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NEET

NEET ACE TEST SERIES

(NATS)

TEST-16

CLASS 11TH + 12TH

Full Syllabus Test 08

Duration : 3 Hours 20 Minutes

M.Marks : 720

Physics	:	Complete Class 11 th + 12 th Syllabus
Chemistry	:	Complete Class 11 th + 12 th Syllabus
Botany	:	Complete Class 11 th + 12 th Syllabus
Zoology	:	Complete Class 11 th + 12 th Syllabus

Instructions

1. The test is of 3 hours 20 min. duration.
2. The test booklet consists of 200 questions. The maximum mark is 720.
3. There are four Sections in the Question Paper, Sections I, II, III, and IV consisting of Section I (Physics), Section II (Chemistry), Section III (Botany) and Section IV (Zoology) have 50 Questions in each Subject and each subject is divided into two Sections, Section A consists of 35 questions (all questions compulsory) and Section B consists of 15 Questions (Any 10 questions are compulsory).
4. There is only one correct response for each question.
5. Each correct answer will give 4 marks while 1 Mark will be deducted for a wrong MCQ response.
6. No student is allowed to carry any textual material, printed, or written, bits of paper, pager, mobile phone, any electronic device, etc. Inside the examination room/hall.
7. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator on duty in the Room/Hall. However, the Candidates are allowed to take away this Test Booklet with them.

SECTION - A

1. If a force F is applied on a body and it moves with a velocity v , the power will be-
 - (1) $F v$
 - (2) F / v
 - (3) F/v^2
 - (4) F/v^2

2. In an experiment, the percentage of error occurred in the measurement of physical quantities. A, B, C and D are 1%, 2%, 3% and 4% respectively. Then the maximum percentage of error in the measurement X , where $X = \frac{A^2 B^{1/2}}{C^{1/3} D^3}$, will be
 - (1) 10%
 - (2) $(3/13) \%$
 - (3) 16%
 - (4) -10%

3. The range of a particle when launched at an angle of 15° with the horizontal is 150 m. What is the range of projectile when launched at an angle of 45° to the horizontal?
 - (1) 150 m
 - (2) 300 m
 - (3) 450 m
 - (4) 60 m

4. The moment of inertia of two spheres of equal masses about their diameters are equal. If one of them is solid and other is hollow, the ratio of their radii is.
 - (1) $\sqrt{3}:\sqrt{5}$
 - (2) 3:5
 - (3) $\sqrt{5}:\sqrt{3}$
 - (4) 5:3

5. The relation between escape velocity v_e from the surface of the earth and the orbital velocity v_0 is.
 - (1) $\sqrt{2}v_e = v_0$
 - (2) $v_e = \sqrt{2}v_0$
 - (3) $v_e = 2v_0$
 - (4) $4v_e = 3v_0$

6. If electric flux coming out of a closed surface is zero, the electric field at the surface will be-
 - (1) Zero
 - (2) Same at all places
 - (3) Dependent upon the location of charges
 - (4) Infinite

7. A particle performing SHM starts from equilibrium position and its time period is 16 second. After 2 seconds its velocity is $\pi m/s$. Amplitude of oscillation is $(\cos 45^\circ = \frac{1}{\sqrt{2}})$.
 - (1) $a2\sqrt{m}$
 - (2) $4\sqrt{2} m$
 - (3) $6\sqrt{2}m$
 - (4) $8\sqrt{2}m$

8. The resistance of the bulb filament is 100Ω at a temperature of $100^\circ C$. If its temperature coefficient of resistance be $0.005 \text{ per } ^\circ C$, its resistance will become 200Ω at a temperature
 - (1) $400^\circ C$
 - (2) $200^\circ C$
 - (3) $300^\circ C$
 - (4) $500^\circ C$

9. A circular coil of n turns and radius R has a magnetic induction of strength at its centre is
 - (1) $B = \frac{\mu_0 n I}{2R}$
 - (2) $B = \frac{\mu_0 n R}{\sqrt{2} R}$
 - (3) $B = \frac{\mu_0 n I}{R}$
 - (4) $\sqrt{\frac{2}{3}} \frac{\mu_0 n I}{R}$

10. The nuclei of which one of the following pairs of nuclei are isotones: -

- (1) ${}_{34}\text{Se}^{74}, {}_{31}\text{Ga}^{71}$
- (2) ${}_{38}\text{Sr}^{84}, {}_{38}\text{Sr}^{86}$
- (3) ${}_{42}\text{Mo}^{92}, {}_{40}\text{Zr}^{92}$
- (4) ${}_{20}\text{Ca}^{40}, {}_{16}\text{S}^{32}$

11. Two slits in Young's experiment have widths in the ratio 1:25. The ratio of intensity at the maxima and minima in the interference pattern, $\frac{I_{\max}}{I_{\min}}$ is.

- (1) $\frac{49}{121}$
- (2) $\frac{4}{9}$
- (3) $\frac{9}{4}$
- (4) $\frac{121}{49}$

12. Consider the earth to be a homogeneous sphere. Scientist 'A' goes deep down in a mine and scientist 'B' goes high up in a balloon. The gravitational field measured by:

- (1) A goes on decreasing and that by B goes on increasing.
- (2) B goes on decreasing and that by A goes on increasing
- (3) Each remains unchanged
- (4) Each goes on decreasing

13. In a series LCR circuit, resistance $R = 10\ \Omega$ and the impedance $Z = 20\ \Omega$. The phase difference between the current and the voltage is.

- (1) 30°
- (2) 45°
- (3) 60°
- (4) 90°

14. The rms velocity of hydrogen gas molecules at NTP is $V\ \text{ms}^{-1}$. The gas is heated at constant volume till the pressure becomes four times. The final rms velocity is.

- (1) $V/2$
- (2) V
- (3) $2V$
- (4) $4V$

15. A system of three polarizers P_1, P_2, P_3 is set up such that the pass axis of P_3 is crossed with respect to that of P_1 . The pass axis of P_2 is inclined at 60° to the pass axis of P_3 . When a beam of unpolarized light of intensity I_0 is incident on P_1 , the intensity of light transmitted by the three polarizers is I . The ratio (I_0/I) equals (nearly):

- (1) 10.67
- (2) 5.33
- (3) 1.80
- (4) 16.00

16. The thermodynamic process on an ideal gas is given in column - I while the corresponding change in internal energy (dU), heat transfer (dQ) and work done are (dW) given in column - II.

Column-I		Column-II	
(i)	Isothermal process	p.	Pressure= constant
(ii)	Adiabatic process	q.	$dW = -dU$
(iii)	Isochoric process	r.	$dU = 0$
(iv)	Isobaric process	s.	$dQ = dU$

Now, match the given columns and select the correct option from the codes given below.

- (1) $i - p, ii - q, iii - r, iv - s$
- (2) $i - r, ii - q, iii - s, iv - p$
- (3) $i - s, ii - p, iii - q, iv - r$
- (4) $i - q, ii - s, iii - p, iv - r$

17. If the current through a coil change from 1 A to 3 A in 0.02 s to produce an emf of 6 V, then the self-inductance of the coil is.

- (1) 0.12 H
- (2) 0.06 H
- (3) 0.02 H
- (4) 0.01 H

18. Escape velocity for a projectile at earth's surface is v_e . A body is projected from earth's surface with velocity $2v_e$. The velocity of the body when it is at infinite distance from the center of the earth is-

- (1) v_e
- (2) $2v_e$

(3) $\sqrt{2}v_e$

(4) $\sqrt{3}v_e$

19. A body is projected at an angle of 30° with the horizontal and with a speed of 30ms^{-1} . What is the angle with the horizontal after 1.5 seconds? ($g = 10\text{ms}^{-2}$).

(1) 0°

(2) 30°

(3) 60°

(4) 90°

20. If a magnetic needle is made to vibrate in uniform field H, then its time period is T. If it vibrates in the field of intensity 4H, its time period will be:

(1) 2T

(2) T/2

(3) 2/T

(4) T

21. If α - particle of mass m_α are accelerated through potential V, the wavelength of associated matter wave will be -

(1) $h/\sqrt{m_\alpha eV}$

(2) $h/\sqrt{2m_\alpha eV}$

(3) $h/\sqrt{8m_\alpha eV}$

(4) $h/2\sqrt{m_\alpha eV}$

22. An alpha particle is accelerated through a potential difference of 10^6 volt. Its kinetic energy will be.

(1) 1 MeV

(2) 2 MeV

(3) 4 MeV

(4) 8 MeV

23. The length of a potentiometer wire is 10 m and a potential difference of 2 volt is applied to its ends. If the length of its wire is increased by 1 m, the value of potential gradient in volt/m will be-

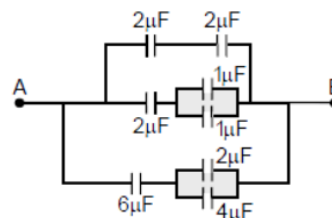
(1) 0.18

(2) 0.22

(3) 1.3

(4) 0.9

24. In the arrangement shown, find the equivalent capacitance between A and B:



(1) $5\mu F$

(2) $\frac{25}{2}\mu F$

(3) $10\mu F$

(4) $\frac{25}{3}\mu F$

25. A cricket ball of mass 250 g collides with a bat with velocity 10 m/s and returns with the same velocity within 0.01 second. The force acted on bat is.

