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IIT-JEE | NEET | Foundation

NEET

Time: 200 Minute   **M.M. 720**

ALL INDIA SKY TEST SERIES

Pulse Batch – Neet

Date : 18/09/2023

SYLLABUS

PHYSICS	CHEMISTRY	BOTANY	ZOOLOGY
Previous + C.O.M.	Previous + Thermodynamics	The living world + Biological classification	Reproductive health

Please read the instructions carefully. You are allotted **5** minutes specifically for this purpose.

INSTRUCTIONS:

1. This Question paper is divided in to four parts physics, chemistry, botany, zoology and each part is further divided into two sections.

   Section –A contains 35 Questions Section B contains 15 questions. Please ensure that the Questions paper you have received contains **ALL THE QUESTIONS** in each Part.

2. **In Section A all the 35 Questions are compulsory and in Section B Contain 15 Question, out of these**

   15 Questions, candidates can choose to attempt any 10 Questions.

   Each Question has four choices (a), (b), (c), (d) out of which **only one is correct & Carry 4 marks each 1 mark** will be deducted for each wrong answer.
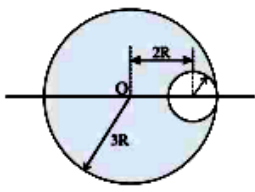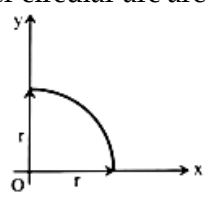
GENERAL INSTRUCTION

1. Use only **blue/black pen (avoid gel pen)** for darkening the bubble.

2. Indicate the correct answer for each question by filling appropriate bubble in your **OMR** answer sheet.

3. The answer sheet will be checked through computer hence; the answer of the question must be marked by –shading the circles against the question by dark **blue/black pen**

4. Blank papers, Clipboards, Log tables, Slide Rule, Calculator, Cellular Phones Papers and Electronic Gadgets in any form are **not** allowed to be carried inside the examination hall.

Name of the candidate: _____

**Signature of the candidate:** _____ **Signature of the invigilator:** _____

PHYSICS

SECTION - A

1. The distance of centre of mass of a uniform semi-circular disc of radius R, from the geometric centre on the axis of symmetry is.
   (a) $\dfrac{4R}{3\pi}$ (b) $\dfrac{2R}{3\pi}$ (c) $\dfrac{4R}{9\pi}$ (d) $\dfrac{2R}{\pi}$

2. Two blocks of masses 10kg and 30kg are placed along a vertical line. If 10kg block is raised through a height of 7cm, then the distance through which other mass should be moved to raise the center of mass of the system by 1cm is
   (a) 1cm up (b) 1 cm down
   (c) 2cm down (d) 2 cm up

3. Distance of centre of mass of a solid uniform cone from its vertex is z_o. If the radius of its base is R and its height is h then z_o is equal to.
   (a) $\dfrac{5h}{8}$ (b) $\dfrac{3h^2}{8R}$ (c) $\dfrac{h^2}{4R}$ (d) $\dfrac{3h}{4}$

4. Mass is non-uniformly distributed over the rod of length l. Its linear mass density varies linearly with length as $\lambda = kx^2$. The position of center of mass (from lighter end) is given by
   (a) $2l/5$ (b) $3l/5$ (c) $3l/4$ (d) $2l/3$

5. A cannon shell fired at an angle θ. with horizontal breaks into two equal parts at its highest point. One part retraces the path to the cannon with kinetic energy E_1 and kinetic energy of the second part is E_2, the relation between E_1 and E_2 is
   (a) $E_2 = 15E_1$ (b) $E_2 = E_1$
   (c) $E_2 = 4E_1$ (d) $E_2 = 9E_1$

6. A pulley fixed with ceiling carries a string with blocks of mass m and 3m attached to its ends. The masses of string and pulley are negligible. When the system is released, its center of mass moves with acceleration
   (a) g (b) g/5 (c) g/4 (d) zero

7. A stone of mass 500g is dropped from the top of a tower of 100m height and simultaneously other stone of mass 1kg is thrown horizontally with a speed of 10 m/s from same point. the height of the centre of mass of the above two stone system after 3s is-
   (a) 45 m (b) 35 m (c) 55 m (d) N.O.T

8. A circular hole of radius 1 cm is cut off from a disc of radius 6 cm. The centre of the hole is 3 cm from the centre of the disc. Then the distance of the centre of mass of the remaining disc from the centre of the disc is
   (a) 3/35 cm (b) 1/35 cm
   (c) 3/10 cm (d) N.O.T.

9. Body A of mass M while falling vertically downward under the gravity break into two parts; a body B of mass M/3 and body C of mass 2M/3. The centre of mass of body is B and C taken together shift compared to that of a body A towards
   (a) depends on height of breaking
   (b) doesn't shift
   (c) body C
   (d) body B

10. The centre of mass of three particles of masses 1 kg, 2kg, and 3 kg is at (2,2,2). The position of the fourth mass of 4 kg to be placed in the system as that the new centre of mass is at (0,0,0) is
    (a) (-3, -3, -3) (b) (-3, 3, -3)
    (c) (2, 3, -3) (d) (2, -2, 3)

11. A uniform rod is placed vertically on a smooth surface and then released. Then,
    (a) the centre of rod follows straight line path
    (b) the centre of mass follows circular path
    (c) the instantaneous axis is passing through the contact point
    (d) all the above

12. The figure shows a disc of radius 3R from which a circular hole of a radius R is cut as shown in the figure. The distance of the centre of mass of the remaining object from the point O is

    (a) R/4 (b) R/5 (c) R/3 (d) R/6

13. The coordinate of the center of mass of the following quarter circular arc are

    (a) $\left(\dfrac{r}{2}, \dfrac{r}{2}\right)$ (b) $\left(\dfrac{2r}{3}, \dfrac{2r}{3}\right)$
    (c) $\left(\dfrac{2r}{\pi}, \dfrac{2r}{\pi}\right)$ (d) $\left(\dfrac{4r}{\pi}, \dfrac{4r}{\pi}\right)$

14. Two homogeneous spheres A and B of masses m and 2m having radii 2a and a respectively are placed in touch. The distance of the centre of mass from the first sphere is
    (a) a (b) 2a (c) 3a (4) N.O.T.

15. Two identical particles move towards each other with velocity 2v and v respectively. The velocity of centre of mass is.

(a) v (b) $\dfrac{v}{3}$ (c) $\dfrac{v}{2}$ (d) zero

16. Three masses 2 kg, 3 kg and 4 kg are lying at the corners of an equilateral triangle of side a . The X coordinate of center of mass is
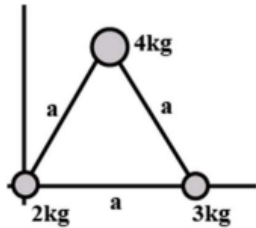

(a) $\dfrac{7}{12}a$ (b) $\dfrac{5}{9}a$ (c) $\dfrac{7\sqrt{2}}{9}a$ (d) $\dfrac{\sqrt{5}}{9}a$

17. A man of mass M stands at one end of a plank of length L which lies at rest on a frictionless surface. The man walks to the other end of the plank. If the mass of the plank is 3M, the distance that the man moves relative to the ground is
(a) L/4   (b) 3L/4   (c) 2L/3   (d) L/3

18. An object comprises of a uniform ring of radius R and its uniform chord AB (not necessarily made of the same material) as shown. Which of the following cannot be the centre of mass of the object?
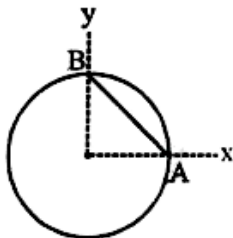

(a) $\left(\dfrac{R}{3},\dfrac{R}{3}\right)$ (b) $\left(\dfrac{R}{\sqrt{2}},\dfrac{R}{\sqrt{2}}\right)$

(c) $\left(\dfrac{R}{4},\dfrac{R}{4}\right)$ (d) N.O.T.

