike ***Sea lettuce** * Sea cucumber
84. Ulva is _____ alga.
* Unicellular *** Multicellular** *Both of these * None of these

85. The non vascular plants are called:
* Gymnosperm * Angiosperm *Tracheophytes *** Bryophytes**

86. A polymer that is resistant to all kinds of environmental damage:
* Cellulose *** Sporopollenin** *Cutin * None of these

87. Group of Hornworts is:
* Hepaticae * Musci ***Anthocerotae** * Sphenopsida

88. Dominant generation of Bryophytes is:
* Sporophyte *** Gametophyte** *Saprophyte * heterophyte

89. _____ is heterosporous plant:
* Equisetum * Lycopodium *Psilotum *** Selaginella**

90. Lycopsids are _____ plant.
* Mosses *** club mosses** *horse tails * liverworts

91. Horse tail plants are included in:
* Psilopsida * Lycopodsida ***Sphenopsida** * Pteropsida

92. Seeded plants are called:
*** Spermopsids** * Pteropsids *Sphenopsids * Lycopodsids

93. Marchantia is:
* Fern *** Liverwort** *Hornwort * Equisetum

94. Fossil plant of psilopsida is:
* Psilotum * Lycopodium ***Rhynia** * Tmesipteris

95. Horse tail is called:
* Moss * Marchantia ***Equisetum** * Selaginella

96. Sori are found in:
*** Ferns** * Pteropsida *Both of these * None of these

97. The gametophyte of fern is called:
* Protoandry *** Prothallus** *Ascocarp * Pericarp

98. Epipetalous is the characteristic feature of family:
* Rosaceae *** Solanaceae** *Fabaceae * Poaceae

99. Axile placentation is found in:
* Fabaceae * Poaceae *Rosaceae *** Solanaceae**

100. Vexillary aestivation is found in:
* Rosaceae * Solanaceae *** Fabaceae** * Ceasalpiniaceae

101. Ovary is obliquely placed in:
*** Solanaceae** * Fabaceae *Ceasalpiniaceae * Mimosaceae

102. Poaceae is also known as:
* Grass family * Monocot family *Cereal family *** All of these**

103. Group of plants in which spore germinates into protonema:
*** Bryophyta** * Hepaticae *Musci * Anthocerotae

104. Double fertilization takes place in:
* Gymnosperm *** Angiosperm** *Bryophytes * Tracheophytes

105. Diadelphous stamens are found in:
*** Fabaceae** * Ceasalpiniaceae *Mimosaceae * Solanaceae

106. The common energy currency of the cell is called:
***ATP** *NADP *FAD *NADH

108. The colour of cholrophyll 'a' is:
*Yellowish green ***bluish green** *brown *red

109. The light harvesting complex in plant body is called:
* Antenna complex * reaction center ***photosystem** * none of these

110. The colour of chlrophyll 'b' is:
*** Yellowish green** * bluish green *brown * yellow

111. Light reaction is also called as:
* Chemical reaction * Calvin reaction
***photochemical reaction** * all of these

112. The formation of ATP compounds during respiration is called:
* Photophosphorylation * cyclic phosphorylation
*** oxidative phosphorylation** * none of these

113. The primary electron acceptor in electron transport chain from PS-II is:
* Phytochrome * phycocyanin *ferredoxin *** phaeohytin**

114. The process of carbon fixation during C3 cycle called:
* Rubisco * Reduction *oxidation *** carboxylation**

115. Calvin-Benson cycle is called:
* Light reaction *** Dark reaction** *Kreb cycle * TCA cycle

116. The rate of photosynthesis is high in:
* Red light *Blue light ***Both of these** * None of these

117. The link between glycolysis and Kreb cycle is:
* Citric acid *Succinyl Co-A ***Acetyl Co-A** * Oxaloacetate

118. The diagrammatic representation of trophic levels is called:
* Food web ***Pyramid** *Energy flow *Food chain

119. In the ecosystem the plants are called:
* Consumers *Organizers ***Producers** * All of these

120. The bacteria and fungi in the ecosystem are called:
* Producers *Consumers ***Decomposers** * All of these

121. Oxygen produced during photosynthesis comes from:
* CO_2 *** H2O** *Both of these * None of these

122. Process which converts pyruvate into three molecules of C_2O is:
* C3 Cycle * C4 cycle ***TCA cycle** * Calvin cycle