(1) 25 N

(2) 50 N

(3) 250 N

(4) 500 N

26. Two particles A and B initially at rest. Move towards each other under a mutual force of attraction. At the instant, when the speed of A is v and the speed of B is $2v$ the velocity of center of the system is.

(1) 0

(2) v

(3) $1.5v$

(4) $3v$

27. **Assertion:** Work function of a metal is 8 eV. Two photons each having energy 5 eV can't eject the electron from the metal.

Reason: More than one photon can't collide simultaneously with an electron.

(1) If both Assertion and Reason are true and the Reason is correct explanation of the Assertion.

(2) If both Assertion and Reason are true but the Reason is not correct explanation of the Assertion.

- (3) If Assertion is true but the Reason is false.
- (4) If Assertion & Reason are false.
28. **Assertion:** Net electric field inside conductor is zero.
Reason: Total positive charge equals to total negative charge in a charged conductor.
- (1) If both assertion and reason are true and reason is the correct explanation of assertion.
- (2) If both assertion and reason are true but reason is not the correct explanation of assertion.
- (3) If assertion is true but reason is false.
- (4) If both assertion and reason are false.
29. **Assertion:** Work done in moving a body over a closed loop is zero for every force in nature.
Reason: Work done does not depend on nature of force.
- (1) If both assertion and reason are true and reason is the correct explanation of assertion.
- (2) If both assertion and reason are true but reason is not the correct explanation of assertion.
- (3) If assertion is true but reason is false.
- (4) If both assertion and reason are false.
30. The electric field associated with an e. m. wave in vacuum is given by $\vec{E} = \hat{i}40 \cos(kz - 6 \times 10^8 t)$, where E, z and t are in vol/m, meter and seconds respectively. The value of wave vector k is:
- (1) 6 m^{-1}
- (2) 3 m^{-1}
- (3) 2 m^{-1}
- (4) 0.5 m^{-1}
31. **Assertion:** Force is the product of mass and square of acceleration.
Reason: In every case, net force is parallel to acceleration.
- (1) Both (Assertion) and (Reason) are correct and (Reason) is not the correct explanation of (Assertion).
- (2) (Assertion) is correct but (Reason) is not correct.
- (3) (Assertion) is not correct but (Reason) is correct.
- (4) Both (Assertion) and (Reason) are correct and (Reason) is the correct explanation of (Assertion).
32. Radius of the second Bohr orbit of singly ionised helium atom is.
- (1) 0.53 \AA
- (2) 1.06 \AA
- (3) 0.265 \AA
- (4) 0.132 \AA
33. The center of mass of a non-uniform rod of length L whose mass per unit length λ varies as $\lambda = \frac{kx^2}{L}$ where k is a constant and x is the distance of any point on rod from its one end, is (from the same end).
- (1) $\frac{3}{4}L$
- (2) $\frac{1}{4}L$
- (3) $\frac{k}{L}$
- (4) $\frac{3k}{L}$
34. For a radioactive substance disintegrating. Which of the following is correct at $t = 1.09 \tau$.
- (1) About 1/3 of substance disintegrate
- (2) About 2/3 of substance disintegrate
- (3) About 90% of the substance disintegrate
- (4) Almost all the substance disintegrates
35. Two waves of same frequency and amplitude travelling in opposite directions in a medium super impose

over each other. Then which event is observed.

- (1) Beats
- (2) Resonance
- (3) Stationary waves
- (4) Harmonic nodes

SECTION - B

36. **Statement I:** The angle of contact of a liquid decrease with increase in temperature.

Statement II: According to Bernoulli's theorem, as velocity increases pressure decreases and vice versa.

Choose the correct option.

- (1) Both statement I and II are correct.
- (2) Both statement I and II are incorrect.
- (3) Statement I is correct but statement II is incorrect.
- (4) Statement II is correct but statement I is incorrect

37. The magnetic susceptibility of a paramagnetic substance at -73°C is 0.0075, then its value at -173°C will be?

- (1) 0.0030
- (2) 0.0150
- (3) 0.0180
- (4) 0.0045

38. **Assertion:** When number of turns in a coil doubled, coefficient of self-inductance of the coil becomes four times.

Reason: Coefficient of self-inductance is proportional of the square of number of turns.

- (1) If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- (2) If both the assertion and reason are true but the reason is not a correct explanation of the assertion
- (3) If the assertion is true but the reason is false
- (4) If both the assertion and reason are false

39. A two-input NAND gate is followed by a single-input NOR gate. This logic circuit will function as.

- (1) an AND gate
- (2) an OR gate
- (3) a NOT gate
- (4) a NOR gate

40. One mole of an ideal diatomic gas is heated at a constant pressure of one atmosphere from 0°C to 100°C . Then the change in the internal energy is.

- (1) $20.80 \times 10^2 \text{ J}$
- (2) $12.48 \times 510^2 \text{ J}$
- (3) $832 \times 10^2 \text{ J}$
- (4) $6.25 \times 10^2 \text{ J}$

41. M_p denotes the mass of a proton and M_n that of a neutron. A given nucleus, of binding energy B , contains Z protons and N neutrons. The mass, $M(N, Z)$ of the nucleus is given by (c is velocity of light)

- (1) $M(N, Z) = NM_n + ZM_p + Bc^2$
- (2) $M(N, Z) = NM_n + ZM_p - B/c^2$
- (3) $M(N, Z) = NM_n + ZM_p + B/c^2$
- (4) $M(N, Z) = NM_n + ZM_p - Bc^2$

42. Probability of survival of a radioactive nucleus in one mean life is.

- (1) $\frac{1}{2}$
- (2) $\frac{1}{e}$
- (3) $\frac{1}{4}$
- (4) $\frac{1}{5}$

43. The correct measure of magnetic hardness of a material is.

- (1) Remnant magnetism
- (2) Hysteresis loss
- (3) Coercivity
- (4) Curie temperature

44. If the angle of dip at two places are 30° and 45° respectively, then the ratio of horizontal component of earth's magnetic field at two places assuming

magnitude of total magnetic field of earth is same, will be.

45. Two parallel wires in free space are 10 cm apart and each carries a current of 10 A in the same direction. The magnetic force per unit length of each wire is.

- (1) $2 \times 10^{-4} \text{ N}$, attractive
- (2) $2 \times 10^{-4} \text{ N}$, repulsive
- (3) $2 \times 10^{-7} \text{ N}$, attractive
- (4) $2 \times 10^{-7} \text{ N}$, repulsive

46. What is the voltage gain in a common emitter amplifier where input resistance is 3Ω and load resistance is 24Ω and current gain $\beta = 6$?

- (1) 2.2
- (2) 1.2
- (3) 4.8
- (4) 48

47. A person of mass m is standing on one end of a plank of mass M and length L floating in water. The person moves from one end to another and stops. The displacement of the plank is-

- (1) $\frac{Lm}{(m+M)}$
- (2) $Lm(M + m)$
- (3) $\frac{(M+m)}{Lm}$
- (4) $\frac{LM}{(m+M)}$

48. **Assertion:** When height of a tube is less than liquid rise in the capillary tube, the liquid does not overflow.

Reason: Product of radius of meniscus and height of liquid in the capillary tube always one.

- (1) If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- (2) If both the assertion and reason are true but the reason is not a correct explanation of the assertion
- (3) If the assertion is true but the reason is false
- (4) If both the assertion and reason are false

49. The amplitude of particles executing S.H.M with frequency of 60 Hz is 0.01 m. Then the maximum value of the acceleration of particle is.

