



Question Paper [CODE - 27131]

NEET PATTERN TEST Brahmastra Semi Major Test-03

13th NEET - Phase 12

KOTA

Date: 02-Feb-2025

Duration: 3 Hours

Max Marks: 720

IMPORTANT INSTRUCTIONS

- The test is of 3 hours duration and the Test Booklet contains 180 multiple-choice questions (four options with a single correct answer) from Physics (45 Ques.), Chemistry (45 Ques.) and Biology (90 Ques.). [All Questions are compulsory]
- Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total score. The maximum marks are 720.
- Rough work is to be done in the space provided for this purpose in the Test Booklet only.
- Blank papers, Clipboards, Log tables, Slide Rule, Calculators, Cellular Phones, Pagers and Electronic Gadgets in any form are not allowed to be carried inside the examination hall.

GENERAL INSTRUCTION FOR FILLING THE OMR

- Use Blue/Black Ball Point Pen only for marking responses on Answer Sheet (OMR sheet).
- Indicate the correct answer for each question by filling appropriate bubble in your OMR answer sheet.
- While filling the bubbles please be careful about Question Number

महत्वपूर्ण निर्देश

- परीक्षा अवधि 3 घंटा है एवं परीक्षा पुस्तिका में भौतिकी, (45 प्रश्न), रसायनशास्त्र (45 प्रश्न) एवं जीव विज्ञान (45 प्रश्न) विषयों से कुल 180 व्युविकल्पीय प्रश्न हैं (4 विकल्पों में से एक सही उत्तर है)। [सभी प्रश्न अनिवार्य हैं]
- प्रत्येक प्रश्न 4 अंक का है। प्रत्येक सही उत्तर के लिए परीक्षार्थी को 4 अंक दिए जाएँगे। प्रत्येक गलत उत्तर के लिए कुल योग में से एक अंक घटाया जाएगा। अधिकतम अंक 720 हैं।
- रफ कार्य इस परीक्षा पुस्तिका में केवल निर्धारित स्थान पर ही करें।
- खाली पेपर, विलप बोर्ड, लॉग टेबल, स्लाइड रूल, कैलकुलेटर, सेल्युलर फोन, पेजर और इलेक्ट्रोनिक गैजेट्स को किसी भी रूप में परीक्षा हॉल के अंदर से जाने की अनुमति नहीं है।

OMR भरने के लिए सामान्य निर्देश

- उत्तर पुस्तिका (OMR पुस्तिका) पर निशान लगाने के लिए केवल नीले/काले बॉल पैइंट पेन का प्रयोग करें।
- उत्तर अपनी OMR उत्तर पुस्तिका में उपयुक्त गोले भरके प्रत्येक प्रश्न के लिए सही उत्तर अंकित करें।
- उत्तर गोले भरते समय प्रश्न संख्या पर ध्यान दें।

SYLLABUS**Physics**

Ray optics and optical instrument, Wave optics, Electrostatic, Current electricity, Capacitance

Chemistry

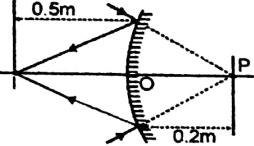
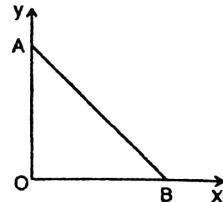
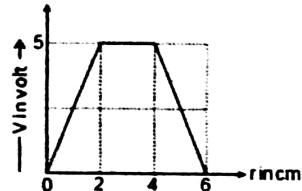
Hydrocarbons, Haloalkanes and Haloarenes, Alcohols, Phenols and Ethers, Biomolecules, Chemical kinetics, Solutions, Coordination Compounds

Biology

Sexual Reproduction in Flowering Plants, Principles of inheritance and Variation, Molecular Basis Of inheritance, Human Reproduction, Reproductive Health, Evolution

PHYSICS

[PHYSICS]

- 1.** Two identical metallic sphere are charged with 20 and -30 units of charge. If both the spheres are first brought into contact with each other and then are placed to their previous positions, then the ratio of the force in the two situations will be :-
- 48:1
 - 24:1
 - 1:24
 - 1:48
- 2.** A beam of convergent light converges to a point 0.5m in front of the mirror after reflection at a convex mirror but in the absence of the mirror the beam converges to a point 0.2m behind the mirror. The radius of the curvature of the mirror is :
- 
- 20 cm
 - 50 cm
 - 66.67 cm
 - 28.57 cm
- 3.** Find the magnitude of electric field intensity E such that, an electron placed in it would experience an electrical force equal to its weight.
- mg/e
 - $\frac{mg}{e}$
 - $\frac{e}{mg}$
 - $\frac{e^2}{m^2}g$
- 4.** An object 2.5 cm high is placed at a distance of 10 cm from a concave mirror of radius of curvature 30 cm. The size of the image is
- 9.2 cm
 - 10.5 cm
 - 5.6 cm
 - 7.5 cm
- 5.** As per this diagram a point charge $+q$ is placed at the origin O. Work done in taking another point charge $-Q$ from the point A [co-ordinates $(0, a)$] to another point [co-ordinates $(a, 0)$] along the straight path AB is :
- 
- Zero
 - $\left(\frac{-qQ}{4\pi\epsilon_0}\frac{1}{a^2}\right)\sqrt{2}a$
 - $\left(\frac{qQ}{4\pi\epsilon_0}\frac{1}{a^2}\right)\cdot\frac{a}{\sqrt{2}}$
 - $\left(\frac{qQ}{4\pi\epsilon_0}\frac{1}{a^2}\right)\sqrt{2}a$
- 6.** The variation of potential with distance r from a fixed point is shown in Figure. The electric field at $r = 5$ cm, is :
- 
- $(2.5)V/cm$
 - $(-2.5)V/cm$
 - $(-2/5)V/cm$
 - $(2/5)V/cm$
- 7.** A glass prism has refractive index $\sqrt{2}$ and refracting angle 30° . One of the refracting surface of the prism is silvered. A beam of monochromatic light will retrace its path if its angle of incidence on the unsilvered refracting surface of the prism is
- 0
 - $\pi/6$
 - $\pi/4$
 - $\pi/3$