123. Glycolysis takes place in:
* Mitochondria *** Cytoplasm** *Chloroplast * All of these

124. Anaerobic respiration is also known as:
* Fragmentation *** Fermentation** *Fertilization * All of these

125. Kreb cycle lies in _____ respiration:
* Aerobic * Anaerobic ***Both of these** * None of these

126. Acetyl Co-A is formed by:
* Glucose *** Pyruvic acid** *Lactic acid * All of these

127. TCA cycle is:
* Kreb cycle * Citric acid cycle
*Tricarboxylic acid cycle *** All of these**

128. Electron transport chain of respiration takes place in:
* Lamella * matrix of mitochondria
*** Membrane of mitochondria** * Chloroplast

129. Net ATPs produce by the end of glycolysis are:
*** 2** * 4 *6 * 8

130. Aerobic respiration produces _____ ATPs.
* 34 * 36 ***38** * 40

131. Light reaction of photosynthesis takes place in:
* Stroma *** Thylakoid** *Chloroplast * All of these

132. Dark reaction of photosynthesis takes place in:
* Mitochondria * Chloroplast *Thylakoid *** Stroma**

133. The organisms which prepare their own food material are called:
*** Autotrophs** * Heterotrophs *parasites * Saprophytes

134. Photosynthetic bacteria use _____ during photosynthesis:
* CO_2 * H_2O ***H_2S** * S

135. Photosynthetic bacteria release _____ during photosynthesis:
* O_2 *** S** *C_2O * H_2O

136. The pale yellow colouration of plants called:
* Senescence * Dormancy *Necrosis *** Chlorosis**

137. _____ is/are constituents of chlorophyll.
* N * Mg ***Both of these** * None of these

138. The element which helps in opening and closing of stomata:
* N * P ***K** * Mg

139. Insectivorous plants grow in _____ deficient areas:
*** N** *P *K * Mg

140. Charles Darwin called the most beautiful plant:
*** Venus fly trap** * Water fly trap *Utricularia * Sundew

141. Leaves colour become bluish green due to:
* N * P *** K** * Mg

142. Utricularia is commonly called as:
* Sundew * Water fly trap *Venus fly trap *** Bladder wort**

143. Monotropa is ____ plant:
*** Saprophytic** * Parasitic *Autotrophic * Symbiotic

144. Cuscuta is a _____ plant:
*** Total stem Parasite** * Partial stem parasite *Partial root parasite * Total root Parasite

145. Orobanche and Cistanche are _____:
* Total stem Parasite * Partial stem parasite *Partial root parasite *** Total root Parasite**

146. Waxy covering on the epidermis of plant body is called:
* Cellulose *lignin *pectin *** cuticle**

147. Gaseous Exchange takes place in plants through:
* Lenticels * cuticle *stomata *** All of these**

148. The plants of photo-respiration called:
*** C3** * C4 * CAM * All of these

149. The enzyme which is involved in photo-respiration:
* Reductase * Ribulase *Oxidase *** Rubisco**

150. These cells have Chloroplast:
* Goblet cells * sclerenchyma *guard cells *** Vascular cells**

151. The process doesn't produce ATP:
* Respiration * aerobic respiration *Anaerobic respiration *** Photo-respiration**

152. Rubisco is _____ enzyme:
* Carboxylase * Oxigenase ***Both of these** * None of these

153. _____ is broken down into C2O and serine:
* Phosphoglyceraldehyde * Phosphoglycerate
***Phosphoglycolate** * Oxaloacetate

154. The process of absorption of water resulting swelling of substance called:
* Inhibition * Plasmolysis *Osmosis *** imbibition**

155. The following substance show imbibition:
* Wooden window * seeds *resins *** All of these**

156. To which factor transpiration is inversely proportional:
* Light * Temperature *Wind *** Humidity**

157. Recovery of cell from Plasmolysis called:
* Plasmolysis *** Deplasmolysis** *Turgidity * All of these

158. _____ conducts water more efficiently.
* Tracheids * Trachea ***Vessel** * All of these

159. Transport of water takes place in _____ direction.
* Longitudinal * Vertical ***radial** * None of these

160. Xylem are _____ tissues.
* Thick walled * Conducting *Vascular *** All of these**

161. Attraction of molecules between water and xylem is:
* Cohesion *** Adhesion** *Both of these * None of these

162. Suction force is generated in xylem vessel called:
* Root pressure * Stem pressure ***Transpiration pull** * All of these