- (1) $144\pi^2 m / \text{sec}^2$
- (2) $144 m / \text{sec}^2$
- (3) $\frac{144}{\pi^2} m / \text{sec}^2$
- (4) $288\pi^2 m / \text{sec}^2$

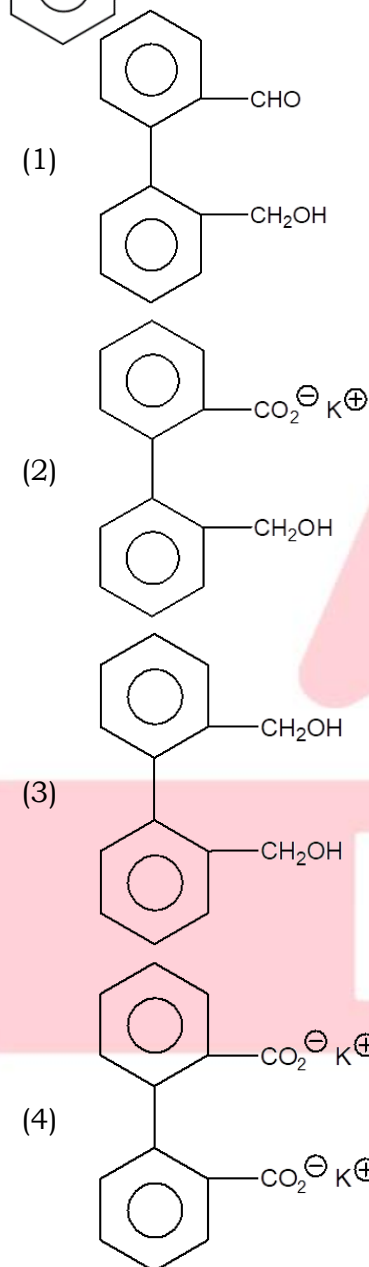
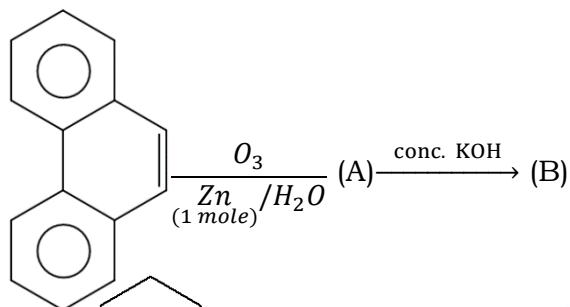
50. A force F is needed to break a copper wire having radius R . Then the force needed to break a copper wire of radius $2R$ will be.

- (1) $F/2$
- (2) $2F$
- (3) $4F$
- (4) $F/4$

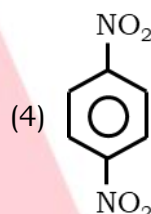
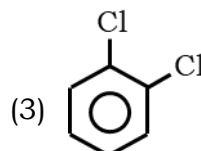
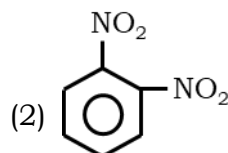
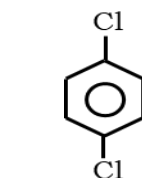
Chemistry

SECTION - A

51. Major product (2) of given reaction is:



52. Which of the following has the maximum value of dipole moment?



53. Activation energy of a chemical reaction can be determined by _____.

- (1) determining the rate constant at standard temperature.
- (2) determining the rate constant at two temperatures.
- (3) determining probability of collision.
- (4) using catalyst.

54. The first member of the family of alkenynes has the molecular formula:

- (1) C_6H_6
- (2) C_4H_4
- (3) C_4H_6
- (4) C_3H_2

55. The cell constant of a conductivity cell _____.

- (1) changes with change of electrolyte.
- (2) changes with change of concentration of electrolyte.
- (3) changes with temperature of electrolyte.
- (4) remains constant for a cell.

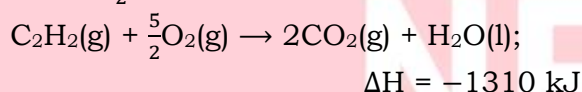
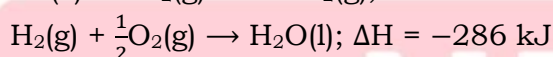
56. Select the correct statement (s) regarding $3P_y$ orbital:

- (a) Total no. of nodes is 2
 (b) Number of maxima in the curve $4\pi r^2 R^2$ vs r are two
 (c) Quantum no. n , l and m for orbital may be 3, 1, - 1 respectively
 (d) The magnetic quantum number may have a positive value
- (1) Only a is correct
 (2) Both B and c are correct
 (3) a, b, c is correct.
 (4) All a, b, c and d are correct.

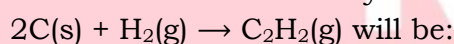
57. Which of the following reaction is never expected to be spontaneous:

- (1) $2O_3(g) \rightarrow 3O_2(g)$;
 $\Delta H = -ve, \Delta S = +ve$
 (2) $Mg(s) + H_2(g) \rightarrow MgH_2$;
 $\Delta H = -ve, \Delta S = -ve$
 (3) $Br_2(l) \rightarrow Br_2(g)$;
 $\Delta H = +ve, \Delta S = +ve$
 (4) $2Ag(s) + 3N_2(g) \rightarrow 2AgN_3$;
 $\Delta H = +ve, \Delta S = -ve$

58. Given that-



Heat of formation of acetylene



- (1) +1802 kJ
 (2) -1802 kJ
 (3) -800 kJ
 (4) +237 kJ

59. Match List I (hypothetical reactions) with List II (ratio $\frac{K_p}{K_c}$ for the given reactions) and select the correct answer using the code given below in the lists:

List I		List II	
(a)	$A_2(g) + 3B_2(g) \rightleftharpoons 2AB_3(g)$	(1)	$(RT)^{-2}$
(b)	$A_2(g) + B_2(g) \rightleftharpoons 2AB(g)$	(2)	$(RT)^0$
(c)	$A(s) + 1.5B_2(g) \rightleftharpoons AB_3(g)$	(3)	$(RT)^{\frac{1}{2}}$
(d)	$AB_2(g) \rightleftharpoons AB(g) + 0.5B_2(g)$	(4)	$(RT)^{-\frac{1}{2}}$

Codes:

- (1) a-1, b-2, c-3, d-4
 (2) a-2, b-1, c-4, d-3
 (3) a-1, b-4, c-3, d-2
 (4) a-1, b-2, c-4, d-3

60. In Castner-Kellner Cell, the cathode is made of

- (1) Pt
 (2) C
 (3) Hg
 (4) Ni

61. At equilibrium:

- (1) $E^\circ_{cell} = 0, \Delta G^\circ = 0$
 (2) $E_{cell} = 0, \Delta G = 0$
 (3) both are correct
 (4) none is correct

62. Considering the formation, breaking and strength of hydrogen bond, predict which of the following mixtures will show a positive deviation from Raoult's law?

- (1) Methanol and acetone
 (2) Chloroform and acetone
 (3) Nitric acid and water
 (4) Phenol and aniline

63. Which reaction among the following will give Inorganic Benzene as a major product?

- (1) $B_2H_6 \xrightarrow[\text{low Temp.}]{2NH_3}$
 (2) $B_2H_6 \xrightarrow[\text{High Temp.}]{2NH_3}$
 (3) $B_2H_6 \xrightarrow[\text{Excess}]{NH_3}$
 (4) $B_2H_6 \xrightarrow{N(CH_3)_3}$

64. Match the items of Column I with Column II.

Column I		Column II	
(1)	Mathematical expression for rate of reaction	(A)	rate constant
(2)	Rate of reaction for zero-order reaction is equal to	(B)	rate law
(3)	Units of rate constant for zero order reaction is same that of	(C)	order of slowest step
(4)	Order of a complex reaction is determined by	(D)	rate of a reaction

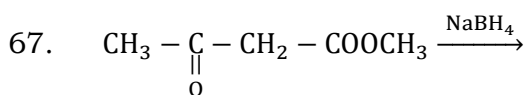
- (1) 1-D, 2-C, 3-B, 4-A
 (2) 1-A, 2-D, 3-C, 4-B
 (3) 1-B, 2-A, 3-D, 4-C
 (4) 1-C, 2-B, 3-A, 4-D

65. Which of the following statements is correct about Galvanic cell?

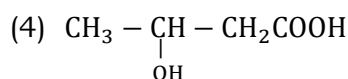
- (1) It converts chemical energy into electrical energy.
 (2) It converts electrical energy into chemical energy
 (3) It converts metal from its free state to the combined state.
 (4) It converts electrolyte into individual ions.

66. Which of the following have higher z_{eff} than Fluorine?

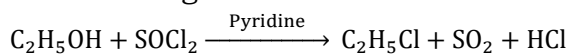
- (1) Cl
 (2) O
 (3) F^{\ominus}
 (4) None of these



- (1) $CH_3 - \underset{\underset{OH}{|}}{CH} - CH_2COOCH_3$
 (2) $CH_3 - \underset{\underset{OH}{|}}{CH} - CH_2 - CH_2 - OH$
 (3) $CH_3 - \overset{\overset{O}{||}}{C} - CH_2CH_2 - OH$



68. The following reaction is known as



- (1) Kharasch effect
 (2) Darzen's procedure
 (3) Williamson's synthesis
 (4) Hunsdiecker synthesis reaction

69. The primary and secondary valences of cobalt respectively in $[Co(NH_3)_5Cl]Cl_2$ are:

- (1) 3 and 6
 (2) 2 and 6
 (3) 3 and 5
 (4) 2 and 8

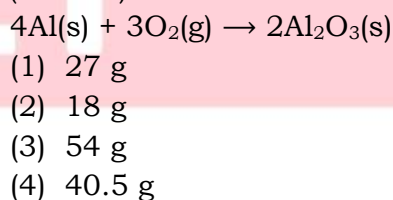
70. Which of the following are per oxoacids of Sulphur?