19. Two particles whose masses are 10kg and 30 kg and their position vectors are $\left(\hat{i}+\hat{j}+\hat{k}\right)$ and $\left(-\hat{i}-\hat{j}-\hat{k}\right)$ respectively would have the center of mass of.

(a) $-\dfrac{\hat{i}+\hat{j}+\hat{k}}{2}$ (b) $\dfrac{\hat{i}+\hat{j}+\hat{k}}{2}$

(c) $-\dfrac{\hat{i}+\hat{j}+\hat{k}}{4}$ (d) $\dfrac{\hat{i}+\hat{j}+\hat{k}}{4}$

20. A square plate of edge a and a circular disc of diameter a are placed touching each other at the midpoint of an edge of the plate as shown. Then the center of mass of the combination will be (assume same mass per unit area for the two plates
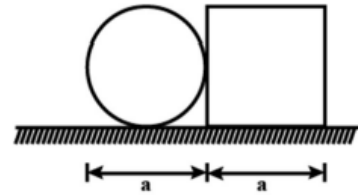
(a) $\dfrac{2a}{2+\pi}$ eft to the center of the disc

(b) $\dfrac{2a}{2+\pi}$ right to the center of the disc

(c) $\dfrac{4a}{4+\pi}$ right to the center of the disc

(d) $\dfrac{4a}{4+\pi}$ left to the center of the disc

21. The distance of the centre of mass of a hemispherical shell of radius R from its centre is.

(a) $\dfrac{R}{2}$ (b) $\dfrac{R}{3}$ (c) $\dfrac{2R}{2}$ (d) $\dfrac{2R}{3}$

22. Three particles of masses 1kg, 2kg, and 3kg are situated at the corner of an equilateral triangle move at speed 6m/s, 3m/s, 2m/s respectively each particle maintains a direction towards the particle at the next corner symmetrically. Find the velocity of centre of mass at this instant.
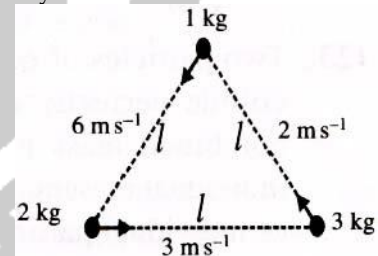
(a) 3 m/s   (b) 5 m/s   (c) 6 m/s   (d) 0

23. Consider the following two statements:
    (i) Linear momentum of a system of particles is zero
    (ii) Kinetic energy of a system of particles is zero, Then
    (a) (i) implies (ii) and (ii) implies (i)
    (b) (i) does not imply (ii) and (ii) does not imply (i)
    (c) (i) implies (ii) but (ii) does not imply (i)
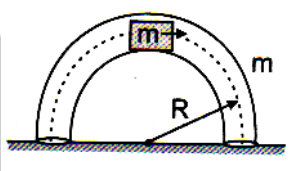   (d) (i) does not imply (ii) but (ii) implies (i)

24. A body at rest breaks up into 3 parts. If 2 parts having equal masses fly off perpendicular each after with a velocity of 12 m/s then the velocity of the third part which has 3 times mass of each part is
    (a) $4\sqrt{2}$ m/s at an angle of 45^0 from each body
    (b) $24\sqrt{2}$ m/s at an angle of 135^0 from each body
    (c) $6\sqrt{2}$ m/s at 135^0 from each body
    (d) $4\sqrt{2}$ m/s at 135^0 from each body

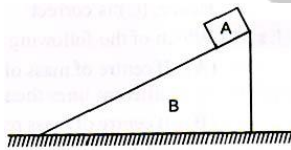25. Internal forces can change.
    (a) The linear momentum but not the kinetic energy
    (b) The kinetic energy but not the linear momentum
    (c) Linear momentum as well as kinetic energy
    (d) Neither the linear momentum nor the kinetic energy

26. In a vertical plane inside a smooth hollow thin tube a block of same mass as that of tube is released as shown in figure. when it is slightly disturbed it moves towards right. By the time the block reaches the right end of the tube then the displacement of the tube will be (where 'R' is mean radius of tube). Assume that the tube remains in vertical plane.
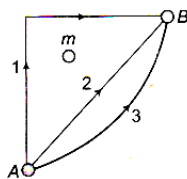   (a) $\dfrac{2R}{\pi}$ (b) $\dfrac{4R}{\pi}$ (c) $\dfrac{R}{2}$ (d) R

27. A block A (mass = 4m) is placed on the top of a wedge B of base length ℓ (mass = 20 m) as shown in figure. When the system is released from rest. Find the distance moved by the wedge B till the block A reaches ground. Assume all surfaces are frictionless.
    (a) $\ell/6$ (b) $\ell/4$
    (c) $\ell/5$ (d) $\ell/3$

28. If W_1, W_2 and W_3 represent the work done in moving a particle from A to B along three different paths 1, 2 and 3, respectively (as shown) in the gravitational field of a point mass m. Find the correct relation between W_1, W_2 point m. Find the correct relation between W_1, W_2 and W_3.
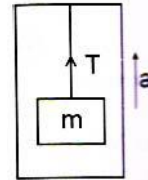   (a) $W_1 > W_2 > W_3$ (b) $W_1 = W_2 = W_3$
    (c) $W_1 < W_2 < W_3$ (d) $W_2 > W_1 > W_3$

29. A position –dependent force $F = 7 - 2x + 3x^2$ newton acts on a small body of mass 2 kg and displaces it from x = 0 to x = 5 m. The work done in joule is
    (a) 70   (b) 270   (c) 35   (d) 135

30. A block of mass m is suspended by a light thread from an elevator. The elevator is accelerating upward with uniform acceleration a. The work done by tension on the block during t second is.
    (a) $\dfrac{m}{2}(g+a)at^2$ (b) $\dfrac{m}{2}(g-a)at^2$
    (c) $\dfrac{m}{2}gat^2$ (d) 0

31. A pump can take out 7200 kg of water per hour from a well 100 m deep. The power of pump, assuming its efficiency as 50%, will be
    (a) 1 kW   (b) 2 kW   (c) 3 kW   (d) 4 kW

32. Power of a water pump is 2 kW. If g = 10 m/s², the amount of water it can raise in 1 min to a height of 10 m is
    (a) 2000 L   (b) 1000 L   (c) 100 L   (d) 1200 L

33. A particle of mass M starting from rest undergoes uniform acceleration. If the speed acquired in time T is V, the power delivered to the particle is
    (a) $\dfrac{MV^2}{T}$ (b) $\dfrac{1}{2}\dfrac{MV^2}{T^2}$
    (c) $\dfrac{MV^2}{T^2}$ (d) $\dfrac{1}{2}\dfrac{MV^2}{T}$

34. A car of mass m is driven with acceleration a along a straight level road against a constant external resistive force R. When the velocity of the car is V, the rate at which the engine of the car is doing work will be
    (a) RV   (b) ma V
   (c) (R + ma)V   (d) (ma – R) V

35. A spring of force constant 800N/m has an extension of 5 cm. The work done in extending it from 5 cm to 15 cm is
   (a) 16 J   (b) 8 J   (c) 32 J   (d) 24 J

SECTION -B

36. Two spring have their constant as k_1 and $k_2(k_1 > k_2)$. When they are stretched by the same force.
    (a) No work is done by the force in case of both the spring.
    (b) Equal work done by the force in case of both the springs.
    (c) More work is done by this force in case of second spring.
    (d) More work is done by this force in case of first spring.