163. Ascending of water in xylem vessel takes place through:
* Adhesion * Cohesion ***Both of these** * None of these

164. Cellulose keeping in water become swell by:
* Diffusion * Osmosis ***Imbibition** * All of these

165. Tracheids and vessels are found in:
* Cambium * Phloem ***Xylem** * Stele

166. When the cell is fully extended, called:
* Plasmolysed * Deplasmolysed ***Turgid** * All of these

167. The maximum pressure developed in a cell solution with pure water is called:
* Osmotic pressure ***Turgor pressure** *Osmotic Potential * Wall pressure

168. The shrinkage of cell cytoplasm from cell wall called:
* Diffusion *** Plasmolysed** *Deplasmolysed * Plasmolysis

169. Munch Theory is also called:
* Pressure flow hypothesis * Bulk flow theory
***Both of these** * None of these

170. The upward movement of water and dissolved salts against force of gravity called:
* Transpiration pull * Root pressure ***Ascent of sap** * All of these

171. Conduction of water takes place through:
* Root * Stem ***Xylem** * Phloem

172. Root pressure theory was proposed by:
* Dixon *** Hales** *Munch * Schwann

173. The most successful theory about ascent of sap is:
* Adhesion-cohesion tension theory * Pull from above
*Dixon's theory *** All of these**

174. Transpiration pull and cohesion of water are the points of:
*Munch Theory *Root pressure theory ***Dixon's theory** * Source to sink theory

175. Distribution of food throughout the body of plant is known as:
* Transpiration * Transportation ***Translocation** * All of these

176. The internal loss of water from aerial parts in the form of vapours called:
*** Transpiration** * Guttation *Translocation * Hydathode

177. In woody stem, the pores are known as:
* Stomata * Cuticle ***Lenticels** * Hydathode

178. Most of the Transpiration takes place through:
* Stomata * Cuticle *Lenticels *** All of these**

179. The giving out of water in the form of droplets called:
* Ascent of sap * Transpiration ***Guttation** * Translocation

180. In facilitated diffusion the carrier molecules are:
* Lipids *** Protein** *Carbohydrates * All of these

181. Water potential in a cell solution is:
* Zero * Positive ***Negative** * All of these

182. Water potential of pure water is:
*** Zero** * Positive *Negative * None of these

183. The point when cytoplasm just starts to separate from cell-wall called:
*** Incipient Plasmolysis** * Plasmolysis
*Deplasmolysis * Protoplasm

184. The root pressure is responsible for raising water upto:
* 6 meters *** 6.4 meters** *7 meters * 7.4 meters

185. The transport of water through plasmodesmata called:
*** Symplast** * Apoplast *Cell to cell * All of these

186. Sodium-potassium pump is an example of:
*** Active transport** * Passive transport * Diffusion * Osmosis

187. Phloem loading is translocation of food by the process:
* Passive transport *** Active transport** *Both of these * None of these

188. The movement of water through extracellular pathway called:
* Cell to cell * Symplast ***Apoplast** * All of these

189. These are the conducting tissues:
* Xylem * Phloem ***Both of these** * None of these

IMPORTANT QUESTIONS 2019-2020

CHAPTER 04,THE CELL

Short questions:

1. Cell fractionation by centrifugation.
2. Diff b/w Prokaryotes and Eukaryotes.
3. Define Phagocytosis, Pinocytosis, Active Transport and Passive transport.
4. Note on Mitochondria, E.R, Chloroplast and Plastids.
5. Structure and Functions of Cell-wall.

CHAPTER 05,VARIETY OF LIFE

Short questions:

1. Definitions of Species, Homology and Genetics.
2. Note on Binomial Nomenclature.
3. Changes proposed by Margulies and Schwartz.
4. Diagrams and Description of Lytic and Lysogenic cycles of Bacteriophage.
5. Viral diseases with their causative agents.
6. AIDS and Hepatitis (Control-treatment and preventions)
7. Diagram of Bacteriophage

CHAPTER 06, KINGDOM PROKARYOTAE

1.Diagram of Rod-shaped Bacterium. 2. Economic importance of Bacteria (04 points).
3. Reproduction in Bacteria by Fission and Spore formation. 4. Shapes of Bacteri*
5. Growth Phases and Control measures of Bacteri* 6. Salient features of Cyanobacteria (Blue-green algae).
7. Methods of genetic recombination 8. Bacteria classification an flagella

CHAPTER 07, KINGDOM PROTOCTISTA

Short questions:

1. Structure and economic importance of Phytophthora infestans.
2.Animal and plant like characters of Euglena*
3.Diagrammatic life cycle of Ulva to show the isomorphic alternation of generation.