- (1) H_2SO_5 and $H_2S_2O_8$
 (2) H_2SO_5 and $H_2S_2O_7$
 (3) $H_2S_2O_7$ and $H_2S_2O_8$
 (4) $H_2S_2O_6$ and $H_2S_2O_7$

71. Colour of $Co(BO_2)_2$ bead is

- (1) Red
 (2) Blue
 (3) Green
 (4) Orange

72. If $1/2$ moles of oxygen combine with Aluminium to form Al_2O_3 then weight of Aluminium metal used in the reaction is (Al = 27):



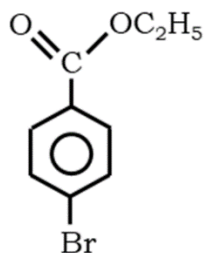
73. Number of waters of crystallization in Borax is

- (1) 10
 (2) 9
 (3) 8
 (4) 5

74. Which of the following contains only 1 $p\pi - p\pi$ & 1 $p\pi - d\pi$ overlapping?

- (1) SiO_2
- (2) CO_2
- (3) SO_2
- (4) NO_3^{-2}

75. Give IUPAC name of the following:



- (1) Ethyl-1-bromo 4-benzoate
- (2) Ethyl-4-bromobenzoate
- (3) Bromo benzoate
- (4) Bromo benzene ester

76. Which is used to get straight chain polymer?

- (1) PhSiCl_3
- (2) Ph_3SiCl
- (3) MeSiCl_3
- (4) Me_2SiCl_2

77. Correct order of complex formation with EDTA most rapidly

- (1) $4d < 3d < 5d$
- (2) $4d < 5d < 3d$
- (3) $3d < 5d < 4d$
- (4) $3d < 4d < 5d$

78. Of the five isomeric hexanes, the isomer which can give two monochlorinated compounds is

- (1) n - hexane
- (2) 2, 3 dimethylbutane
- (3) 2, 2-dimethylbutane
- (4) 2-methylpentane

79. The structure of allyl vinyl ether is:

- (1) $\text{CH}_2 = \text{CH} - \text{CH}_2 - \text{O} - \text{CH}_2 - \text{CH} = \text{CH}_2$
- (2) $\text{CH}_2 = \text{CH} - \text{O} - \text{CH}_2 - \text{CH} = \text{CH}_2$
- (3) $\text{CH}_2 = \text{CH} - \text{O} - \text{CH} = \text{CH}_2$
- (4) $\text{CH}_3 - \text{CH} = \text{CH} - \text{O} - \text{CH} = \text{CH}_2$

80. $\text{CH}_3 - \overset{\overset{\text{O}}{\parallel}}{\text{C}} - \text{O} - \overset{\overset{\text{O}}{\parallel}}{\text{C}} - \text{C}_6\text{H}_5$ and $\text{C}_6\text{H}_5 - \overset{\overset{\text{O}}{\parallel}}{\text{C}} - \text{O} - \overset{\overset{\text{O}}{\parallel}}{\text{C}} - \text{CH}_3$ are:

- (1) Metamers
- (2) Chain isomers
- (3) Identical
- (4) Position isomers

81. Among the following alkenes

- (I) 1-butene
- (II) trans-2-butene
- (III) cis-2-butene
- (IV) isobutene

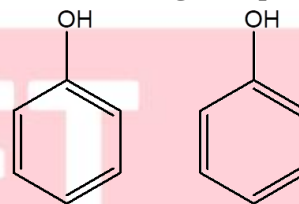
the order of decreasing stability is:

- (1) $\text{II} > \text{I} > \text{III} > \text{IV}$
- (2) $\text{III} > \text{IV} > \text{I} > \text{II}$
- (3) $\text{IV} > \text{I} > \text{II} > \text{III}$
- (4) $\text{IV} > \text{II} > \text{III} > \text{I}$

82. In which of the following both are nonpolar -

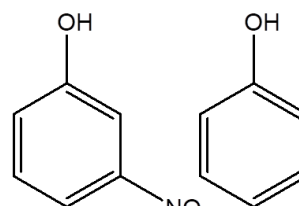
- (1) XeF_4, O_3
- (2) $\text{XeF}_5^-, \text{I}_2\text{Cl}_6$
- (3) $\text{SF}_4, \text{XeF}_2$
- (4) $\text{BrF}_3, \text{SCl}_2$

83. The increasing order of the pK_a values of the following compounds is:



(I)

(II)



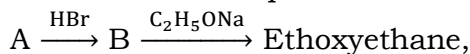
(III)

(IV)

- (1) $\text{II} < \text{III} < \text{IV} < \text{I}$

- (2) III < II < I < IV
 (3) IV < I < III < II
 (4) II < III < I < IV

84. In the reaction sequence



A and B are:

- (1) $\text{C}_2\text{H}_6, \text{C}_2\text{H}_5\text{Br}$
 (2) $\text{CH}_4, \text{CH}_3\text{Br}$
 (3) $\text{CH}_2 = \text{CH}_2, \text{C}_2\text{H}_5\text{Br}$
 (4) $\text{CH} \equiv \text{CH}, \text{CH}_2 = \text{CHBr}$

85. In phosphorus atom find out the number of paired electrons for $l = 1$ and $m = 0$:

- (1) 3
 (2) 1
 (3) 2
 (4) 0

SECTION - B

86. Correct statement about AlCl_3 :-

- (A) AlCl_3 is less ionic compare AlF_3
 (B) AlCl_3 fumes in moist Air
 (C) AlCl_3 is soluble only in Benzene not is water
 (D) AlCl_3 on dimerization forms 4 membered Ring
- (1) A and B only
 (2) B and C only
 (3) A, B and C only
 (4) A, B and D only

87. Equivalent weight of FeC_2O_4 in the change: $\text{FeC}_2\text{O}_4 \rightarrow \text{Fe}^{3+} + \text{CO}_2$ is:

- (1) $M/3$
 (2) $M/6$
 (3) $M/2$
 (4) $M/1$

88. **Assertion:** Phenols give o- and p-Nitrophenol on nitration with conc. HNO_3 and H_2SO_4 mixture.

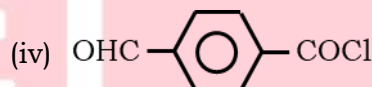
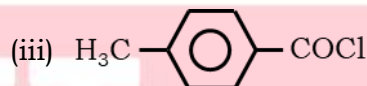
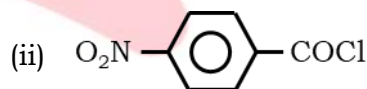
Reason: -OH group in phenol shows -M effect.

- (1) If both assertion and reason are correct statements and reason is the correct explanation of assertion.
 (2) If both assertion and reason are correct statements and reason is not the correct explanation of assertion.
 (3) If the assertion is the correct statement and the reason is an incorrect statement.
 (4) If the assertion is incorrect statement and reason, is the correct statement.

89. The number of photons emitted per second by a 60-watt source of monochromatic light of wavelength 663 nm is ($h = 6.63 \times 10^{-34}$ J s)

- (1) 4×10^{-20}
 (2) 1.5×10^{20}
 (3) 3×10^{-20}
 (4) 2×10^{20}

90. Consider the following compounds:



The correct order of reactivity towards hydrolysis is:

- (1) (i) > (ii) > (iii) > (iv)
 (2) (iv) > (ii) > (i) > (iii)
 (3) (ii) > (iv) > (i) > (iii)
 (4) (ii) > (iv) > (iii) > (i)

91. Correct order of dipole moment

- (1) $\text{OF}_2 > \text{H}_2\text{O}$
 (2) $\text{CH}_3\text{Cl} < \text{CH}_3\text{F}$
 (3) $\text{PH}_3 < \text{NH}_3$
 (4) $\text{H}_2\text{S} > \text{H}_2\text{O}$

92. Match List I with List II and select the correct answer using the codes given below:

List I		List II	
A.	Ammonical AgNO ₃	1.	Primary amine
B.	HIO ₄	2.	Aldehyde
C.	Cold dil. Alkaline KMnO ₄	3.	Vicinal-OH groups
D.	Chloroform + NaOH	4.	Double bond

- (1) A-1, B-2, C-1, D-4
 (2) A-4, B-2, C-1, D-3
 (3) A-2, B-3, C-4, D-1
 (4) A-4, B-3, C-2, D-1
93. Co-ordination compounds have great Importance in Biological system. In this context which of the following statement is Incorrect?