8. The electric potential in a region is represented as $4x + 9y - 3z$ obtain expression for electric field strength.

- $-4\hat{i} - 9\hat{j} + 3\hat{k}$
- $4\hat{i} + 9\hat{j} - 3\hat{k}$
- $4\hat{i} - 9\hat{j} + 3\hat{k}$
- None

9. For a prism of refractive index $\sqrt{3}$, the angle of the prism is equal to the angle of minimum deviation. The value of the angle of the prism is-

- 60°
- 50°
- 45°
- 30°

10. There is a solid sphere of radius 'R' having uniformly distributed charge. What is the relation between electric field 'E' (inside the sphere) and radius of sphere 'R' is

- $E \propto R^{-2}$
- $E \propto R^{-1}$
- $E \propto \frac{1}{R^3}$
- $E \propto R^2$

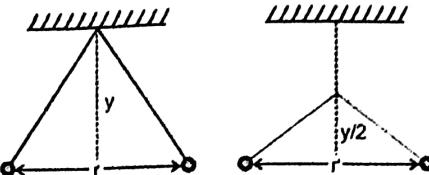
11. A beam of unpolarised light of intensity I_0 is passed through a polaroid A and then through another polaroid B which is oriented so that its principal plane makes an angle of 45° relative to that of A. The intensity of the emergent light is

- $I_0/2$
- $I_0/4$
- $I_0/8$
- I_0

12. A nonconducting ring of radius R has uniformly distributed positive charge Q. A small part of the ring, of length d, is removed ($d \ll R$). The electric field at the centre of the ring will now be

- directed towards the gap, inversely proportional to R^3 .
- directed towards the gap, inversely proportional to R^2 .
- directed away from the gap, inversely proportional to R^3 .
- directed away from the gap, inversely proportional to R^2 .

13. Two pith balls carrying equal charges are suspended from a common point by strings of equal length, the equilibrium separation between them is r . Now the strings are rigidly clamped at half the height. The equilibrium separation between the balls now become :

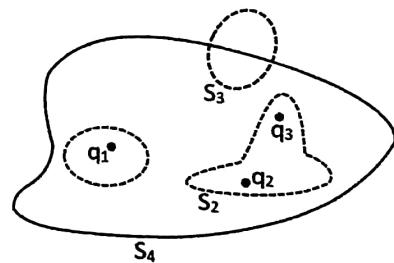


- $\left(\frac{r}{2^{1/3}}\right)$
- $\left(\frac{2r}{\sqrt{3}}\right)$
- $\left(\frac{2r}{3}\right)$
- $\left(\frac{r}{\sqrt{2}}\right)^2$

14. Light enters from air into a given medium at an angle of 45° with interface of the air-medium surface. After refraction, the light ray is deviated through an angle of 15° from its original direction. The refractive index of the medium is :

- 1.732
- 1.333
- 1.414
- 2.732

15. Three charges $q_1 = 1 \times 10^{-6}$, $q_2 = 2 \times 10^{-6}$, $q_3 = -3 \times 10^{-6}$ C have been placed, as shown in figure, in four surfaces S_1 , S_2 , S_3 and S_4 electrical flux emitted from the surface S_2 in $N \cdot m^2/C$ will be -



- $36\pi \times 10^3$
- $-36\pi \times 10^3$
- $36\pi \times 10^9$
- $-36\pi \times 10^9$

- 16.** Two coherent sources of different intensities send waves which interfere. If the ratio of maximum and minimum intensity in the interference pattern is 25 then find ratio of intensity of source :

- (1) 25 : 1
- (2) 5 : 1
- (3) 9 : 4
- (4) 25 : 16

- 17.** A neutral metallic object is placed near a finite metal plate carrying a positive charge. The electric force on the object will be :

- (1) towards the plate
- (2) away from the plate
- (3) parallel to the plate
- (4) zero

- 18.** The wavelength of light in two liquids 'x' and 'y' is 3500 \AA and 7000 \AA , then the critical angle of x relative to y will be

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

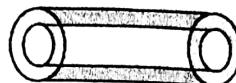
- 19.** A steady current is passing through a linear conductor of non-uniform cross-section. The net quantity of charge crossing any cross-section per second is

- (1) independent of area of cross-section
- (2) directly proportional to the length of conductor
- (3) directly proportional to the area of cross-section
- (4) inversely proportional to the lengths of conductor

- 20.** A lens which has focal length of 4 cm and refractive index of 1.4 is immersed in a liquid of refractive index 1.6, then the focal length will be :-

- (1) -12.8 cm
- (2) -18 cm
- (3) 12.8 cm
- (4) -32 cm

21.