Chapter 08, KINGDOM FUNGI

1.Note on Lichens, Micorrhiza and Yeast. Mycellium
3. Economic importance of fungi.
4. Names of groups in which fungi are classified also Basis on which the groups are name*
5. Zygomycota Life Cycle diagram
6. Describe Ascomycota or Basidiomycota in detail.

CHAPTER 09, KINGDOM PLANTAE

Short questions:

1. Draw an outline of kingdom Plantae.
2. Write a note on Rhyni* 3. Explain the evolution of leafwith respect of Megaphyllous or Microphyllous hypothesis. OR Explain three steps in the evolution of see*
4. Define Heterospory, Homospory, Prothallus.
5. Labeled diagram of L.S of Ovule,
6. Economic importance of Family Poaceae. 7. Four Botanical names of each Family Solanaceae, Rosaceae, Mimosaceae and Poaceae. 8.Double fertilization (definition)

CHAPTER 11, BIOENERGETICS

Short questions:

1. Diff b/w Aerobic and Anaerobic respiration.
2.Formation of Acetyl Co-* 3. Anaerobic Break down of Pyruvic Acid (Alcoholic and Lactic acid fermentation).4. Economic importance of fermentation.
5. Main events take place during Photosynthesis. 6. Role of light, chlorophyll and water during photosynthesis.
7. Diff b/w photosynthesis and respiration.

CHAPTER 12, NUTRITION

Short questions:

1. Write down the role and deficiency symptoms of Nitrogen, phosphorus, Potassium.
2. Explain Phototrophic nutrition with its chemical equation.
3.Write a note on Carnivorous plants with two examples.

CHAPTER 13, GASEOUS EXCHANGE

Short questions:

1. Write a note on Photorespiration.
2. How does gaseous exchange takes place in plants?

CHAPTER 14, TRANSPORTATION

Short questions:

1. Define osmosis, diffusion, imbibitions, facilitated diffusion and active transport.
2. Define vessel and tracheids.
3. Advantages and dis-advantages of transpiration.
4. Guttation and Hydathode.

DETAILED QUESTIONS

i. Floral characteristics, floral formula, floral diagram & economic importance of family Fabaceae, Rosaceae, Solanaceae.
ii. Glycolysis in detail
iii. Light reaction of photosynthesis
iv. Describe Calvin Benson Cycle (Dark reaction) (C3 cycle/carbon fixation in C3 plants
v. Define transpiration and its types. Explain the stomatal transpiration and mechanism of opening and closing of stomat*
vi. Life cycle of fernor Moss.
vii. Mechanism of Ascent of Sap viii. Basidiomycota or Ascomycota in detail.

ONE MARK QUESTIONS

i. Name the Lysosomal Storage Diseases and their consequences.
ii. Give the name of the organelle in the given diagram and label the mark parts.
iii. Chloroplast in an Energy converting organelle Justify.
iv. Why Ribosomes are regarded as Protein Factories?
v. Why viruses are appeared to be on the borderline between living and non-living worl*
vi. Write down the two strong differences between Lytic and Lysogenic Cycle.
vii. Mention the name and site of Bacterial chlorophyll.
viii. Among five kingdoms, which one is known as polyphyletic group of organisms and why?
ix. Why are fungi neither Plants nor Animals?
x. Give botanical names any two of the following:
a) Bajra b) Redwood Tree c) Brinjal d) Barley e) Sugarcane
f) Red pepper g) Tomato h) Tamarind i) Touch-me-not j) Kachnar
xi. What is the name of Energy trapping and energy converting process? Mention the chemical equation also.
xii. Why do Insectivorous plants use insects as food?
xiii. What is the role of Rubisco during photorespiration.
xiv. Why do transpiration also called a necessary Evil?
xv. Write two strong differences between Plasmolysis and Deplasmolysis.
xvi. Define any two of the following.
a) Osmotic Pressure b) Osmotic Potential c) Water Potential
xvii. Why is Mitochondria also called Power House of a cell.
xviii. Give the name of the organelle in the given diagram and label the mark parts.
xix. Name the viral diseases with their causative agents.
xx. Write down the two major differences between Viroids and Prions.
xxi. What are Photosyntehtic bacteria?
xxii. Define Isomorphic Alternation of Generation.
xxiii. Define Perasexuality.