37. A block of mass m is attached to two unstretched springs of spring constants k, each as shown. The block is displaced towards right through a distance x and is released. The speed of the block as it passes through the mean position will be
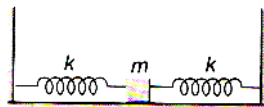

    (a) $x\sqrt{\dfrac{m}{2k}}$ (b) $x\sqrt{\dfrac{2k}{m}}$ (c) $x\dfrac{m}{k}$ (d) $x\dfrac{2k}{m}$

38. The figure shows a smooth curved track terminating in a smooth horizontal part. A spring of spring constant 400 N/m is attached at one to a wedge fixed rigidly with the horizontal part. A 40 g mass is released from rest at a height of 5m on the curved track. The maximum compression of the spring will be
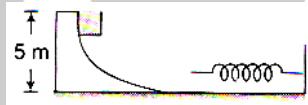
   (a) 10 cm   (b) 20 cm   (c) 30 cm   (d) 40 cm

39. A block weighing 10 kg travels down a smooth curved track AB joined to a rough horizontal surface (see the figure). The rough surface has a friction coefficient of 0.20 with the block. If the block starts slipping on the track from a point 1 m above the horizontal surface, how far will it move on the rough surface?
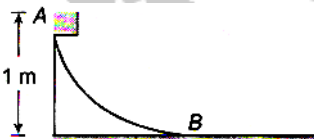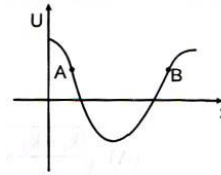

    (a) 3m   (b) 4 m   (c) 5 m   (d) 6 m

40. The force acting on a body moving along the x-axis varies with the position of the particle as shown in the figure. The body is in stable equilibrium at
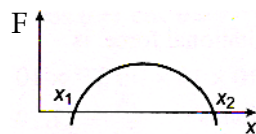
    (a) x = x_1 (b) x = x_2
    (c) Both x_1 and x_2 (d) Neither x_1 nor x_2

41. Potential energy v/s displacement curve for one dimensional conservative field is shown. Force at A and B is respectively.

    (a) Positive, Positive   (b) Positive, Negative
    (c) Negative, Positive   (d) Negative, Negative

42. $F = 2x^2 – 3x – 2$. Choose correct option
    (a) x = - 1/2 is position of stable equilibrium
    (b) x = 2 is position of stable equilibrium
    (c) x = - 1/2 is position of unstable equilibrium
    (d) x = 2 is position of neutral equilibrium

43. A body crosses the topmost point of a vertical circle with a critical speed. Its centripetal acceleration, when the string is horizontal will be
    (a) 6g   (b) 3g   (c) 2g   (d) g

44. In a simple pendulum, the breaking strength of the string is double the weight of the bob. The bob is released from rest when the string is horizontal. The string breaks when it makes an angle θ with the vertical.
    (a) $\theta = \cos^{-1}(1/3)$ (b) $\theta = 60^0$
    (c) $\theta = \cos^{-1}(2/3)$ (d) θ = 0

45. A stone tied to a string of length L is whirled in a vertical circle, with the other end of the string at the center. At a certain instant of time, the stone is at its lowest position and has a speed u. The magnitude of the change in its velocity as it reaches a position where the string is horizontal is
    (a) $\sqrt{u^2 - 2gL}$ (b) $\sqrt{(2gL)}$
    (c) $\sqrt{u - gL}$ (d) $\sqrt{2(u^2 - gL)}$

46. A block is released on a smooth track from A. The minimum value of h so that the block will complete the loop is
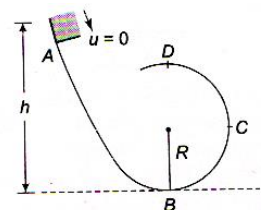
    (a) $\dfrac{R}{2}$ (b) $\dfrac{3R}{2}$ (c) zero   (d) $\dfrac{5R}{2}$

47. A particle is released from the top of the smooth hemisphere R as shown.

The normal contact between the particle and the hemisphere in position θ is
(a) mg(3 - 2 cos θ)   (b) mg(3 cos θ - 2)
(c) mg(4 cos θ - 3)   (d) mg(4 - 3 cos θ)

48. A particle is kept at rest at the top of a sphere of diameter 42 m. When disturbed slightly, it slides down. At what height h from the bottom, the particle will leave the sphere
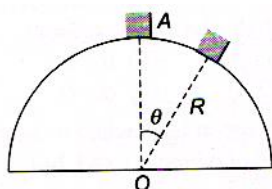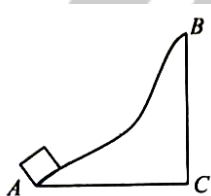(a) 14 m   (b) 28 m   (c) 35 m   (d) 7 m

49. A block of mass 1 kg is projected from point A along irregular rough inclined surface and reaches point B as shown in fig. The coefficient of friction between the block and the inclined plane is 0.5. Find work done by the friction on te block if AC = 1 m.

(a) – 1 J   (b) – 2 J   (c) – 4 J   (d) – 5 J

50. The string of a pendulum, having bob of mass m, is displaced through 90° from the vertical and then released. The minimum strength of the string in order to withstand the tension as the pendulum passes through the mean position is.
(a) mg   (b) 3 mg   (c) 5 mg   (d) 6 mg

CHEMISTRY

SECTION - A

51. The work done during the process when 1 mole of gas is allowed to expand freely into vacuum is
(a) 0   (b) +ve
(c) −ve   (d) any of these

52. In an isochoric process the increase in internal energy is
(a) Equal to the heat absorbed
(b) Equal to the heat evolved
(c) Equal to the work done
(d) Equal to the sum of the heat absorbed and work done

53. Which one is not a state function?
(a) Internal energy (E)
(b) Volume
(c) Heat (q)
(d) Enthalpy

54. When no heat energy is allowed to enter or leave the system, it is called
(a) Isothermal process
(b) Reversible process
(c) Adiabatic process
(d) Irreversible process

55. Which of the following is the intensive property?
(a) Temperature   (b) Viscosity
(c) Density   (d) All of these

56. Which of the following is an intensive property?
(a) boiling point   (b) molarity
(c) freezing point   (d) all of these

57. In which process net work done is zero?
(a) Cyclic   (b) Isochoric
(c) Free expansion   (d) Adiabatic

58. A system absorbs 600 J of heat and work equivalent to 300 J on its surroundings. The change in internal energy is :
(a) 300 J   (b) 400 J
(c) 500 J   (d) 600 J

59. The difference between ΔH and ΔE (on a molar basis) for combustion of n-octane (*l*) at 25° C would be :
(a) −13.6 kJ   (b) −1.14 kJ
(c) −11.15 kJ   (d) +11.15 kJ

60. Calculate the work done when 2 moles of hydrogen expand isothermally and reversibly at 27°C from 15 to 50 litres.
(a) - 14.45 kcal   (b) - 1445 J
(c) - 1445 cal   (d) - 14.45 kJ

61. Calculate the work involved when 1 mol of an ideal gas is compressed reversibly from 1.00 bar to 5.00 bar at a constant temperature of 300 K.
(a) −14.01 kJ   (b) +18.02 kJ
(c) 4.01 kJ   (d) −8.02 kJ