- (1) Cyanocobalamin is vitamin B₁₂ and contains cobalt.
 (2) Hemoglobin is the red pigment of blood and contains iron.
 (3) Chlorophylls are green pigments in plants and contain calcium.
 (4) Carboxypeptidase-A is an Enzyme and contains Zinc.

94. Given that the abundances of isotopes ⁵⁴Fe, ⁵⁶Fe and ⁵⁷Fe are 5%, 90% and 5% respectively, the atomic mass of Fe is

- (1) 55.85
 (2) 55.95
 (3) 55.75
 (4) 56.05

95. **Assertion:** AlF₆⁻³ is known but BF₆⁻³ is not.

Reason: Boron belongs 3 period & 3 period elements have vacant d-orbital.

- (1) If both assertion and reason are correct statements and reason is the correct explanation of assertion.
 (2) If both assertion and reason are correct statements and reason is not the correct explanation of assertion.

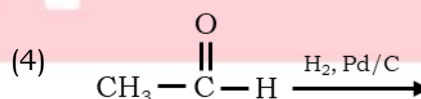
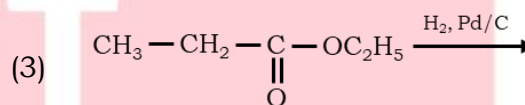
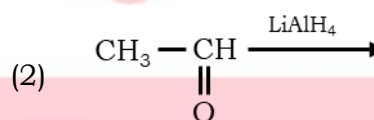
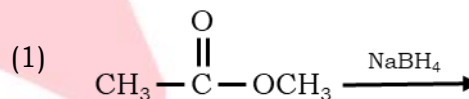
- (3) If the assertion is the correct statement and the reason is an incorrect statement.
 (4) If the assertion is incorrect statement and reason, is the correct statement.

96. Match the following

Column I		Column II	
1.	SeCl ₄	A.	Tetrahedral
2.	K ₃ [Fe(CN) ₆]	B.	See Saw
3.	K ₄ [Fe(CN) ₆]	C.	Paramagnetic & d ² sp ³
4.	CH ₄	D.	Diamagnetic & d ² sp ³

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

97. Which of the following cannot form ethanol?



98. Given, H₂O(l) → H₂O(g); ΔH₁ = +43.7 kJ
 H₂O(s) → H₂O(l); ΔH₂ = +6.05 kJ.
 Calculate the enthalpy of sublimation of ice.

- (1) 49.75 kJ mol⁻¹
 (2) 37.65 kJ mol⁻¹
 (3) 43.7 kJ mol⁻¹
 (4) 55.23 kJ mol⁻¹

Botany

SECTION - A

101. Read the following statements (A-D) and answer the question which follows them:

- A. Heterochromatin is densely stained and transcriptionally active
- B. Unequivocal proof of genetic material comes from Griffith experiment
- C. Prokaryotic transcription and Translation is coupled
- D. During translation, small subunit first bind to mRNA

How many of the above statements are correct?

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

102. Select the list of items of **Column I** with **Column II** and select the correct option from the codes given below:

Column I		Column II	
A.	Male heterogametic	i.	Birds
B.	Female heterogametic	ii.	Drosophila
C.	Haplodiploidy	iii.	Honey bee

- (1) A-ii, B-i, C-iii
- (2) A-i, B-iii, C-ii
- (3) A-iii, B-ii, C-i
- (4) A-i, B-ii, C-ii

103. Basic unit or smallest taxon of classification is

- (1) Species
- (2) Kingdom
- (3) Family
- (4) Variety

104. Given a protist whose Pigments similar to higher plants present in habitat-

- (1) Marine
- (2) Moist soil
- (3) Stagnant fresh water
- (4) Deep sea

105. Match column I with column II and select the correct option from the codes given below.

Column I		Column II	
A.	Ribosome	(i)	Smallest bacteria
B.	Basal body	(ii)	Acid hydrolases
C.	Lysosome	(iii)	9+0 arrangement of microtubule
D.	PPLO	(iv)	Ribonucleic acid

- (1) A-(ii), B-(iii), C-(i), D-(iv)
- (2) A-(iv), B-(iii), C-(ii), D-(i)
- (3) A-(iii), B-(ii), C-(iv), D-(i)
- (4) A-(iii), B-(ii), C-(i), D-(iv)

106. Consider the following matching pair:

- A. Perigynous - Plum
- B. Axile placentation - Lemon
- C. Twisted aestivation - Cassia
- D. Epipetalous - Brinjal

How many are **correctly** matched?

- (1) Only A and B
- (2) Only A, B and D
- (3) Only A and B
- (4) All are correct

107. Number of G = 30 in 100 base pair in circular DNA then number of cytosine is

- (1) 60
- (2) 30
- (3) 70
- (4) 30

108. **Assertion:** Volvox and Fucus is oogamous.

Reason: Leaf like photosynthetic organ is present in Fucus

- (1) Both assertion and reason are true and reason is the correct explanation of assertion.
- (2) Both assertion and reason are true but reason is not the correct explanation of assertion.
- (3) Assertion is true but reason is false
- (4) Both assertion and reason are false.

109. Which is **not** true for bulliform cells

- (1) Present in leaf of grass
- (2) Colourless
- (3) Present on mid vein
- (4) Have plastids like chloroplast

110. The number of microsporangia present in an anther is-

- (1) One
- (2) Two
- (3) Three
- (4) Four

111. Lateral and unequal flagella present in

- (1) Zoospore of Ulothrix
- (2) Aplanospore of Gelidium
- (3) Zoospore of Ectocarpus
- (4) Male gamete of Polysiphonia

112. In Dicot root is a part of stele

- (1) Epidermis
- (2) Endodermis
- (3) Root hair
- (4) Pith

113. Consider the following matching pairs:

- A. G1 Phase - Cell Growth
- B. Interphase - Resting phase
- C. G0 phase - DNA replication
- D. Interkinesis - DNA replication occur

How many are **correctly** matched?

- (1) Only A
- (2) Only A and C

- (3) Only A and B
- (4) All are correct

114. Ethephon-

- (1) Promotes female flowers in cucumbers
- (2) Hastens fruit ripening in tomatoes
- (3) Accelerates abscission in fruits
- (4) All of the above

115. Which flowering plant exhibits variations in filament length?

- (1) Tulip
- (2) Salvia
- (3) Pea
- (4) Chilli

116. Match **column I** with **column II** and select the correct option from the codes given below.

Column I		Column II	
A.	Phospholipid	(i)	Basic amino acid
B.	Haemoglobin	(ii)	Essential amino acid
C.	Lysine	(iii)	Quaternary protein
D.	Valine	(iv)	lecithin

- (1) A-(iv), B-(ii), C-(i), D-(iii)
- (2) A-(iv), B-(iii), C-(i), D-(ii)
- (3) A-(iii), B-(ii), C-(iv), D-(i)
- (4) A-(iii), B-(ii), C-(i), D-(iv)

117. **Assertion:** Tilman found that plots with more species showed less year-to-year variation in total biomass.

Reason: Increased diversity contributed to higher productivity.

- (1) Both assertion and reason are true and reason is the correct explanation of assertion.
- (2) Both assertion and reason are true but reason is not the correct explanation of assertion.

- (c) Assertion is true but reason is false.
 (d) Both assertion and reason are false.

118. Water containing cavities are present within the vascular bundles of -
 (1) Dicot stem
 (2) Dicot root
 (3) Monocot stem
 (4) Monocot root

119. **Statement-A:** Rudolf Virchow in 1955 modified cell theory.

Statement-B: Gas vacuole is not present in bacteria.

- (1) Both Statements A and B are correct
 (2) Statement A is correct but Statement B is incorrect
 (3) Statement A is incorrect but Statement B is correct
 (4) Both Statements A and B are incorrect.

120. Which process among the following will not lead to genetic variations among siblings?

- (1) Independent assortment of genes
 (2) Crossing over
 (3) Linkage
 (4) Mutation

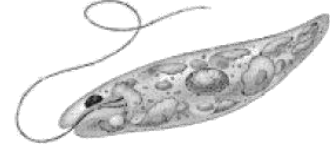
121. Match **column I** with **column II** and select the **correct** option from the codes given below.

Column I		Column II	
A.	Citrate synthase	(i)	Fermentation
B.	Complex V	(ii)	Kreb's cycle
C.	Pyruvate dehydrogenase	(iii)	ETS
D.	Pyruvate decarboxylase	(iv)	Link reaction

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

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

122. Identify the given figure and select the **correct** option.



- (1) Majority of them are marine
 (2) Found in running water
 (3) Lack cell wall
 (4) Saprophytic bacteria

123. At low light intensity, rate of photosynthesis depends on

- (1) Temperature
 (2) Light
 (3) Oxygen
 (4) Water

124. Mark the **incorrectly** matched pair-

- (1) Monocistronic gene - In eukaryotes
 (2) Introns - Intervening sequences
 (3) RNA polymerase I - Transcribes 5srRNA
 (4) Tailing - Addition of adenylate residues

125. Read the following statements (A-D) and answer the question which follows them.

- A. Auxin promote rooting in stem cuttings
 B. First discovered Gibberellic Acid was GA_1
 C. Cytokinin help to overcome apical dominance
 D. ABA antagonist to Gibberellic acid
 How many of the above statements are correct?