In given hollow cylindrical conductor current density is $J = \frac{J_0}{r^2}$ where J_0 is constant and r is the distance from axis of cylinder. If radius of inner surface is 'a' and radius of outer surface is $2a$ then find current passed through the conductor.

- (1) $\pi J_0 \ln 2$
- (2) $2\pi J_0 \ln 2$
- (3) $2\pi J_0$
- (4) $2\pi J_0 \ln 3$

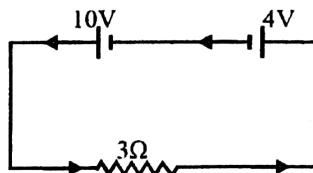
- 22.** At what distance from a convex lens of focal length 30 cm, an object should be placed so that the size of real image be $\frac{1}{4}$ that of object:-

- (1) 30 cm
- (2) 60 cm
- (3) 150 cm
- (4) 90 cm

- 23.** Calculate the amount of charge flowing in 2 minutes in a wire of resistance 10Ω when a potential difference of 20 V is applied between its ends :

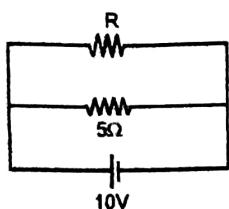
- (1) 120 C
- (2) 240 C
- (3) 20 C
- (4) 4 C

- 24.** In the circuit shown in figure. The power dissipated in 3Ω resistance is :-



- (1) 12 W
- (2) 8 W
- (3) 4 W
- (4) 16 W

25. The power dissipated in the circuit shown in the figure is 30 Watts. The value of R is :

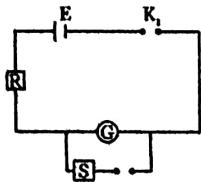


- (1) $20\ \Omega$
- (2) $15\ \Omega$
- (3) $10\ \Omega$
- (4) $30\ \Omega$

26. A meter bridge is used to determine the resistance of an unknown wire by measuring the balance point length L. If the wire is replaced by another wire of same material but with triple the length and $1/4$ the thickness, the balancing point is expected to be at :-

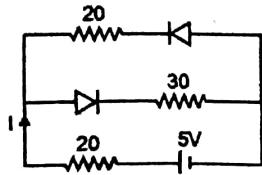
- (1) $12L$
- (2) $22L$
- (3) $48L$
- (4) $36L$

27. In an experiment to determine the resistance of a galvanometer by half deflection method, the circuit shown is used. In one set of readings, if $R = 10\Omega$ and $S = 4\Omega$, then the resistance of the galvanometer is



- (1) $\frac{20}{3}\ \Omega$
- (2) $\frac{40}{3}\ \Omega$
- (3) $\frac{50}{3}\ \Omega$
- (4) $\frac{70}{3}\ \Omega$

28. The current (I) in the circuit will be :-

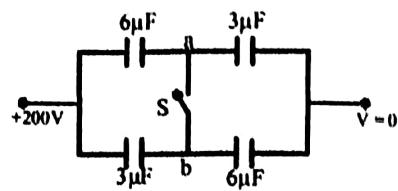


- (1) $5/40\ A$
- (2) $5/50\ A$
- (3) $5/10\ A$
- (4) $5/20\ A$

29. A battery of 10 V is connected to a capacitor of capacity of $0.1\ F$. The battery is now removed and this capacitor is connected to a second uncharged capacitor. If the charge distributes equally on these two capacitors. Ratio of energy stored in the system initially & finally -

- (1) $2 : 1$
- (2) $1 : 2$
- (3) $4 : 1$
- (4) $1 : 4$

30. In the arrangement of capacitor shown in figure. Initially switch S was open. Find the amount of charge flowing through the switch when it is closed -



- (1) $300\ \mu C$
- (2) $400\ \mu C$
- (3) $200\ \mu C$
- (4) $100\ \mu C$

31. Two lenses of powers $-1D$ and $+2D$ are placed in contact. Focal length and nature of the equivalent lens is :-

- (1) 50 cm, converging
- (2) 50 cm, diverging
- (3) 100 cm, converging
- (4) 100 cm, diverging

32. A doctor advises a patient to use spectacles with a convex lens of focal length 40 cm. in contact with a concave lens of focal length 25 cm. What is the power of the resultant combination -

- (1) -6.5 D
- (2) -1.5 D
- (3) 6.5 D
- (4) 1.5 D

33. For achromatic combination which of the following is true (symbols have their usual meaning)

- (1) $\frac{\omega_1}{\omega_2} = -\frac{f_1}{f_2}$
- (2) $\frac{\omega_1}{\omega_2} = \frac{f_1}{f_2}$
- (3) $\frac{\omega_1}{\omega_2} = \frac{f_2}{f_1}$
- (4) $\omega_1\omega_2 = -f_1 f_2$