xxiv. Name four groups of fungi with their reproductive organ. Also mention that which group of fungi is called Fungi Imperfecti?
xxv. Write down the two useful and two harmful effects of fungi.
xxvi. Define Hetrospory.
xxvii. Name the three distinct phases of Carbon Cycle with their chemical equations.
xxviii. State the function of RUBISCO during photorespiration.
xxix. Classify the Insectivorous plant and explain any one.
xxx. Describe the role of Potassium (K) ion in opening and closing of stomat*
xxxi. Write down two differences between Photosystem I and Photosystem II.
xxxii. Name the Layers of Cell wall and their functions.
xxxiii. Give the name of the organelle in the given diagram and label the mark parts
xxxiv. Write down two strong differences between Temperate and Virulent viruses.
xxxv. When and who discovered the Tobacco Mosaic Disease?
xxxvi. Give the name of Pigments and Food reserves found in Cyanobacteri*
xxxvii. Define Apalnospores.
xxxviii. Name the different types of Ascocarps and also mention their differences.
xxxix. State two reasons that Spermopsida is a successful group of Land plant.
xl. Draw efficiency of Food chain.
xli. Name the two processes in which Gaseous exchange occur in plants.
xlii. Name the three pathways available for water to enter in the xylem.
xliii. Write two strong differences between Aerobic and Anaerobic Respiration.
xliv. Define Imbibition.
xlv. What are the major sites of Transpiration?
xlvi. Differentiate between Diffusion and Facilitate Diffusion.
xlvii. Write the floral formula of Rosaceae or Fabaceae
xlviii. Differentiate the viroids & prions. Write animal & plant like character of slime mol*

ZOOLOGY

SECTION "A" (Multiple Choice Questions)

1. Sucrose on hydrolysis produce:
   ***Glucose and Fructose** *Glucose and Galactose
   *Glucose and Maltose *Glucose and Glucose
2. The pH of water is:
   *5 *6 ***7** *8
3. The polymers are formed by the release of water molecules called:
   *Oxidation *Reduction ***Condensation** *Hydrolysis
4. Carbon is an element:
   *Bivalent *Trivalent ***Tetravalent** *Pentavalent
5. Milk sugar is known as:
   ***Lactose** *Galactose *Maltose *Fructose
6. The animal fat is called:
   *Glycogen *Starch ***Stearin** *Linolin
7. ATP, the energy rich compound is considered as:
   ***Mononucleotide** *dinucleotide
   *Polynucleotide *All of these
8. The hereditary material is considered as:
   ***DNA** *RNA *Both of these *None of these
9. Mucoids are the conjugated molecules of:
   *Glycolipids ***Glycoprotein** *Lipoproteins *Nucleoprotein
10. Haemoglobin is a type of protein:
    * Primary * Secondary * Tertiary *** Quaternary**
11. tRNA and rRNA take part in:
    * Transcription ***Translation** * Conjugation * Hydration
12. The term enzyme was proposed by:
    *Koshland ***Kuhne** * Berzelius * Bloor
13. The biocatalyst which increase the chemical reaction are called:
    ***Enzymes** * Reactants *Products * Isomers
14. The site of enzymes where substrate is attached, called:
    *Anterior site *Posterior site *Allosteric site ***Active site**
15. Lock-key theory was proposed by:
    ***Fischer** * Koshland *Kuhne * Stanley
16. The enzyme consist of protein only:
    ***Simple enzyme** * Conjugated enzyme *Prosthetic enzyme *Apoenzyme
17. The non protein part of the enzyme called:
    ***Prosthetic group** * Non prosthetic group
    * Holoenzyme * None of these