- (1) Four
 (2) One

- (3) Two
(4) Three
126. Absence of one sex chromosome causes
(1) Turner's Syndrome
(2) Klinefelter's syndrome
(3) Down's syndrome
(4) Cri du chat
127. Process which uses RNA as template to synthesize DNA-
(1) Reverse transcription
(2) Transcription
(3) DNA replication
(4) Translation
128. Mark the **incorrect** statement-
(1) Both ribose sugar and nitrogenous bases have heterocyclic ring.
(2) Nucleotide and nucleoside have N-glycosidic bond between sugar and nitrogenous bases
(3) Polynucleotide chain have phosphodiester bond
(4) H-bond present between consecutive nitrogenous bases of same polynucleotide chain in DNA
129. In plants that shed pollen grain at two-celled condition, the generative cell divides and form the two male gametes during the-
(1) Entry of pollen tube in the ovule
(2) Entry of pollen tube in the synergid
(3) Growth of pollen tube in the stigma
(4) Growth of pollen tube in the antipodals.
130. Which of the following spore is product of fusion of gametes?
(1) Conidia
(2) Zygosporangium
(3) Ascospores
(4) Zoospores
131. **Assertion:** Arrangement of operon is very common in bacteria.
Reason: A polycistronic structural gene mainly found in prokaryotes is regulated by a common promoter and regulatory genes.
(1) Both assertion and reason are true and reason is the correct explanation of assertion.
(2) Both assertion and reason are true but reason is not the correct explanation of assertion.
(3) Assertion is true but reason is false.
(4) Both assertion and reason are false.
132. Select the **incorrect** option.
(1) Friedrich Miescher in 1869 found an acidic substance and named it as 'Nuclein'
(2) Haploid content of human DNA 3.3×10^9 bp
(3) Escherichia coli has 4.6×10^6 bp
(4) None of the above
133. Strobilus or cone is present in
(1) Salvinia and Marchantia
(2) Selaginella and Equisetum
(3) Funaria and Pteris
(4) Pinus and Mustard
134. Read the following statements and find out the **incorrect** statement.
a. Plants use two abiotic (wind and water) and one biotic (animals) agents to achieve pollination.
b. Majority of plants use abiotic agents for pollination.
c. Only a small proportion of plants uses biotic agents.
d. Pollination by water is common among abiotic pollinations.
e. Pollination by wind is quite rare

in flowering plants and is restricted to about 30 genera mostly monocotyledons

- (1) a, b, c and d
- (2) b, c, d and e
- (3) a, c, d and e
- (4) b and d only

135. The law of limiting factors for factors affecting photosynthesis was proposed by-

- (1) Calvin
- (2) Joseph Priestley
- (3) Blackmann
- (4) T.W Engelmann

SECTION - B

136. The metabolite which is common to respiration mediated breakdown of fats, carbohydrates, and proteins is-

- (1) Acetyl CoA
- (2) Pyruvic acid
- (3) PGAL
- (4) Glucose-6-phosphate

137. Match **column I** with **column II** and select the correct option from the codes given below.

Column I		Column II	
A.	Nitrococcus	(i)	Basidiospore
B.	Diatom	(ii)	Silica in cell wall
C.	Euglenoid	(iii)	Pigments like higher plants
D.	Agaricus	(iv)	Chemosynthetic

- (1) A-(iv), B-(ii), C-(iii), D-(i)
- (2) A-(iv), B-(iii), C-(ii), D-(i)
- (3) A-(iii), B-(ii), C-(iv), D-(i)
- (4) A-(iii), B-(ii), C-(i), D-(iv)

138. Baculoviruses are pathogens use as a biocontrol agent attack.

- (1) Bacteria
- (2) Arthropods

- (3) Fungi
- (4) Algae

139. Match **column I** with **column II** and select the correct option from the codes given below.

Column I		Column II	
A.	Autosomal recessive	(i)	Sickle cell anaemia
B.	Autosomal dominant	(ii)	Down's syndrome
C.	Chromosomal disorder	(iii)	Myotonic dystrophy
D.	Sex -linked disorder	(iv)	Haemophilia

- (1) A-(i), B-(iii), C-(ii), D-(iv)
- (2) A-(i), B-(ii), C-(iv), D-(iii)
- (3) A-(iii), B-(ii), C-(iv), D-(i)
- (4) A-(iii), B-(ii), C-(i), D-(iv)

140. **Assertion:** DNA fingerprinting involves identifying differences in some specific regions in DNA sequence called as repetitive DNA.

Reason: Satellite DNA sequence show high degree of polymorphism and form the basis of DNA fingerprinting.

- (1) Both assertion and reason are true and reason is the correct explanation of assertion.
- (2) Both assertion and reason are true but reason is not the correct explanation of assertion.
- (3) Assertion is true but reason is false
- (4) Both assertion and reason are false.

141. Read the given statements and select the **correct** option.

Statement-A: A.V Humboldt observed that within a region species richness increased with increasing explored area, but only up to a limit

Statement-B: Ecologists have discovered that the value of Z lies in

the range of 10 to 20, regardless of the taxonomic group or the region.

- (1) Both statements A and B are correct
 - (2) Statement A is correct but statement B is incorrect
 - (3) Statement A is incorrect but statement B is correct
 - (4) Both statements A and B are incorrect
142. The feature that is absent in nucleolus of Eukaryotes is-
- (1) Presence of membrane
 - (2) Synthesis of rRNA
 - (3) Present in more number in cells involves in protein synthesis
 - (4) Size and number can change
143. Most fungi involve in formation of mycorrhizae belong to genus.
- (1) *Aspergillus*
 - (2) *Agaricus*
 - (3) *Glomus*
 - (4) *Trichoderma*
144. The amount of the oxygen that would be consumed if all the organic matter in one liter of water were oxidized by bacteria is called-
- (1) Dissolve oxygen
 - (2) Biochemical oxygen demand (BOD)
 - (3) Dissolve bacteria
 - (4) Dissolve inorganic chemical
145. Zoological parks, botanical gardens and wildlife safari parks serve the purpose of.
- (1) In-situ conservation
 - (2) Ex-situ conservation
 - (3) Bio magnification
 - (4) Bio prospecting
146. Number of spindle fibre attach to one chromosome in metaphase of mitosis-
- (1) Two from same pole

- (2) Two from opposite pole
- (3) One from each pole
- (4) Two from both pole

147. Natality refers to the number of-
- (1) Deaths in the population during a given period.
 - (2) Individuals of the same species that have come into the habitat
 - (3) Births during a given period
 - (4) Living individuals present in a population
148. If one of the progeny have O blood group, then probable blood group of parents would be-
- (1) AB and O
 - (2) A and B
 - (3) AB and B
 - (4) A and AB
149. Consider the following matching pair:
-
- A. 5srRNA - RNA polymerase III
 - B. 28srRNA - RNA polymerase I
 - C. 18srRNA - RNA polymerase I
 - D. Small nuclear RNA - RNA polymerase III
- How many are **correctly** matched?
- (1) Only A
 - (2) Only A and C
 - (3) Only A and D
 - (4) All are correct
150. **Statement-A:** Biological control methods adopted in agricultural pest control are based on the ability of the predator to regulate prey population. **Statement-B:** Gause's 'Competitive Exclusion Principle' states that two closely related species competing for the same resources cannot co-exist indefinitely and the competitively inferior one will be eliminated eventually.

- (1) Both statements A and B are correct
- (2) Statement A is correct but statement B is incorrect
- (3) Statement A is incorrect but statement B is correct
- (4) Both statements A and B are incorrect



NEET

Zoology

SECTION - A

151. Match the animal names listed under Column-I with the Zoological names given under Column-II and select the correct option from the codes given below.

Column-I Common Name		Column-II Zoological Name	
A.	Star fish	(i)	<i>Sepia</i>
B.	Sea urchin	(ii)	<i>Asterias</i>
C.	Devil fish	(iii)	<i>Aurelia</i>
D.	Cuttle fish	(iv)	<i>Octopus</i>
		(v)	<i>Echinus</i>

- (1) A-(ii) B-(iii) C-(iv) D-(v)
(2) A-(iii) B-(iv) C-(i) D-(v)
(3) A-(ii) B-(v) C-(iv) D-(i)
(4) A-(v) B-(i) C-(iv) D-(ii)
152. Read the following statements and select the correct option.
Statement-I: The regions outside the seminiferous tubules called interstitial spaces, contain small blood vessels and interstitial cells.
Statement II: Leydig cells synthesis and secret testicular hormones called androgens.
(1) Both statement-I and statement II are correct.
(2) Statement-I is correct but statement II is incorrect.
(3) Statement-I is incorrect but statement II is correct
(4) Both statement-I and Statement II are incorrect
153. The symptoms of allergy can be reduced quickly with the use of
(1) Histamine.
(2) Adrenalin
(3) Non-steroidal chemicals
(4) All of the above
154. Which of the following statement are correct?