62. A gas expands isothermally and reversibly. The work done by the gas is
(a) Zero
(b) Minimum
(c) Maximum
(d) Cannot be determine

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63. If 50 calories are added to a system and system does work of 30 calories on surroundings, the change in internal energy of system is
(a) 20 cal   (b) 50 cal
(c) 40 cal   (d) 30 cal

64. For the combustion of n-octane
$C_8H_{18} + O_2 \longrightarrow CO_2 + H_2O$ at 25^0C (ignoring resonance in CO_2)
(a) $\Delta H = \Delta E - 5.5 \times 8.31 \times 0.298$ in kJ/mol
(b) $\Delta H = \Delta E + 4.5 \times 8.31 \times 0.298$ in kJ/mol
(c) $\Delta H = \Delta E - 4.5 \times 8.31 \times 0.298$ in kJ/mol
(d) $\Delta H = \Delta E - 4.5 + 8.31 \times 0.298$ in kJ/mol

65. Adiabatic reversible expansion of a gas is represented by
(a) $\left(\dfrac{T_1}{T_2}\right)^{\gamma} = \left(\dfrac{P_2}{P_1}\right)^{(1-\gamma)}$ (b) $\left(\dfrac{T_1}{T_2}\right)^{\gamma} = \left(\dfrac{P_1}{P_2}\right)^{(1-\gamma)}$
(c) $\left(\dfrac{T_1}{T_2}\right)^{\gamma} = \left(\dfrac{P_2}{P_1}\right)^{(\gamma-1)}$ (d) All of the above

66. For the reaction
$B_2H_6(g) + 3O_2(g) \longrightarrow B_2O_3(s) + 3H_2O(l)$
$\Delta E = -2143.2\,kJ$
Calculate ΔH for the reaction at $25^0\,C$
(a) $-2148.2\,kJ\,mol^{-1}$ (b) $-2138.6\,kJ\,mol^{-1}$
(c) $-2133.2\,kJ\,mol^{-1}$ (d) $-2143.2\,kJ\,mol^{-1}$

67. Combustion of methane
(a) is an exothermic reaction
(b) is an endothermic reaction
(c) requires a catalyst
(d) gives H_2

68. The correct relationship between free energy change in a reaction and the corresponding equilibrium constant K_C is :
(a) $\Delta G^0 = RT \ln K_C$ (b) $-\Delta G^0 = RT \ln K_C$
(c) $\Delta G = RT \ln K_C$ (d) $-\Delta G = RT \ln K_C$

69. Mixing of non-reaction gases is generally accompanied by
(a) Decrease in entropy
(b) Increase in entropy
(c) Change in enthalpy
(d) Change in free energy

70. Identify the correct statement regarding a spontaneous process :
(a) For a spontaneous process in an isolated system, the change in entropy is positive
(b) Endothermic processes are never spontaneous
(c) Exothermic processes are always spontaneous
(d) Lowering of energy in the reaction process is the only criterion for spontaneity

71. Predict which of the following reaction(s) has a positive entropy change?
I. $Ag^+(aq) + Cl^-(aq) \longrightarrow AgCl(s)$
II. $NH_4Cl(s) \longrightarrow NH_3(g) + HCl(g)$
III. $2NH_3(g) \longrightarrow N_2(g) + 3H_2(g)$
(a) I and II (b) III
(c) II and III   (d) II

72. For a spontaneous chemical process, the free energy change is
(a) positive
(b) negative
(c) either positive or negative
(d) zero

73. Which of the following statement(s) is/are correct?
Statement (i): The entropy of isolated system with P – V work only is always maximized at equilibrium.
Statement (ii): It is possible for the entropy of close system to decrease substantially in an irreversible process.
Statement (iii) : Entropy can be created but not be destroyed.
Statement (iv) : ΔS system is zero for reversible process in an isolated system.
(a) Statements i, ii, iii   (b) Statements ii, iv
(c) Statement i, ii, iv   (d) All of these

74. The molar enthalpy of fusion of water is $6.01\,kJ\,mol^{-1}$. The entropy change of 1 mole of water at its melting point will be
(a) $22\,J\,mol^{-1}K^{-1}$ (b) $109\,J\,mol^{-1}K^{-1}$
(c) $44\,J\,mol^{-1}K^{-1}$ (d) $11\,J\,mol^{-1}K^{-1}$

75. When ice melts into water, entropy
(a) Becomes zero   (b) Decreases
(c) Increases   (d) Remains same

76. If S^0 for H_2, Cl_2 and HCl are 0.13, 0.22 and 0.19 kJ K^{-1} mol^{-1} respectively. The total change in standard entropy for the reaction $H_2 + Cl_2 \longrightarrow 2HCl$ is
(a) $30\,JK^{-1}mol^{-1}$ (b) $40\,JK^{-1}mol^{-1}$
(c) $60\,JK^{-1}mol^{-1}$ (d) $20\,JK^{-1}\,mol^{-1}$

77. The heat required to raise the temperature of body by 1^0C is called:
(a) Specific heat   (b) Thermal capacity
(c) Water equivalent   (d) None of these

78. If for an ideal gas, the ratio of pressure and volume is constant and is equal to $1\ \text{atm}\ \text{L}^{-1}$, the molar heat capacity at constant pressure would be

(a) $\dfrac{3}{2}R$ (b) 2R   (c) $\dfrac{5}{2}R$ (d) zero

79. In the following table, which one is correct

	ΔH	ΔS	**Nature of reaction**
(a)	(-)	(+)	Spontaneous only at high temperature
(b)	(+)	(-)	Nonspontaneous regardless of temperature
(c)	(+)	(+)	Spontaneous only at low temperature
(d)	(-)	(-)	Spontaneous at all temperature

80. $(\Delta H - \Delta U)$ for the formation of carbon monoxide (CO) from its elements at 298 K is (R = 8.314 J K^{-1} mol^{-1}):

(a) 2477.57 J mol^{-1} (b) $-1238.78\,\text{J}\,\text{mol}^{-1}$

(c) $1238.78\,\text{J}\,\text{mol}^{-1}$ (d) $-2477.57\,\text{J}\,\text{mol}^{-1}$

81. 10 moles of ideal gas confined to a volume of 10 L is released into atmosphere at 300 K where the pressure is 1 bar. The work done by the gas is (R = 0.083 L-bar K^{-1} mol^{-1}).

(a) 249 L-bar   (b) 259 L-bar

(c) 239 L-bar   (d) 220 L-bar

82. At 500 K for an isobaric process.

$\Delta S_{\text{system}} = -10\,\dfrac{\text{kJ}}{\text{mol K}}$ $\Delta S_{\text{surr}} = 12\,\dfrac{\text{kJ}}{\text{mol K}}$

Therefore, ΔG for the entire process is

(a) $-500\,\text{kJ}/\text{mol}$ (b) $-1000\,\text{kJ}/\text{mol}$

(c) $-600\,\text{kJ}/\text{mol}$ (d) $-1100\,\text{kJ}/\text{mol}$

83. The incorrect expression among the following is

(a) $\dfrac{\Delta G_{\text{system}}}{\Delta G_{\text{total}}} = -T$

(b) In isothermal process, $W_{\text{reversible}} = -nRT\ln\dfrac{V_f}{V_i}$

(c) $\ln K = \dfrac{\Delta H - T\Delta S^0}{RT}$

(d) $K = e^{-\Delta G^0/RT}$

84. When reaction is at standard state at equilibrium, then :

(a) $\Delta H^0 = 0$

(b) $\Delta S^0 = 0$

(c) equilibrium constant K = 0

(d) equilibrium constant K = 1

85. In which case, a spontaneous reaction is possible at any temperature

(a) $\Delta H < 0, \Delta S > 0$ (b) $\Delta H < 0, \Delta S < 0$
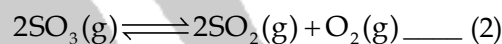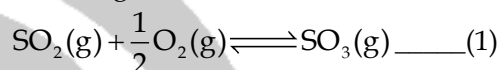
(c) $\Delta H > 0, \Delta S > 0$ (d) None of these