18. When non prosthetic group is inorganic molecule, it is called:
*Co-enzyme *** Co-factor** *Both of these *None of these
19. The inhibitors which resembles with the substrate and attached to active site are called:
*Co factor *Co enzyme
*** Competitive inhibitor** *Inhibitors
20. Pepsin works optimum at:
*1 ****1.4*** *2 *2.4
21. When the product binds with enzyme active site the process is called:
****Feed back inhibition*** * Feed back promotion
*Allosteric activation *None of these
22. In Malaria that temperature may rise up to:
*103°F * 105°F **** 106°F*** *100°F
23. In mosquito the sporozoites are stored in:
*Stomach *Liver *Intestine ****Salivary glands***
24. Plasmodium causes _____.
*Typhoid *fever *TB ****Malaria***
25. Entamoeba histolytica causes _____ to man.
****Dysentry*** * Diarrhoea *Malaria *None of these
26. Euglena belongs to the class:
****Flagellata*** *Ciliata * Sarcodina * Sporozoa
27. Monocystis lives in the seminal vesicles of:
****Earthworm*** *Snail * Planaria *Neries
28. Which one is not the symptoms of malaria?
*Nausea *Loss of appetite *** Dysentary** *Shivering
29. Asexual life cycle of Plasmodium is completed in:
*Mosquito ****Man*** *Both of these *None of these
30. Sexual life cycle of Plasmodium is completed in:
****Mosquito*** *Man *Both of these * None of these
31. The sub-kingdom whose members have no proper tissue organization is called:
* Protozoa *** Parazoa** * Prezoa * Sporozoa
32. Cnidanans and Echinoderms have symmetrical body
*** Radial** * Bilateral * Asymmetrical * Non-symmetrical
33. Cnidoblasts are present in the animals of phylum:
* Annelida * Arthropoda *** Cnidaria** * Mollusca
34. Zooids of phylum cnidaria which are attached 'to the subStratum are called
* Medusa * Polyp * Dactylozooids * Gonozooids
35. In flatworms excretion takes place by:
* Metanephredia *** Protonephredia** * Contractile vacuole * Malpighian tubles
36. Nematodes (round worms) are included in phylum:
* Platyhelminthes * Cnidaria *** Aschelminthes** * Annelida
37. In nematodes the body cavity is called:
* Enteron * Coelom *** Pseudocoelom**
38. In Earthworm locomotion takes place by:
* Parapodia *** Setae** * Cilia * Flagella
39. The largest invertebrate:
*Slugs *** Squids** * Clams * Oysters
40. In molluscs excretibn takes place by:
*Contractile vacuole * Malpighian tubules * Nephredia *** Kidneys**

41. When an animals complete their life cycle in two they are called:
*Monogenic *** Digenic** * Homogenic * Syngenic
42. Filariasis disease in man is caused by:
* Entamoeba * Tapeworm
*** Wuchereria (Thread worm)** * Liver fluke
43. Spiral shell is present in the class of phylum molusca:
***Gastropoda** * Scaphopoda * Pelecypoda * Amphineura
44. The animals with jointed appendages are included in phylum.
*Mollusca *** Arthropoda** * Cnidaria * Platyhelminthes
45. In insects the respiration takes place by:
*Gills *** Trachea** * Book lungs * Cuticle
46. Social animals are called:
*Centipedes * Spiders * Crustaceans *** Bees and termites**
47. Water vascular system is found in:
*Molluscs * Arthropodes *** Echinoderms** * Annelids
48. Biting and chewing mouth parts are present in:
*Mosquito * Butterfly *** Cockroach** * Liver fluke
49. Spiny skinned animals are called:
*Annelida * Mellusca *** Echinodermata** * Protozoa
50. An ancient bony fish is called:
*** Rhipidistian** * Amphioxis * Balanoglossus * Branchiostoma
51. A living fossil fish in the sea is called:
*** Coelocenth** * Branchiostoma * Amphioxis * Balanoglossus
52. Amphioxus is included in
* Hemichordata * Urochordata *** Cephalochordata** * Vertebrata
53. The heart of fishes consits of:
*** Two chambers** * Three chambers * Four chambers * Five chambers
54. Sweat glands are modified into mammary glands in:
*** Prototherian mammals** * Metatherian mammals
* Eutherian mammals * None of these
55. The sharp and curved teeth of snakes are called
*** Fangs** * Venon * Venter * Viper
56. The flying birds are included in sub-class:
* Ratitae *** Carinata** * Craniatae * Acraniatae
57. Dolphin is included in:
* Aves *** Mammalia** * Pisces * Reptilia
58. The closed circulatory system for each from the given options_____
*** Annelida** * Mollusca * Arthropoda * Echinodermata
59. Haemoglobin carries _____ times more oxygen than plasma
* 20 * 50 *** 70** * 100
60. Secretion of pyrogen in the body causes _____
* Headache * Malaria *** Fever** * Dysentery
61. Living part of the blood is_____
* Plasma * Lymph * Serum *** Corpuscles**
62. The accumulation of blood in tissues is called_____
* Atherosclerosis * Thrombosis *** Hematoma** * Phagocytosis
63. The body cavity of grass hopper is known as_____-
* Shizocoel *Pseudocoel * Coelom * Haemocoel

64. Blood vessels carrying oxygenated blood from lungs to heart is_____
* Pulmonary vein * Pulmonary arteries * Coronary arteries * Coronary vein