- (i) Govt of India legalised MTP in 1971
(ii) Inability to conceive or produce children even after 2 years of unprotected sexual cohabitation is called infertility.
(iii) Surgical method of contraception prevents gamete formation.
(iv) MTPs are relatively safe up to 12 weeks of pregnancy.
(1) (i), (ii) and (iv)
(2) (ii), (iii) and (iv)
(3) (iii) and (iv)
(4) (i) and (iv)

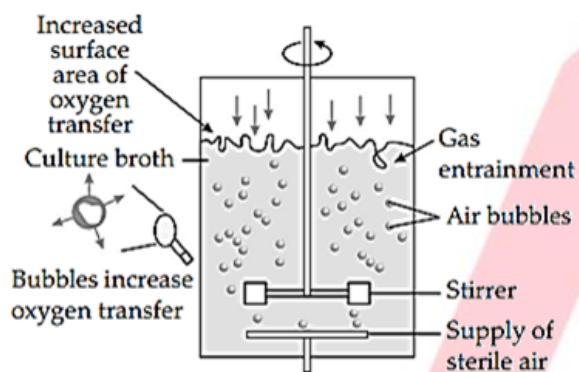
155. Which of the following have been found to be very effective as emergency contraceptive as they could be used to avoid possible pregnancy due to rape if given within 72 hours?
A. Cervical caps
B. Progestogen-estrogen combination
C. Valults
(1) A only
(2) A and B only
(3) B and C only
(4) B only

156. The meiotic division in secondary oocyte occurs
(1) In the Graafian follicle following the first maturation division
(2) Shortly after ovulation before the ovum makes entry into the fallopian tube
(3) After the ovum has been penetrated by sperm
(4) The zygote is embedded in uterus

157. Which one of the following is a marine fish?
(1) Rohu
(2) Exocoetus
(3) Catla
(4) Clarias

158. Tasmanian wolf and placental wolf appear similar due to
 (1) Chemical evolution
 (2) Divergent evolution
 (3) Biochemical evolution
 (4) Convergent evolution

159. Select the correct option related to given diagram.



- (1) Simple stirred- tank bioreactor
 (2) Sparged stirred – tank bioreactor through which sterile air bubbles are sparged
 (3) Sparged stirred – tank bioreactor through which non sterile air bubbles are sparged
 (4) Simple stirred- tank bioreactor through which non sterile air bubbles are sparged

160. Which one of the following pairs of animals comprise “Jawed fishes”?

- (1) *Petromyzon* and *Scoliodon*
 (2) *Clarias* and *Myxine*
 (3) *Petromyzon* and *Myxine*
 (4) *Betta* and *Trygon*

161. Match Column-I with Column-II and select the correct option.

Column-I	Column-II
(a) Primers	(i) PCR
(b) Separation and purification of products	(ii) C_2H_5OH / ethanol

(c) Precipitation of DNA	(iii) Uptake of foreign DNA by bacterium
(d) Transformation	(iv) Downstream processing

- (1) (a)-(i); (b)-(iv); (c)-(ii); (d)-(iii)
 (2) (a)-(i); (b)-(ii); (c)-(iv); (d)-(iii)
 (3) (a)-(iv); (b)-(i); (c)-(iii); (d)-(ii)
 (4) (a)-(ii); (b)-(i); (c)-(iv); (d)-(iii)

162. Consider the following three statements related to the human male reproductive system and select the correct option stating which ones are True (T) and which ones are False (F).

- (I) Middle piece of sperm possess numerous mitochondria, which produces energy.
 (II) Vas deferens joins a duct from seminal vesicle and form vasa efferentia.
 (III) Semen is a collection of secretions from the seminal vesicles, prostate gland, Cowper’s glands and sperms from testes.

- (1) I-T, II-F, III-T
 (2) I-F, II-F, III-T
 (3) I-T, II-T, III-F
 (4) I-T, II-F, III-F

163. Read the following statements and select the correct option

Statement-I: The human male ejaculates about 200 to 300 million sperms during a coitus.

Statement-II: For normal fertility at least 40 percent sperms must have normal shape and size.

- (1) Both Statement-I and Statement-II are correct.
 (2) Statement-I is correct but Statement-II is incorrect.
 (3) Statement-I is incorrect but Statement-II is correct.
 (4) Both Statement-I and Statement-II are incorrect.

164. Read following statements carefully.

- A. Studies suggest that first organisms that invaded land were plants.
- B. Saltations are large mutations and directionless while Darwinian variations are small and directional.
- C. Sauropsids were common ancestors of therapsids and thecodonts.
- D. Homo habilis was the first hominid with brain capacity ranging between 650-800 cc

Choose the correct option w.r.t. True (T) and False (F) statements.

	A	B	C	D
(1)	T	F	T	F
(2)	F	T	F	T
(3)	T	T	F	T
(4)	T	T	F	F

165. The protein products of the following Bt toxin genes cryIAC and cryIIAb are responsible for controlling:

- (1) Bollworm
- (2) Roundworm
- (3) Moth
- (4) Fruit fly

166. Which one of the following is commonly used in transfer of foreign DNA into crop plants?

- (1) *Penicillium expansum*
- (2) *Trichoderma harzianum*
- (3) *Meloidogyne incognita*
- (4) *Agrobacterium tumefaciens*

167. Match the common names of animals given in column I with their respective scientific names given in column II and choose the correct option.

Column I (Common name)		Column II (Scientific name)	
a.	Angle fish	(i)	<i>Bufo</i>
b.	Tree frog	(ii)	<i>Hyla</i>
c.	Saw fish	(iii)	<i>Pristis</i>
d.	Toad	(iv)	<i>Pterophyllum</i>

- (1) a-(iv), b-(i), c-(iii), d-(ii)
- (2) a-(iv), b-(ii), c-(iii), d-(i)
- (3) a-(iv), b-(iii), c-(i), d-(ii)
- (4) a-(iii), b-(i), c-(iv), d-(ii)

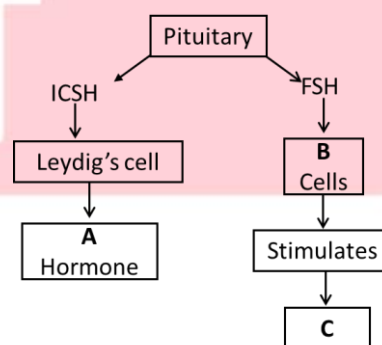
168. Select the correct statement

- (1) Expiration is initiated due to contraction of diaphragm
- (2) Expiration occurs due to contraction of external intercostal muscles
- (3) Intrapulmonary pressure is lower than the atmospheric pressure during inspiration
- (4) Inspiration occurs when atmospheric pressure is less than intrapulmonary pressure

169. If any protein encoding gene is expressed in a heterologous host, it is called.....

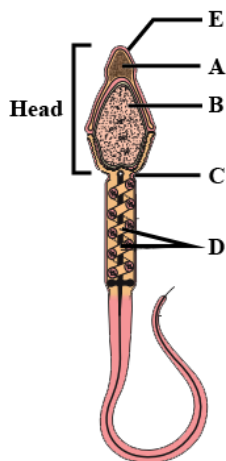
- (1) Recombinant protein
- (2) Host protein
- (3) Encoded protein
- (4) None of these

170. Given below is an incomplete flow chart showing influence of hormones on gametogenesis in males. Observe the flow chart carefully and identify A, B and C.



	A	B	C
(1)	Progesterone	Follicular	Spermatogenesis
(2)	GnRH	Follicular	Spermiogenesis
(3)	GnRH	Sertoli	Spermatogenesis
(4)	Androgens	Sertoli	Spermatogenesis

171. Identify the parts labelled as A, B, C, D and E in the given diagram of a human sperm and select the correct option.