SECTION – B

86. For the reaction;

$H_{2(g)} + CO_{2(g)} \rightleftharpoons CO_{(g)} + H_2O_{(g)}$, if the initial concentration of $[H_2]$ = $[CO_2]$ and x moles/litre of hydrogen is consumed at equilibrium, the correct expression of K_p is

(a) $\dfrac{x^2}{(1-x)^2}$ (b) $\dfrac{(1-x)^2}{(1-x)^2}$

(c) $\dfrac{x^2}{(2+x)^2}$ (d) $\dfrac{x^2}{1-x^2}$

87. At 298 K equilibrium constant K_1 and K_2 of following reaction

$SO_2(g) + \dfrac{1}{2}O_2(g) \rightleftharpoons SO_3(g)$ _____(1)

$2SO_3(g) \rightleftharpoons 2SO_2(g) + O_2(g)$ _____ (2)

The relation between K_1 and K_2 is

(a) $K_1 = K_2$ (b) $K_2 = K_1^2$

(c) $K_2 = 1/K_1^2$ (d) $K_2 = 1/K_1$

88. The rate at which substances react depends on their

(a) Atomic weigh

(b) Molecular weight

(c) Equivalent weight

(d) Active mass

89. In a system $A_{(s)} \rightleftharpoons 2B_{(g)} + 3C_{(g)}$. If the concentration of C at equilibrium is increased by a factor 2, it will cause the equilibrium concentrations of B to change to

(a) Two times of its original value

(b) One half of its original value

(c) $2\sqrt{2}$ time of its original value

(d) $\dfrac{1}{2\sqrt{2}}$ times of its original value

90. The dissociation equilibrium of a gas AB_2 can be represented as

$2AB_2(g) \rightleftharpoons 2AB(g) + B_2(g)$
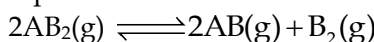
The degree of dissociation is x and is small compared to 1. The expression relating the degree of dissociation (x) with equilibrium constant K_p and total pressure P is

(a) $(2K_p/P)^{1/3}$ (b) $(2K_p/P)^{\frac{1}{2}}$

(c) (K_p/K) (d) $(2K_p/P)$

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91. 10^{-2} mole of NaOH was added to 10 litres of water. The pH will change by
(a) 4   (b) 3   (c) 11   (d) 7

92. What would be the pH of an ammonia solution if that of an acetic acid solution of equal strength is 3.2? Assume dissociation constant for NH_3 and acetic acid are equal.
(a) 3.2   (b) 6.4   (c) 9.6   (d) 10.8

93. In which case pH will not change on dilution
(a) 0.01 M CH_3COONa + 0.01 M CH_3COOH buffer
(b) 0.01 M CH_3COONH_4
(c) 0.01 M NaCl
(d) in all cases

94. The values of K_{sp} for CuS, Ag_2S and HgS are 10^{-31}, 10^{42} and 10^{-54} respectively. The correct order of their solubility in water is.
(a) $Ag_2S > HgS > CuS$
(b) $HgS > CuS > Ag_2S$
(c) $HgS > Ag_2S > CuS$
(d) $Ag_2S > CuS > HgS$

95. If 50 ml of 0.2 M KOH is added to 40 ml of 0.05 M HCOOH, the pH of the resulting solution is $(K_a = 1.8 \times 10^{-4})$
(a) 3.4   (b) 7.5   (c) 5.6   (d) 3.75

96. Equimolar solutions of the following were prepared in water separately. Which one of the solutions will record the highest pH?
(a) $BaCl_2$ (b) $MgCl_2$ (c) $CaCl_2$ (d) $SrCl_2$

97. $[Cr(H_2O)_6]Cl_3$ (at no. of Cr = 24) has a magnetic moment of 3.83 B.M. The correct distribution of 3d electrons in the chromium of the complex
(a) $3d_{xy}^1, 3d_{yz}^1, 3d_{xz}^1$ (b) $3_{xy}^1, 3d_{yz}^1, 3d_{z^2}^1$
(c) $(3d_{x^2-y^2}^1), 3d_{z^2}^1, 3d_{xz}^1$ (d) $3d_{xy}^1, (3d_{x^2-y^2}^1), 3d_{yz}^1$

98. Maximum number of electrons in a sub-shell of an atom is determined by the following
(a) $2n^2$ (b) $4l + 2$ (c) $2l + 1$ (d) $4l - 2$

99. The charge on the atom containing 17 protons, 18 neutrons and 18 electrons is
(a) +1   (b) -2   (c) -1   (d) Zero

100. The total number of gram –molecules of SO_2Cl_2 in 13.5 g of sulphuryl chloride is
(a) 0.1   (b) 0.2   (c) 0.3   (d) 0.4

BOTANY

SECTION – A

101. Growth and reproduction are mutually exclusive events in.
(a) Majority of higher animals and plants
(b) Bacteria
(c) Unicellular algae
(d) *Amoeba*

102. The most obvious and technically complicated feature of all living organisms is the ability
(a) To sense and respond to the environmental stimuli
(b) To reproduce
(c) To increase the body mass
(d) To perform chemical reactions inside body

103. Photoperiod affects reproduction in
(a) Only plants
(b) Only animals
(c) Only bacteria
(d) Seasonal breeders plants and animals

104. Select the incorrect statement w.r.t. consciousness
(a) All organisms are aware of their surroundings
(b) It is a defining property of all living organism
(c) It is a non – defining property of living beings
(d) Human beings is the only organism to show self – consciousness

105. In taxonomic hierarchy, which of the following serves as basic and lowest category?
(a) Kingdom   (b) Class
(c) Order   (d) Species

106. Select the correct statement w.r.t. order
(a) Order is the assemblage of classes which exhibit a few similar characters
(b) Order is the assemblage of families which exhibit large number of similar character
(c) Convolvulaceae and Solanaceae are included in two different orders
(d) Carnivora includes families like Felidae and Canidae

107. Wheat belongs to which of the given plant family?
(a) Poaceae   (b) Convolvulaceae
(c) Anacardiaceae   (d) Solanaceae

108. The herbarium sheet carrying a label which provides information about
(A) Date and place of collection
(B) Collector's name
(C) Only local names
(a) only (C)   (b) (A) and (C)
(c) (B) and (C)   (d) (A) and (B)

109. Which of the following serves as quick referral sytem in taxonomical studies?
(a) Botanical gardens   (b) Herbarium
(c) Museum   (d) Zoological parks

110. National Botanical Research Insutitute is situated at
(a) Howrah   (b) Darjeeling
(c) Kew   (d) Lucknow

111. In biological museums, insects are preserved
(a) On herbarium sheets
(b) By stuffing
(c) After collecting, killing and pinning
(d) Live in insect box

112. Zoological parks
(a) Are the places where dead animals are preserved
(b) Have collection of living plants for reference
(c) Are places where wild animals are kept in protected environments under human care.
(d) Do not provide conditions similar to natural habitat of animals