34. The magnifying power of a telescope with tube length 60 cm is 5. What is the focal length of its eye piece?

(1) 10 cm
(2) 20 cm
(3) 40 cm
(4) 30 cm

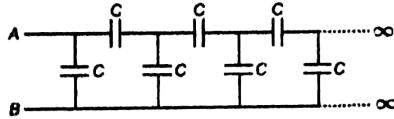
35. The distance between two coherent sources is 0.1 mm. The fringe-width on a screen 1.2 m away from the source is 6.0 mm. The wavelength of light used is

(1) 4000 Å
(2) 5000 Å
(3) 6000 Å
(4) 7200 Å

36. In Young's double slit experiment, 12 fringes are observed by light of $\lambda = 600$ nm in a certain segment of the screen. If wavelength is changed to 400 nm then number of fringes in the same segment will be -

(1) 12
(2) 18
(3) 24
(4) 30

37. The equivalent capacitance between A and B



(1) $\frac{1+\sqrt{5}}{3} C$
(2) $\frac{1+\sqrt{5}}{2} C$
(3) $\frac{1+2\sqrt{5}}{2} C$
(4) $\frac{1-\sqrt{5}}{2} C$

38. A parallel plate condenser with oil between the plates (dielectric constant of oil $K = 2$) has a capacitance C . If the oil is removed, then capacitance of the capacitor becomes-

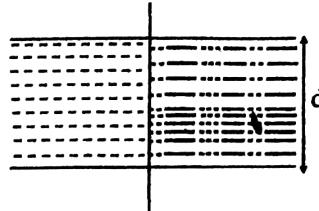
(1) $\frac{C}{2}$
(2) $\frac{C}{\sqrt{2}}$
(3) $2C$
(4) $\sqrt{2}C$

39. On placing a dielectric slab between the plates of an isolated charged condenser its-

(A)	Capacitance decreases	Charge remains unchanged	Potential decreases
(B)	Capacitance increases	Charge remains unchanged	Potential increases
(C)	Capacitance increases	Charge remains unchanged	Potential decreases
(D)	Capacitance decreases	Charge remains unchanged	Potential decreases

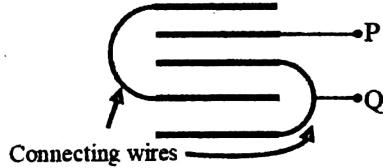
(1) A
(2) B
(3) C
(4) D

40. A capacitor of capacitance $1 \mu F$ is filled with two dielectrics of dielectric constants 4 and 6. What is the new capacitance?



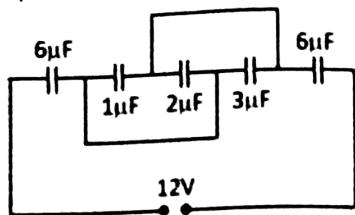
(1) $10 \mu F$
(2) $5 \mu F$
(3) $4 \mu F$
(4) None of these

41. Find the equivalent capacitance between points P & Q. (Area of plate = A, plate separation = d)



(1) $\frac{5\epsilon_0 A}{d}$
(2) $\frac{7}{3} \frac{\epsilon_0 A}{d}$
(3) $\frac{4}{3} \frac{\epsilon_0 A}{d}$
(4) $\frac{5}{3} \frac{\epsilon_0 A}{d}$

For the circuit shown in figure, five capacitors are connected across a 12 V power supply. What is the potential drop (in volt) across the $2\mu\text{F}$ capacitor?



- (1) 2 V
- (2) 3 V
- (3) 4 V
- (4) 6 V

- 43.** Three point charges q , $2q$ and $8q$ are to be placed on a 9cm long straight line. Find the positions where the charges should be placed such that the potential energy of this system is minimum. In this situation, what is the electric field at the position of the charge q due to the other two charges?
- (1) $E = 3\text{N/C}$
 - (2) $E = 0$
 - (3) $E = 1\text{N/C}$
 - (4) $E = 4\text{N/C}$

44. Temperature coefficient of a resistance wire is given by $\alpha = 2 \times 10^{-6} \text{ TK}^{-1}$ where T is absolute temperature of wire. Find percentage change in resistance if temperature increases from 100 K to 200 K.

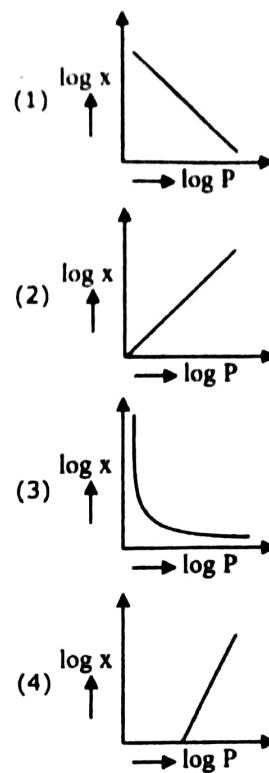
- (1) 4%
- (2) 3%
- (3) 2%
- (4) 1%

- 45.** A parallel plate capacitor of capacitance $20\mu\text{F}$ is being charged by a voltage source whose potential is changing at the rate of 3 V/s. The conduction current through the connecting wires, and the displacement current through the plates of the capacitor, would be, respectively :
- (1) $60 \mu\text{A}$, zero
 - (2) zero, zero
 - (3) zero, $60 \mu\text{A}$
 - (4) $60 \mu\text{A}$, $60 \mu\text{A}$