65. Which of the following has no muscular wall?
* Artery * Vein *** Capillary** * Vena cava

66. Blood clotting is initiated by _____
* RBC * WBC *** Platelets** * Plasma

67. Antibodies are produced by _____
*** B cell** * T cells * Macrophages *Neutrophils

68. This animal has three chambered of heart_____
* Man * Crocodile *** Frog** * Fish

69. RBCs are formed in _____
* Kidney * Heart * Brain *** Bone marrow**

70. This one is referred to as silent killer_____
*** Hypertension** * Heart attack * Aids * Cancer

71. Its function begins before birth and ceases with death_____
* Brain *** Heart** * Lungs * Blood

72. In medical science blue babies are known as _____
* Edema * Atherosclerosis *** Cyanosis** * Thrombus

73. Most numerous leukocytes present in blood are _____
* Lymphocytes *** Neutrophils** * Monocytes * Eosinophills

74. This polysaccharide present in human muscles _____
* Amylase * Collagen *** Glycogen** * Myoglobin

75. Uncontrolled production of leucocytes present in blood are _____
* Thalassaemia *** Leukaemia** * Edema * Cyanosis

76. Heart never receives oxygenated blood (venous bloo* in this animal _____
* Frog *** Fish** * Snake * Man

77. The difference between systolic and diastolic pressure is called _____
* High blood pressure * Low blood pressure
*** Pulse pressure** * Hypertension

78. Paralyses of one side referred as_____
* Coronary artery * stroke
* Myocardial infarction *** Hemiplegia**.

79. Skin and secretion of mucus membrane is consideredas_____.
* Second line of defense *** First line of defense**
* Third line of defense * Barriers

80. Antibodies taking from another person or animal are called _____.
* Active immunity *** Passive immunity** * interferons * cytokines

81. Body reaction against injury and by entry of microorganism is _____.
* Immunization *** Inflammation** * Active immunity * Artificial immunity

82. SA Node is present in_____
*** Right atrium** * Left atrium * Left ventricle * Right

83. Proteolytic Enzyme of infants called _____.
*** Renin** * HCL * Pepsin * Gastrin

84. Teeth in mammals are _____
* Homodont *** Heterodont** * Acrodont *Polyphydont

85. Bilirubin and biliverdin are found in _____
*** Liver** * Stomach * Ileum * Duodenum

86. In which of the organism, digestion is intracellular_____
* Earthworm * Planaria * Grasshopper *** Amoeba**

87. Bile contains_____
* Pepsin * Trypsin * Amylopsin *** None of them**

88. Largest gland of the body_____
*** Liver** * Pancreas * Pituitary Gland * Thyroid gland

89. The enzyme present in gastric juice is _____
* Ptyalin *** Pepsin** * Trypsin * Amylase

90. Dental carries are caused due to the deficiency of _____
* Chloride * Bromide *** fluoride** * Iodide

91. Insulin is released by _____
* Liver *** Pancreas** * Pituitary Gland * Gall bladder

92. Chyme is a creamy paste present in _____.
* Large intestine * Stomach *** Small intestine** * Oesophagus

93. Epigastric discomfort is commonly called _____.
* Piles * Constipation *** Dyspepsia** * Dysentery

94. Haemoglobin carries _____ times more oxygen than plasma
* 20 * 50 *** 70** * 100

95. This disease is caused by mycobacterium _____
* Lung cancer *** Tuberculosis** * Emphysema * Asthma

96. Sound producing organ in birds is _____
*** Syrinx** * Tongue * Larynx * Pharynx

97. TB is caused by _____
* Allergy *** Bacterium** * Nicotine * Virus

98. Rate of breathing is increased due to increase in concentration of _____ in blood
* Oxygen and Hydrogen * Oxygen and CO_2
*** CO_2 and Proton H^+ ions** * CO and Oxygen

99. Lungs of birds consist of _____
* Alveoli *** Parabronchi** * Trachea * None of these

100. The remaining volume of air in the lungs is _____
* Vital volume * Tidal volume *** Residual volume** *Active volume

101. Red color is imparted to the muscles by _____
*** Myoglobin** * CO_2 * Water * Goblet cells

102. Respiratory pigment absents in _____
* Rabbit * Frog * Earthworm *** Cockroach**

103. Recurrent attacks of breathlessness are known as_____
*** Asthma** * Lung cancer * Tuberculosis * Allergy

104. The tracheal system of cockroach opens outside its body through _____
* Tracheoles *** Spiracles** * Bronchi * parabronchi

105. The largest anmal whose size is 40 meters and weight more than 160,000 kg called:
* Balanoglosis *** Balanoptera(Blue whale)**
* Giant squid * Whale shark

IMPORTANT QUESTIONS 2019-2020

SECTION- B (SHORT – ANSWER QUESTIONS)