113. Key is used as a taxonomical aid for identification of
(a) Only plants based on dissimilarities
(b) Only animals based on dissimilarities
(c) Both plants and animals based on the similarities and dissimilarities
(d) Only micoorganisms

114. Which of the following taxonomic aid is generally analytical in nature?
(a) Herbarium   (b) Museum
(c) Key   (d) Botanical garden

115. Which among the following provide information for identification of names of species found in an area?
(a) Monograph   (b) Catalogues
(c) Flora   (d) Manuals

116. Classes in plants with a few similar characters are assigned to a higher category called.
(a) Phylum   (b) Division
(c) Order   (d) Family

117. Select the option showing hierarchial arrangement of taxonomic categories in ascending order
(a) Species → Genus → Family → Order
(b) Genus → Species → Family → Order
(c) Genus → Species → Order → Family
(d) Species → Family → Order → Genus

118. According to Linnaeus's two kingdom classification, organisms like *Chlamydomonas* and *Chlorella* should be placed under.
(a) Kingdom Protista   (b) Kingdom Plantae
(c) Kingdom Animalia   (d) Kingdom Monera

119. The protist that forms an aggregation called polasmodium
(a) Has cellulosic cell wall
(b) Forms fruiting bodies during unfavourable conditions
(c) Has ssRNA as genetic material
(d) Is autotrophic organism

120. How many of the following kingdoms have saprophytic organisms according to five kingdom classification system?
(a) Monera   (b) Protista
(c) Fungi   (d) Plantae

121. The energy required for ATP production in chemosynthetic autotrophic bacteria is obtained by.
(a) Oxidation of inorganic substances
(b) Sunlight radiations
(c) Oxidation of organic substances
(d) Thermal energy

122. Spores of slime moulds
(a) Always diploid
(b) Have true cell wall
(c) Are dispersed by water currents
(d) Cannot survive under adverse conditions

123. Dinoflagellates
(a) Have deposition of silica in their cell wall
(b) Have two flagella, one longitudinally and other transversely
(c) Lack membrane bound cell organelles
(d) Show locomotion by pseudopodia

124. Regarding the features of *Mycoplasma*, choose the option which is not true for it.
(a) It is a unicellular organisms
(b) It cannot survive without oxygen
(c) It is smallest living cell
(d) It can be pathogenic in plants

125. Identify the feature which is not true w.r.t. all the members of the kingdom Fungi.
(a) Eukaryotic cell type
(b) Cellular body organisation
(c) Heterotrophic mode of nutrition
(d) Presence of cell wall

126. Read the following statements and select the correct option.
Statement A: Bacteria as a group show most extensive metabolic diversity.
Statement B: Bacteria have simple behaviour but very complex structure
(a) Only A is correct
(b) Only B is correct
(c) Both A and B are correct
(d) Both A and B are incorrect

127. Match the following and choose the correct option.

A.	*Vibrio cholera*	(i)	Tetanus
B.	*Salmonella typhi*	(ii)	Citrus canker
C.	*Clostridium tetani*	(iii)	Cholera
D.	*Xanthomonas citri*	(iv)	Typhoid

Select the **correct** option.

	A	B	C	D
(a)	(iv)	(iii)	(ii)	(i)
(b)	(iii)	(iv)	(ii)	(i)
(c)	(iii)	(iv)	(i)	(ii)
(d)	(i)	(iii)	(iv)	(ii)

128. The organisms which are known as chief producers in ocean
(a) Have flagella through their life
(b) Are euglenoids
(c) Have silica in their cell wall
(d) Lack asexual reproduction

129. Primitive bacteria called methanogens
(a) Are photoautotrophic bacteria
(b) Have chitin in their cell wall
(c) Are abundant in marshy areas
(d) Show aerobic respiration

130. Cell wall in diatoms is
(a) Soft and easily destructible
(b) Made up of chitinous overlapping halves
(c) Siliceous
(d) Indestructible due to presence of calcium

131. Slime moulds
(a) Form fruiting bodies during unfavourable conditions
(b) Produce spores which lack cell wall
(c) Have vegetative phase similar to plants
(d) Show both holozoic and phototrophic nutrition

132. All unicellular eukaryotic, irrespective of their mode of nutrition are included in the kingdom Protista in Whittaker's system. Which of the given nutrition is not seen in these members?
(a) Photoautotrophic
(b) Chemoautotrophic
(c) Saprotrophic
(d) Phagotrophic

133. State true (T) of false (F) for the following statements and select the correct option.
(A) Fungi prefer to grow in cold and moist places.
(B) Most fungi absorb soluble organic matter from dead substances.
(C) Members of phycomycetes could be found in aquatic habitats.

	A	B	C
(a)	T	T	F
(b)	T	F	T
(c)	F	T	T
(d)	F	T	F

134. All the given feature are common between the members of Ascomycetes and Deuteromycetes, except
(a) Septate and branched mycelium
(b) Formation of conidia
(c) Can be decomposers
(d) Production of sexual spores

135. Read the following statements and select the correct option.
Statement A: Lichens grow well in SO_2 polluted area.
Statement B: Lichens are mutual association between algae and fungi.
(a) Only A is incorrect
(b) Only B is incorrect
(c) Both A and B are correct
(d) Both A and B are incorrect

SECTION - B

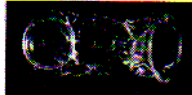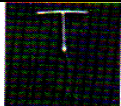136. Select the incorrectly matched pair.
(a) Yeast – unicellular fungus
(b) *Penicillium* – Source of antibiotics
(c) *Albugo* – White rust on mustard
(d) *Claviceps* - Smut fungi

137. All of the following are true w.r.t. prions, except
(a) These are abnormally folded proteins
(b) They causes certain neurological diseases
(c) These are similar in size to viruses
(d) They have low molecular weight RNA

138. Phycobiont component in lichens
     (a) Is heterotrophic in nature
     (b) Provides shelter for its partner
     (c) Receives water and minerals from its partner
     (d) Has cells which are without cell wall

139. Morels and truffles are edible and considered delicacies belong to which class of fungi?
     (a) Basidiomycetes   (b) Deuteromycetes
     (c) Phycomycetes   (d) Ascomycetes

140. Zoosperes are formed in the life cycle of.
     (a) Bracket fungi   (b) Sac fungi
     (c) Aquatic fungi   (d) Smut fungi

141. Member of Ascomycetes which is exclusive used in biochemical and genetic work is.
     (a) *Claviceps*   (b) *Aspergillus*
     (c) *Neurospora*   (d) *Penicillium*

142. Select the incorrect match from the following
     (a) Truffles   -   Edible fungi
     (b) *Claviceps*   -   A sac fungus
     (c) *Penicillium* -   Exhibits dikaryophase
     (d) *Neurospora*   -   Produces motile male gametes

143. Which of the following features is common amongst *Alternaria, Agaricus, Aspergillus* and *Rhizopus*?
     (a) Their mycelia are branched and septate
     (b) They sexually reproduce by forming non - motile gametes
     (c) They asexually reproduce by the formation of aplanospores
     (d) These are terrestrial fungi

144. Who for the first time showed that viruses could be crystallised and crystals consists largely of proteins?
     (a) D. Ivanowsky   (b) M.W. Beijerinck
     (c) W.M. Stanley   (d) Louis Pasteur

145. Match the following colums and choose the correct option.

A.	Viroids	(i)	Have either DNA or RNA
B.	Prions	(ii)	Have low molecular weight RNA
C.	Viruses	(iii)	Consist of abnormally folded protein
D.	Lichens	(iv)	Are very good pollution indicators