CHEMISTRY

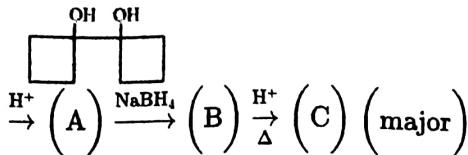
[CHEMISTRY]

46. Which of the following is diamagnetic in nature?
 (1) $[\text{Fe}(\text{CN})_6]^{3-}$
 (2) $[\text{NiCl}_4]^{2-}$
 (3) $[\text{Ni}(\text{CO})_4]$
 (4) $[\text{MnCl}_4]^{2-}$
47. At some temperature the osmotic pressure of each 0.01 M solution of AB_2 and sucrose ($\text{C}_{12}\text{H}_{22}\text{O}_{11}$) are 0.38 atm and 0.16 atm respectively. The van't Hoff factor for AB_2 will
 (1) 4.26
 (2) 2.37
 (3) 3.72
 (4) 2.89
48. An organic compound 'A' on ozonolysis produces 'B' and 'C' which both of them show Iodoform test. The Structure of 'A' is :
 (1) $\text{CH}_3\text{CH} = \text{CHC}_6\text{H}_5$
 (2) $\text{CH}_3 - \text{CH} = \text{CH}_2$
 (3) $(\text{CH}_3)_2\text{C} = \text{CHC}_6\text{H}_5$
 (4) $\text{CH}_3 - \text{CH} = \text{C}(\text{CH}_3)\text{C}_6\text{H}_5$



49. Which of the following graphs represents Henry's law? (Where x = mole fraction of dissolved gas, $K_H = 2000$ kbar)
50. The IUPAC name of $[\text{Co}(\text{NH}_3)_5 \text{ONO}]^{2+}$ ion is
 (1) Pentaammine nitrito-O cobalt (IV) ion
 (2) Pentaammine nitro cobalt (III) ion
 (3) Pentaammine nitrito-O cobalt (III) ion
 (4) Pentaammine nitro cobalt (IV) ion
51. $\text{CH}_3-\text{CH}_2-\text{OH} \xrightarrow[\text{170 } ^\circ\text{C}]{\text{Conc. H}_2\text{SO}_4} \text{P (Major)}$
 P is :
 (1) $\text{CH}_2 = \text{CH}_2$
 (2) $\text{CH}_3-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_3$
 (3) $\text{CH}_3-\text{CH}_2-\text{SO}_4\text{H}$
 (4) $(\text{C}_2\text{H}_5)_2\overset{\oplus}{\text{OH}}$

52.



Product C is

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

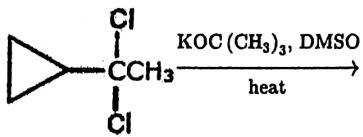
53. Which of the following has the highest molar conductivity in solution -

- (1) $[\text{Pt}(\text{NH}_3)_6]\text{Cl}_4$
 (2) $[\text{Pt}(\text{NH}_3)_5\text{Cl}]\text{Cl}_3$
 (3) $[\text{Pt}(\text{NH}_3)_4\text{Cl}_2]\text{Cl}_2$
 (4) $[\text{Pt}(\text{NH}_3)_3\text{Cl}_3]\text{Cl}$

54. On mixing, which of the following liquid mixture show contraction in volume?

- (1) Methanol + water
 (2) Acetone + aniline
 (3) Acetone + benzene
 (4) Acetone + carbon disulphide

55.



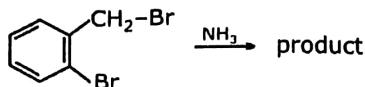
Identify the product?

- (1)
- (2) $\text{H}-\text{C}\equiv\text{C}-\text{H}$
- (3)
- (4)

56. Half life of a chemical reaction at a particular concentration is 75 min. When the concentration of the reactant is doubled, the half life becomes 150 min. what is the order of reaction.

- (1) First order
 (2) Zero order
 (3) Second order
 (4) Third order

57. What is the major product obtained in the following reaction?



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

58. The compound having tetrahedral geometry is

- (1) $[\text{Ni}(\text{CN})_4]^{2-}$
 (2) $[\text{Pd}(\text{CN}_4)]^{2-}$
 (3) $[\text{PdCl}_4]^{2-}$
 (4) $[\text{NiCl}_4]^{2-}$

59. Which of the following is a zero order reaction?

- (1) $2\text{NH}_3(\text{g}) \xrightarrow[\text{Pt catalyst}]{1130\text{ K}} \text{N}_2(\text{g}) + 3\text{H}_2(\text{g})$ (Reactant NH₃ is strongly absorbed)
 (2) $^{226}_{88}\text{Ra} \rightarrow ^4_2\text{He} + ^{222}_{88}\text{Rn}$
 (3) $\text{N}_2\text{O}_5(\text{g}) \xrightarrow{\Delta} 2\text{NO}_2(\text{g}) + \frac{1}{2}\text{O}_2(\text{g})$
 (4) $\text{CH}_3\text{COOC}_2\text{H}_5(\text{aq}) + \text{H}_2\text{O}(\text{l}) \xrightarrow{\text{H}^+} \text{CH}_3\text{COOH}(\text{aq}) + \text{C}_2\text{H}_5\text{OH}(\text{aq})$