Q2a) REASONING QUESTIONS:

i. Why olive oil liquid and butter solid at room temperature? OR why RNA as a carrier of information OR How is DNA different from RNA.
ii. Which features restricts growth in insects OR why embryo of placental mammals much more secure in the uterus?
iii. How the concentration of product always is kept within certain range? Why reptiles and insect are consider as successful group.
iv. Why echinoderm is thought to be the close relatives of chordates OR how do lung fish survive during drought period.
v. Name the process in which the exoskeleton is removed in invertebrates and why is it so?
vi. What are the importance of coelom and segmentations in annelid? OR Give reasons why earth worms are said to be farmer's friend.
vii. Why Nacre called mother of pearl OR why Archaeopteryx is a connecting link between birds and reptiles.
viii. Give reason why marsupials are born in immature form and how they get nutrients for growth OR Why segmentation and Coelom useful for annelids.
ix. How do birds fly in air easily OR Despite possessing body cavity, why are Nematode not placed in Eucoelomate?
x. How does food move along the alimentary canal? OR Why hypertension called silent killer? OR Why blood does not transport gases in cockroach?
xi. Why the alveoli don't collapse during gaseous exchange? OR Why capillaries have a single layer of endothelium?
xii. A person eat Apple, which type of dressing occur in oral cavity ? OR Why air is better respiratory medium than water ? OR How counter current facilitates exchange of gases in fishes?
xiii. Which diseases is caused by impairment of haemoglobin? Name it's two types.
xiv. Why haemoglobin carries maximum for molecules of oxygen ? OR Why leucocytes are known as soldiers of the body?
xv. Why there is a need of digestion? OR How artery different from veins? Why amphibians and reptiles have incomplete double circulation?
xvi. What is the cause of blue babies as cyanosis?
xvii. Justify why blood called transporting material. OR how do the secretin and gastrin play an important role in digestion?
xviii. Why Hydra had both type of digestion? OR How does cockroach çirculatory system different from earthworm?
xix. Why birds take to breathes? OR explain the role of memory feel cells in Long term immunity.OR What's the role of air sacs in birds? OR why circulation called double circuit in animal?

Q2b) NON REASONING QUESTIONS:

i. What are the parasitic adaptations in flat worm? OR Write about biological important properties of water. OR write about the structure and function of RBC and WBC.

ii. Define conjugated molecules and explain any of them OR Write any four characteristics of enzyme.OR describe briefly any two blood diseases briefly.
iii. Write the common edible fish of Pakistan OR Give the symptoms of malaria OR Name mouthparts of insects with examples. OR what do you mean by LUB and DUB?
iv. Discuss the economic importance of Arthropoda OR insect OR State the name and function of cells present in body wall of sponge. OR what do you mean by SAnode and AV node?
v. Write any four characteristic of phylum chordate OR Echinodermata ORMammalia OR Porifera. OR name the protein digesting enzymes and their site of secretion in human alimentary canal.
vi. What is parasitism? Define monogenic and digenicparasite with examples ORDefine Metamorphosis. Write about its types with example
vii. Define Alternation of generation in animals OR what is meant by polymorphism? Explain with examples. OR define lymph and lymph nodes and write the function of lymphatic system.
viii. Write about four functions of liver. OR How does the tube like digestive system different from sac like digestive system?
ix. Write about human lung capacities. OR state the cause and symptoms of asthma, emphysema, lung cancer.
x. Define complete ventilation and incomplete ventilation. OR define briefly anorexia nervosa and bulimia nervosa. OR describe the role of haemoglobin and myoglobin.
xi. Describe plaque and dental carries in human. Give the dental formula as well. OR what do you know about holozoic nutrition? OR Differentiate between innate and adaptive immune system.
xii. Discriminate between any one:
Hibernation and Aestivation, Chondrichthyes and osteichthyes ,
Diploblastic and Triploblastic, inspiration and expiration.

(DETAILED – ANSWER QUESTIONS)

(i) Describe the characters of Mollusca OR Arthropoda OR Annelida. Classify the phylum give characteristic of these classes with examples.
(ii) Define immunity. Describe innate immune system in detail.
(iii) Describe the internal structure of human heart with labelled diagram. Also explain cardiac cycle.
(iv) Describe the organs and respiratory mechanism in human with diagram.
Human Respiratory system with labelled diagram.
(v) Explain the process of digestion in human alimentary canal with labelled diagram. OR
What are amniotes? Write the characters of class Aves and its sub classes
(vi) Give the types of enzymes. Discuss the factors that affect their activity
OR Write the classification and functions of any one of the following.
i) CARBOHYDRATE ii) Lipids