     (a) A (ii), B (iii), C (i), D (iv)
     (b) A (iii), B (iv), C (ii), D (i)
     (c) A (ii), B (iii), C (iv), D (i)
     (d) A (ii), B (i), C (iv), D – (iii)

146. Which of the following is not true for deuteromycetes
     (a) Commonly known as imperfect fungi
     (b) Asexually reproduce by conidia
     (c) Mycelium is aseptate and unbranced
     (d) Some members are saprophytes or parsites while large numbers of them are decomposers of litter

147. The cell wall of fungi is composed of.
     (a) Chitin
     (b) Polysaccharide containing nitrogenous compounds
     (c) Both (a) and (b) are correct
     (d) Peptidoglycan

148. Which of the following statements is wrong w.r.t.viroids?
     (a) Discovered by T.O. Diener
     (b) Smaller than viruses and self replicatinig particles
     (c) Their RNA is of high molecular weight
     (d) They are RNA particles without protein coat

149. The sex organs are absent, but plasmogamy is brought about by fusion of two vegetative or somatic cells, in the members of
     (a) Basidiomycetes   (b) Deuteromycetes
     (c) Ascomycetes   (d) Phycomycetes

150. Mad cow diseases is caused by.
     (a) Virsu   (b) Viroids
     (c) Virusoids   (d) Prions

ZOOLOGY

SECTION - A

151. According to the World Health Organisation (WHO), re-productive health means a total well-being in all aspects of reproduction, that is
     (a) Physical
     (b) Social
     (c) Emotional and behavioural
     (d) All of the above

152. Medical assistance and care to people is required in re-production related problems like

A.	Pregnancy	B.	Delivery
C.	STDs	D.	Abortions
E.	Contraception	F.	Menstrual problems
G.	Infertility		

     (a) a, c, e, and f   (b) b, d and g
     (c) a, b, c, d, e and g (d) a, b, c, d, e, f and g

153. "Saheli", an oral contraceptive for females, was developed by
     (a) AIIMS, Delhi
     (b) IICB, Kolkata
     (c) SGPGI, Lucknow
     (d) CDRI, Lucknow

154. The problem of the population explosion can also be tackled by
     (a) Statutory raising of marriageable age of the male to 18 years and that of females to 21 years
     (b) Incentives given to the couples with small families
     (c) Statutory ban on marriages
     (d) Both A and B

155. What are the characteristics of an ideal contraceptive?
     A. User-friendly
     B. Easily available
     C. Effective
     D. Reversible
     E. No or least side effects
     F. No way to interfere with the sexual drive, desire and/or the sexual act of the user.
     G. Cheap
     (a) a, b, c, e and g
     (b) b, d, e and f
     (c) a, b, c, d, e and f
     (d) a, b, c, d, e, f and g

156. Emergency contraceptives could be used to avoid possible pregnancy due to
     (a) Casual unprotected intercourse
     (b) Rape
     (c) MTP
     (d) Both A and B

157. Match the columns I and II, and choose the correct combination from the options given.

	Column I		Column II
A.		1.	Implants
B.		2.	Copper T (CuT)
C.		3.	Condom for female
D.		4.	Condom for male

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

158. Progesterone present in contraceptive pill is meant for
     (a) Checking ovulation
     (b) Preventing fertilization
     (c) Preventing implantation of zygote
     (d) Preventing cleavage

159. The non-medicated IUD is
     (a) Copper T
     (b) Progestasert
     (c) Lippes loop
     (d) LNG-20

160. Intentional or voluntary termination of pregnancy before full term is called
     (a) MTP
     (b) STD
     (c) Induced abortion
     (d) Both A and C

161. In which of the following condition, MTP is performed legally?
     a. To get rid of unwanted pregnancy due to casual unprotected intercourse.
     b. To get rid of unwanted pregnancy due to failure of the contraceptive used during coitus or rapes.
     c. Where the continuation of the pregnancy could be harmful or even fatal to mother or to foetus or both.
     d. To get rid of pregnancy as the foetus is found to be female.
     (A) a and b
     (B) b and c
     (C) a, b and c
     (D) a, b, c and d

162. Amniocentesis is employed for determining
     (a) Cardiac ailments of embryo
     (b) Hereditary abnormally in embryo
     (c) Errors in amino acid metabolism in embryo
     (d) All of the above

163. A person could be free of STDs by
     (a) Avoiding sex with unknown partners/multiple partners
     (b) Always using condoms during coitus
     (c) In case of doubt, person should go to a qualified doctor for early detection and get complete treatment if diagnosed with disease
     (d) All of the above

164. Which is wrongly matched?
     (a) ICSI-Sperm directly injected into ovum
     (b) ICSI-Sperm introduced artificially into ovum
     (c) GIFT – Embryo with more than 8 blastomeres transferred into fallopian tube
     (d) IVF- Fertilization outside the body

165. What does the figure show ?
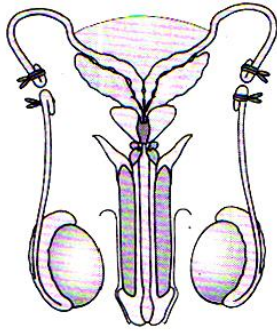
    (a) Ovarian cancer   (b) Uterine cancer
    (c) Tubectomy   (d) Vasectomy

166. Hepatitis-B and HIV can be transmitted from one person to other by
    (a) Sharing of injection needles, surgical instruments, etc., with infected person
    (b) Transfusion of blood
    (c) From infected mother to the foetus
    (d) All of the above

167. Inability to conceive or produce children even after 2 years of unprotected sexual cohabitation is called
    (a) Sexuality   (b) ART
    (c) Fertility   (d) Infertility

168. The reason of the infertility could be
    (a) Physical or psychological
    (b) Congenital or immunological
    (c) Drugs or diseases
    (d) All of the above

169. Specialised health care units that help in diagnosis and corrective treatment of disorders and enable infertile couples to have children, are called
    (a) Assisted reproductive technologies
    (b) IUT
    (c) RTI
    (d) Infertility clinics

170. The technique to assist those females who cannot conceive, includes
    (a) IVF followed by embryo transfer
    (b) In-vivo fertilization followed by embryo transfer
    (c) Gamete intra fallopian transfer
    (d) Intra uterine insemination

171. In which "assisted reproductive technology" (ART), test tube baby procedure is applied?
    (a) Gamete intrafallopian transfer
    (b) Intracytoplasmic sperm injection
    (c) In vitro fertilization and embryo transfer
    (d) Zygote intrafallopian transfer

172. Sterilisation techniques are the last option for couples because
    I. It is almost irreversible.
    II. There is a misconception that it will reduce sexual urge/ drive.
    III. It is a surgical procedure.
    IV. There is a lack of adequate facilities in many parts of the country.
    (a) I and III   (b) II and III
    (c) II and IV   (d) All of these

173. The action of jelly and cream in copulation is
    (a) Spermicidal and immobilizing the sperms also
    (b) Entangles the sperms
    (c) Preventing the ova to be released
    (d) Enables the sperms to reach towards ovum speedily

174. Intra uterine devices (IUDs) are inserted by doctors or expert nurses in the uterus through vagina. These IUDs are presently available as the non-medicated IUDs (e.g., _1__), copper releasing IUDs _2__) and the hormone releasing IUDs (e.g., _3_)