60. Which of the following is not considered as an organometallic compound?

- (1) Cisplatin
 (2) Ferrocene
 (3) Zeise's salt
 (4) Grignard reagent

61. How many half-lives are required to complete 93.75% of a first order reaction?

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



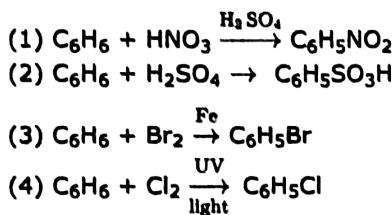
The product B will be?

- (1) Toluene
(2) Ethyl benzene
(3) Both the above
(4) None

63. The amount of ice that will separate out on cooling a solution containing 65 g of ethylene glycol in 250 g water to -9.3°C is : (K_f for water is $1.86 \text{ K mol}^{-1} \text{ kg}$)

- (1) 55 g
(2) 40.33 g
(3) 50 g
(4) 22.60 g

64. The reaction least likely to occur is:



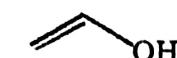
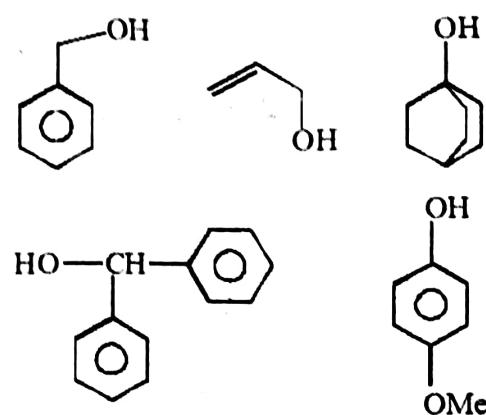
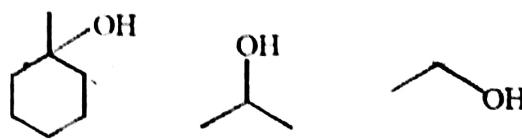
65. If the rate of reaction becomes double when temperature is increased from 25°C to 35°C , then activation energy of the reaction (in kJ) will be:

- (1) 52.89 kJ
(2) 65.2 kJ
(3) 68.5 kJ
(4) 35.3 kJ

66. Which of the following does not give Haloform reaction?

- (1) CH_3CHO
(2) $\text{C}_6\text{H}_5\text{COCH}_3$
(3) $\text{C}_6\text{H}_5\text{CHO}$
(4) CH_3COCH_3

67. How many compound(s) can give +ve Lucas test at room temperature?



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

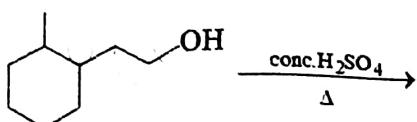
68. 1 molal aqueous solution of which of the following compound have maximum freezing point (assuming complete ionization of each salt)

- (1) $[\text{Co}(\text{H}_2\text{O})_6]\text{Cl}_3$
(2) $[\text{Co}(\text{H}_2\text{O})_5\text{Cl}]\text{Cl}_2 \cdot \text{H}_2\text{O}$
(3) $[\text{Co}(\text{H}_2\text{O})_4\text{Cl}_2]\text{Cl} \cdot 2\text{H}_2\text{O}$
(4) $[\text{Co}(\text{H}_2\text{O})_3\text{Cl}_3] \cdot 3\text{H}_2\text{O}$

69. An ethanolic solution of naphthalene contains 0.25 mole fraction of solute. Molality of solution is:

- (1) 5.92 m
(2) 3.39 m
(3) 7.25 m
(4) 9.47 m

70.

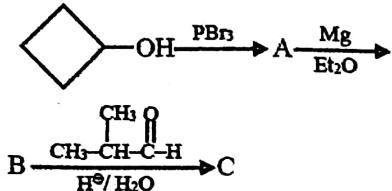


- (a) How many 1,2-shifts are possible during formation of major product.
 (b) How many α -H are present in major product.

Find out the value of $a + b$

- (1) 10
 (2) 8
 (3) 9
 (4) 12

71.



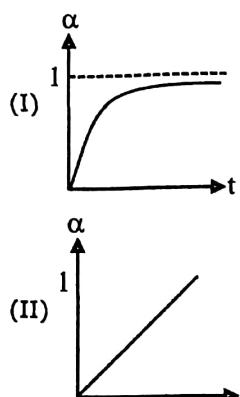
Which of the following is wrong :-

- (1) A is C1CCCC1Br
 (2) B is C1CCCC1O
 (3) C is C1CCCC1OCC(C)C
 (4) C is C1CCCC1OCC(C)(C)C

72. Arrange the following aq. dilute solution in the increasing order of vapour pressure :-

- 10% (w/v) glucose
 10% (w/v) sucrose
 10% (w/v) urea
 (1) (a) < (b) < (c)
 (2) (a) < (c) < (b)
 (3) (c) < (b) < (a)
 (4) (c) < (a) < (b)