- (1) A-Nucleus, B-Tail, C-Mitochondria, D-Acrosome, E-Neck
 (2) A-Acrosome, B-Nucleus, C-Neck, D-Mitochondria, E-Plasma membrane
 (3) A-Nucleus, B-Mitochondria, C-Plasma membrane, D-Neck, E-Neck
 (4) A-Acrosome, B-Neck, C-Mitochondria, D-Plasma membrane, E-Tail

172. Which of the following is not related to make tobacco plant resistant against Meloidogyne?

- (1) Agrobacterium vector
 (2) Silencing of specific mRNA
 (3) RNA interference (RNAi)
 (4) Breakdown of chromosomal DNA

173. How many of the following and comes under aschelminthes-

Roundworm, Filarial worm, Hookworm, Liverfluke, Tapeworm, Planaria, Earthworm

- (1) 7
 (2) 3
 (3) 5
 (4) 6

174. Among the following organs which ones are not sense organs in cockroach. Antennae, maxillary palps, mandibular palps, labral palps, labial palps and anal cerci

- (1) Mandibular palps, labral palps
 (2) Anal cerci and Maxillary palps
 (3) Maxillary palps and Labial palps
 (4) Anal cerci and Labial palps

175. If A = Primary bronchi

B = Tertiary bronchi

C = Alveoli

D = Secondary bronchi

E = Terminal bronchiole

Then starting from trachea (T), which sequence of branching is correct?

- (1) T → A → E → D → C → B
 (2) T → A → D → B → E → C
 (3) T → A → D → E → C → B
 (4) T → E → A → D → B → C

176. Given below are four statements (i)-(iv) each with two blanks. Select the option which correctly fills up the blanks in any of these statements.

(i) The columnar epithelium is composed of __ (1) __ and slender cells. Their __ (2) __ are located at the base.

(ii) Collagen fibres provide __ (3) __ and elastin fibres provide __ (4) __ and elasticity to the tissue.

(iii) Adipose tissue is a __ (5) __ type of connective tissue located mainly beneath __ (6) __

(iv) Tendon attach __ (7) __ to bones and ligament attach __ (8) __ to bones.

- (1) (1) Tall, (2) Nucleus, (7) Bones, (8) Muscles
 (2) (1) Short, (2) Organelles, (3) Strength, (4) Flexibility
 (3) (3) Strength, (4) Flexibility, (5) Loose, (6) Skin

- (4) (5) Dense, (6) Muscles, (7) Muscles, (8) Bones

177. Select the incorrect statement.

- (1) Rheumatoid arthritis is an auto immune disease.
- (2) Steroids and antihistamine drugs are used in treatment of allergy
- (3) Spleen does not contain erythrocytes.
- (4) HIV replicates in T-helper cells.

178. Which one of the following four organs of respiratory system is correctly matched with its characteristics?

- (1) Trachea – Divides at the level of 7th thoracic vertebrae into right and left primary bronchi
- (2) Trachea – Small flap that prevents food from entering.
- (3) Diaphragm – Dome-shaped muscle that pushes on the lungs during exhalation.
- (4) Alveoli – Pair of organs that shrink as you inhale and swell up as you exhale.

179. Number of bones in cranium, face, hyoid and middle ear are respectively

- (1) 14, 8, 1 and 3
- (2) 8, 14, 1 and 3
- (3) 3, 8, 14 and 1
- (4) 14, 8, 3 and 1

180. Which of the following event is regarded as first phase of menstrual cycle

- (i) Menstrual phase
- (ii) Follicular development
- (iii) Secretory phase .
- (iv) Luteal phase

181. Which one of the following shows the correct sequential order of vertebrae in the vertebra column of human beings?

- (1) Cervical — Lumbar — Thoracic — Sacral — Coccygeal
- (2) Cervical — Thoracic — Sacral — Lumbar — Coccygeal

- (3) Cervical — Sacral — Thoracic — Lumbar — Coccygeal

- (4) Cervical — Thoracic — Lumbar — Sacral — Coccygeal

182. Select the correct statement.

- (1) ADH reduces blood volume and increases urine volume
- (2) ADH increase blood volume and reduces urine volume
- (3) ADH reduces blood pressure
- (4) ADH stimulates water excretion in DCT

183. In the nephron all is true, except

- (1) Fluid in the base of the loop of Henle is hypertonic with respect to glomerular filtrate
- (2) Glomerular filtrate is hypertonic with respect to the fluid in the distal convoluted tubule
- (3) Antidiuretic hormone causes the fluid in the collecting ducts to be hypertonic with respect that in the proximal convoluted tubule
- (4) Fluid at the end of proximal convoluted tubule is hypotonic with respect to glomerular filtrate

184. **Assertion:** In atherosclerosis, the lumen of arteries gets narrower

Reason: Hypotension is observed in atherosclerotic patients.

- (1) If both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
- (2) If both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
- (3) If Assertion is True but the Reason is False.
- (4) If both Assertion & Reason are false.

185. Contraceptive pill works by

- (1) They inhibit ovulation
- (2) Inhibit implantation

- (3) Alter quality of cervical mucus
- (4) All of these

SECTION - B

186. Removal of proximal convoluted tubule from the nephron will result in

- (1) The urine will be more dilute
- (2) There will be no urine formation
- (3) There will be hardly any change in the quality and quantity of urine formed
- (4) The urine will be more concentrated

187. **Statement-I:** Each coxal bone in man is formed by the fusion of three bones namely ilium, ischium and pubis.

Statement-II: At the point of fusion of the above listed bones is a cavity called glenoid, with which the thigh bone articulates.

Select the correct option

- (1) Statement II is correct
- (2) Statement I is incorrect
- (3) Both statement I and II are correct
- (4) Statement I is correct while statement II is incorrect

188. Cardiac / heart muscles are:

- (1) Striated and involuntary
- (2) Branched
- (3) Not fatigued
- (4) All

189. Which of the following structure undergo second meiotic division to produce spermatids

- (1) Spermatogonium
- (2) Primary spermatocyte
- (3) Secondary spermatocyte
- (4) Secondary oocyte

190. The pneumotaxic centre is present in the ___i___ region of the brain. It directly regulates the functions of the ___ii___. The information in

which alternative completes the given statements?

- (1) i-pons, ii-chemosensitive area
- (2) i-cerebellum. ii-chemosensitive area
- (3) i-cerebellum, ii-respiratory rhythm centre
- (4) i-pons, ii-respiratory rhythm centre

191. Seminal plasma, the fluid part of semen, is contributed by:

- (i) Seminal vesicle
 - (ii) Prostate
 - (iii) Urethra
 - (iv) Bulbourethral gland
- (1) (i) and (ii)
 - (2) (i), (ii), and (iv)
 - (3) (ii), (iii) and (iv)
 - (4) (i) and (iv)

192. **Statement I:** In gel electrophoresis, DNA fragments can be separated by forcing them to move towards the cathode under the electric field through a matrix/medium.

Statement II: DNA fragments are positively charged.

- (1) Both statement-I and statement-II are correct.
- (2) Both statement-I and statement-II are incorrect
- (3) Statement-I is correct & statement-II is incorrect
- (4) Statement-I is incorrect & statement-II is correct.

193. Ribosome that shows catalytic activity in bacteria:

- (1) 23s rRNA
- (2) 5srRNA
- (3) 18srRNA
- (4) 1.8 SrRNA

194. A person is drug addict because of

- (1) irritable behaviour, uncoordinated actions and emotional detachment
- (2) habit of taking drug
- (3) irresistible urge to take the drug and increase the dose
- (4) none of the above

195. Consider the following statement–
I. In S-phase number of chromosome does not change
II. Gametes have half the number of chromosome than cell of G1 phase
How many are correct–
(1) Only I
(2) Only II
(3) Both I and II
(4) Both wrong
196. Many mammals oocyte arrest in...phase of meiosis
(1) Leptotene
(2) Zygotene
(3) Pachytene
(4) Diplotene
197. Which of the following is non-coding region on mRNA–
(1) UTR
(2) Introns
(3) Start codon
(4) All
198. Given below is a small paragraph related to evolution of man with some blanks. You have to select only one option out of four which fills correctly? The fossils discovered in.....in 1891 revealed the next stage, i.e.....about 1.5 mya. and had a large brain around.....and probably ate meat.
(1) Africa, Homo erectus, 650 cc
(2) Java, Homo erectus, 900 cc
(3) Neanderthal valley, Neanderthal, 1450 cc
(4) Africa, Australopithecus, 650 cc
199. Which of the following statements is/are not correct regarding Frog?
(i) They do not have constant body temperature.
(ii) Bile emulsifies fat and pancreatic juices digest carbohydrates and proteins.
(iii) They have the ability to change the colour to hide them from their enemies.
(iv) They do not exhibit sexual dimorphism
(v) Liver secretes bile that is stored in the gall bladder.
(1) (iv) only
(2) (v) only
(3) (i) and (ii)
(4) (iii) and (v)
200. Select the correct statement related to secretin
(1) Acts on the endocrine pancreas and inhibit secretion of water and bicarbonate ions
(2) Acts on the exocrine pancreas and inhibit secretion of water and bicarbonate ions
(3) Acts on the endocrine pancreas and stimulates secretion of water and bicarbonate ions
(4) Acts on the exocrine pancreas and stimulates secretion of water and bicarbonate ions