	1	2	3
(a)	Lippes loop	Cu-7, Cu T, Progestasert	Multiload 375, LNG-20
(b)	Lippes loop	Cu-7, Cu T, Multiload 375	Progestasert, LNG-20
(c)	Lippes loop, Multiload 375	Cu-7, Cu, Progestasert,	LGN-20
(d)	Lippes loop, Multiload 375	Cu-7, Cu T,	Progestasert, LNG-20

175. Select the correct combination about contraceptives

	Column I		Column II
A.	Pill	i.	Prevents sperm reaching cervix
B.	Condom	ii.	Prevents implantation
C.	Vasectomy	iii.	Prevents ovulation
D.	Copper-T	iv.	Semen contains no sperm

	A	B	C	D
(a)	iii	iv	iv	ii
(b)	ii	iii	i	Iv
(c)	iii	i	iv	ii
(d)	iv	i	ii	iii

176. Which of the following statements are correct regarding sterilisation ?
   I. Sterilisation is a form of permanent contraception.
   II. Sterilisation inhibits gametogenesis.
   III. Sterilisation can be done both in males and females.
   IV. Tubectomy is the sterilisation procedure done in males.
   (a) I and II   (b) I and III
   (c) III and IV   (d) III and II

177. Which one is the most widely accepted method of contraception presently in India?
   (a) Diaphragm   (b) Cervical caps
   (c) IUDs   (d) Tubectomy

178. If vasa efferentia get blocked, gametes will not be transported from
   (a) Ovary to uterus
   (b) Vagina to uterus
   (c) Testis to epididymis
   (d) Epididymis to vas deferens

179. MTP is considered safe up to how many weeks of pregnancy
   (a) Six   (b) Eight
   (c) Tweleve   (d) Eighteen

180. One of the legal methods of birth control is
   (a) By having coitus at the time of day break
   (b) By a premature ejaculation during coitus
   (c) Abortion by taking an appropriate medicine
   (d) By abstaining from coitus from day 10 to 17 of the menstrual cycle

181. Artificial insemination means
   (a) Artificial introduction of sperm of a healthy donor into the vagina
   (b) Introduction of sperms of healthy donor directly into the ovary
   (c) Transfer of sperms of a healthy donor to a test tube containing ova
   (d) Transfer of sperms of husband to a test tube containing ova

182. Which contraceptive device makes uterus unsuitable for implantation
   (a) Progestasert   (b) CuT
   (c) Lippe's loop   (d) Multiload

183. Which is not a sexually transmitted disease?
   (a) Genital warts   (b) Trichomoniasis
   (c) Chlamydiasis   (d) Myasthenia gravis.

184. Which of the following is correct regarding AIDS causative agent HIV?
   (a) HIV is unenveloped reterovirus
   (b) HIV does not escape but attacks the acquired immune response
   (c) HIV is enveloped virus containing one molecule of single-stranded RNA and one molecule of reverse transcriptase
   (d) HIV is enveloped virus that contains two identical molecule of single-stranded RNA and two molecule of reverse transcriptase

185. Match the following sexually transmitted diseases (Column I) with their causative agent (Column II) and select the correct option.

	Column I		Column II
A.	Gonorrhea	i.	HIV
B.	Syphilis	ii.	*Neisseria*
C.	Genital Warts	iii.	*Treponema*
D.	AIDS	iv.	Human Papilloma Virus

	A	B	C	D
(a)	iii	iv	i	ii
(b)	iv	ii	iii	i
(c)	iv	iii	ii	i
(d)	ii	iii	iv	i

SECTION - B

186. What is the figure given below showing in particular?

   (a) Ovarian cancer   (b) Uterine cancer
   (c) Tubectomy   (d) Vasectomy

187. GIFT is
   (a) Transfer of a sperm in fallopian tube of a female with the help of injections
   (b) Transfer of a zygote fertilized in vitro in the fallopian tube of female incapable to conceive
   (c) Transfer of an ovum collected from a donor into an other females fallopian tube who cannot produce an ovum but can provide a good environment for further development
   (d) Embryo is developed in vitro and then transferred into female's tract

Assertion and Reason type questions
(a) If both assertion and reason are true and the reason is a correct explanation of the assertion
(b) If both assertion and reason re true but reason is not a correct explanation of the assertion
(c) If the assertion is true but reason is false
(d) If the assertion is false but the reason is true

188. **Assertion :** HIV infection can be avoided by use of condoms.
     Reason : Condoms secrete anti-viral interferons.
     (a)   (b)   (c)   (d)

189. **Assertion:** Periodic abstinence is a natural method where couples abstain from coitus.
     Reason: Coitus from days 5-10 should be avoided because this is the time of ovulation.
     (a)   (b)   (c)   (d)

190. Donor semen is introduced into uterus through
     (a) Intrauterine transfer (IUT)
     (b) Intrauterine insemination (IUI)
     (c) Gamete intrafallopian transfer (GIFT)
     (d) Intracytoplasmic sperm injection (ICSI)

191. Which of the following statement is wrong ?
     (a) Test tube baby begins growth inside test tube
     (b) Test tube baby grows within mother's womb
     (c) Test tube baby grows within surrogate mother's womb
     (d) Test tube baby grows following uterine fertilization

192. IVF followed by ET is called?
     (a) Family planning programme
     (b) RCH programme
     (c) RTI
     (d) Test –tube baby programme

193. In assisted reproductive technology after in-vitro fertilization, what is transferred in fallopian tube?
     (a) Blastula is transplanted
     (b) Only zygote is transplanted
     (c) Morula in 8-24 celled stage is transplanted
     (d) Embryo upto 8 blastomeres, if zygote is not transplanted

194. Though all persons are vulnerable to STDs their incidences are reported to be very high among persons in the age group of
     (a) 12-18 years   (b) 18-21 years
     (c) 21-35 years   (d) 15-24 years

195. Purpose of tubectomy is to prevent
     (a) Coitus   (b) Egg formation
     (c) Fertilization   (d) Embryonic development

196. Which of the following is an ideal contraceptive for the females who want to delay pregnancy and/or space children?
     (a) Barrier method
     (b) IntraUterine Devices
     (c) Oral Contraceptive Pills
     (d) Surgical method

197. CDRI stands for
     (a) Central Dairy Research Institute
     (b) Central Drug Related Institute
     (c) Central Drug Research Institute
     (d) Central Development Research Institute

198. Full form of the RCH is
     (a) Reproduction cum Health care programmes
     (b) Reproductive and Health care programmes
     (c) Reproductive and Classical Health care programmes
     (d) Reproductive and Child Health care programmes

199. Read the following statements and find out the incorrect statements.
     A. Barrier methods are available for both males and females.
     B. In barrier methods, ovum and sperms are prevented from physically meeting with the help of barriers.
     C. Condoms are made of thin rubber/latex sheath that are used to cover the penis in male or vagina and cervix in the female, just before coitus so that the ejaculated semen would not enter into the female reproductive tract.
     D. Both the male and the female condoms are reusable, can be self-inserted and thereby gives privacy to the user.
     E. Diaphragms, cervical caps and vaults are barriers made of rubber that are inserted into the female reproductive tract to cover cervix during coitus.
     These barriers are disposable.
     (a) a and b   (b) b and c
     (c) c and d   (d) d and e

200. Fill in the blanks :
     Oral contraceptive pills have to be taken daily for a period of …..a ….. starting preferably within the first …b… of menstrual cycle.
     After the gap of …c…days (during which menstruation occurs) it has to be repeated in the same pattern till the female desires to prevent conception.
     (a) A-28 days, b-7days, c-5 days.
     (b) A-21 days, b- 5 days, c-7 days
     (c) A-21 days, b-7 days, c-7days
     (d) A-14 days, b-5 days, c-7 days