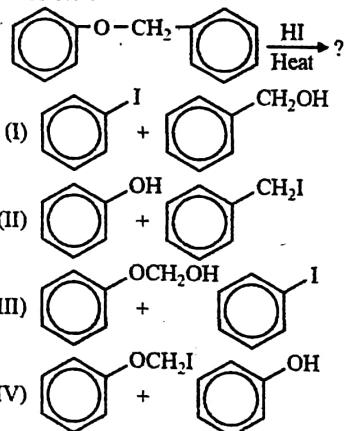
73. Graph of degree of dissociation (α) against time (t) for reaction $A \rightarrow B$ (of different orders) are as follows :



The order of reaction (I) and (II) are respectively :

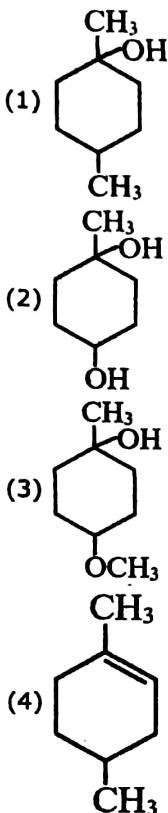
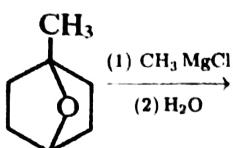
- (1) 0, 1
 (2) 1, 2
 (3) 1, 0
 (4) 0, 2

74. What are the major products from the following reaction ?



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

75. The main product (A) formed is



76. Which statement is not true for α -D glucose and β -D glucose

- (1) Are anomers, epimers and diastereomers of each other
- (2) React with alcohol to form glucosides
- (3) Both are hemiacetals
- (4) α -D glucose is more stable than β -D glucose

77. Glucose does not react with:

- (1) pure HCN
- (2) Schiff's reagent
- (3) NaHSO_3
- (4) All of these

78. Which class of carbohydrates is considered as non-sugar?

- (1) Monosaccharides
- (2) Disaccharides
- (3) Polysaccharides
- (4) Ligosaccharides

79. How many isomers are possible in $[\text{Co}(\text{en})_2\text{Cl}_2]$?

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

80. Which of the following statement is correct?

- (1) There is positive deviation from Raoult's law if mixing of two liquids results in cooling
- (2) Normal boiling point of an azeotropic mixture of HCl and H_2O is 95°C
- (3) Azeotropic mixture is formed when composition of vapour above solution becomes same as that of solution
- (4) Both (1) and (3)

81. If 3 mol of A ($P_A^0 = 800 \text{ mm Hg}$) is mixed with 2 mol of B ($P_B^0 = 500 \text{ mm Hg}$) then mole fraction of A in vapour will be

- (1) 0.7
- (2) 0.2
- (3) 0.3
- (4) 0.4

82. During the kinetic study of the reaction, $2\text{A} + \text{B} \rightarrow \text{C} + \text{D}$, the following results were obtained:

Run	[A]/mol L^{-1}	[B]/mol L^{-1}	Initial rate of formation of D/mol $L^{-1} \text{min}^{-1}$
I	0.1	0.1	6.0×10^{-3}
II	0.3	0.2	7.2×10^{-2}
III	0.3	0.4	2.88×10^{-1}
IV	0.4	0.1	2.40×10^{-2}

Based on the above data which one of the following is correct?

- (1) $\text{rate} = k [A][B]^2$
- (2) $\text{rate} = k [A]^2[B]$
- (3) $\text{rate} = k [A][B]$
- (4) $\text{rate} = k [A]^2[B]^2$

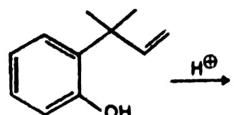
83. Which one of the following statements for the order of a reaction is incorrect?

- (1) Order can be determined only experimentally
- (2) Order is not influenced by stoichiometric coefficient of the reactants
- (3) Order of reaction is sum of power to the concentration terms of reactants to express the rate of reaction
- (4) Order of reaction is always whole number

84. The freezing point depression constant for water is $-1.86^{\circ}\text{Cm}^{-1}$. If 5.00 g Na_2SO_4 is dissolved in 45.0 g H_2O , the freezing point is changed by -3.82°C . Calculate the Van't Hoff factor for Na_2SO_4

- 2.05
- 2.63
- 3.11
- 0.381

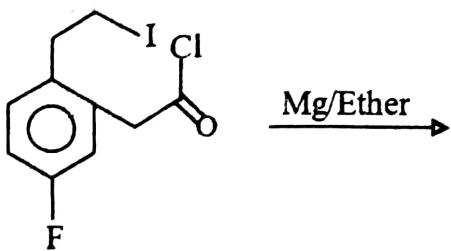
85.



Which of the following is formed as a product during the following reaction?

-
-
-
-

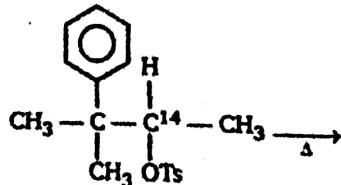
86.



The final product of the reaction is :

-
-
-
-

87.

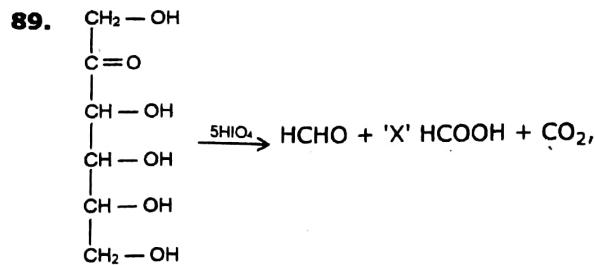


Major product of the reaction is :

-
-
-
-

- 88.** **Assertion :** Addition of methyl alcohol to phenyl magnesium bromide gives benzene
Reason : Methyl alcohol is a stronger acid than benzene

- (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.



Find out the value of 'X'.

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

- 90.** Individual amino acid can be distinguished by their–
(1) Action of HI
(2) Carbylamine reaction
(3) Reduction
(4) Isoelectric point

BIOLOGY**[BIOLOGY]**

- 91.** The phenotype of an individual may be affected if the modified allele produces
 (a) No enzyme at all
 (b) The normal/less efficient enzyme
 (c) A non-functional enzyme
 (1) Only (a) is correct
 (2) (a) and (c) are correct
 (3) (b) and (c) are correct
 (4) Only (c) is correct
- 92.** Vegetative cell in a pollen grain:-
 (1) Floats in cytoplasm of generative cell
 (2) Is small and spindle shaped
 (3) Is larger than generative cell but lacks reserve food
 (4) Has a large irregularly shaped nucleus
- 93.** Read the following statement :
 (1) 3 : 1 ratio in monohybrid cross is due to segregation only.
 (2) 3 : 1 ratio can't explain the law of dominance.
 (3) Law of dominance can be used to explain the expression of both of the parental character in F₁ of monohybrid cross.
 (4) Law of dominance can be observed in dissimilar pair of alleles in F₁ offsprings.
 How many statements are correct ?
 (1) Two
 (2) Three
 (3) Four
 (4) One
- 94.** What is the characteristics of tapetum ?
 (1) It provides nutrition
 (2) It is multinucleated
 (3) It is multi layered structure
 (4) It nourishes the megasporangium
- 95.** Match the column-I (Type of offspring) with the column-II (Their probability) in F₂ generation of a Mendelian dihybrid cross:
- | | Column-I | Column-II |
|---|---|-----------|
| A | Homozygous for one and Heterozygous for other character | i 6/16 |
| B | Recombinant phenotype | ii 2/16 |
| C | F ₁ like phenotype | iii 8/16 |
| D | Parental Genotype | iv 9/16 |
- (1) A-iv, B-ii, C-i, D-iii
 (2) A-iii, B-i, C-ii, D-iv
 (3) A-i, B-iii, C-iv, D-ii
 (4) A-iii, B-i, C-iv, D-ii
- 96.** Pollen tablets and Syrups are nutritious and used by:-
 (1) Horses of race and Athletes
 (2) Pigs and Buffalo
 (3) Athletes and Monkeys
 (4) None of these
- 97.** Assertion :- In co-dominance and incomplete dominance the genotypic & phenotypic ratios are same .
 Reason :- In case of co-dominance the F₁ generation resembles both parents.
 (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.
- 98.** Ovule is attached to placenta by -
 (1) Funicle
 (2) Integument
 (3) Hilum
 (4) Nucellus
- 99.** Which of the following is incorrectly matched?
 (1) ABO blood group in Humans - Multiple allelism
 (2) Skin colour in human - Multiple allelism
 (3) Flower colour in Mirabilis - Incomplete dominance
 (4) Phenylketonuria - Pleiotropism

- 100.** Micropyle allows -
 (1) Activity of gametogenesis
 (2) Entry of pollen tube into ovule
 (3) Activity of sporogenesis
 (4) Germination of pollen grain
- 101.** What will be the probability of non parental offsprings in the F_2 generation of a quantitative character regulated by two genes:-
 (1) $\frac{4}{16}$
 (2) $\frac{1}{8}$
 (3) $\frac{6}{16}$
 (4) $\frac{14}{16}$
- 102.** Nucellus is/-form-
 (1) Poorly developed in all flowering plants
 (2) Parenchyma tissue
 (3) Basal part of ovule
 (4) Located inside the female gametophyte
- 103.** Read the following statements and select the correct statement:
 (1) Morgan carried out several monohybrid crosses in Drosophila to study genes that were linked.
 (2) Morgan attributed that proportion of parental gene combination is less than the non-parental type due to the physical association.
 (3) Term recombination was coined by Morgan to describe the generation of non-parental gene combinations.
 (4) Alfred Sturtevant used the frequency of linkage between gene pairs on the same chromosome and find genetic map.
- 104.** The haploid cell which divides by mitosis to form embryo sac is
 (1) Megasporangium
 (2) Microsporangium
 (3) Functional megasporangium
 (4) Non functional megasporangium
- 105.** Daughter suffers from colour blindness and son is normal. It is possible if-
 (1) mother and father normal
 (2) mother and father suffering from colourblindness
 (3) father is normal, mother suffering from colourblindness
 (4) mother is carrier, father suffering from colourblindness
- 106.** Self-pollination can be prevented by separation of anther and stigma in:-
 (1) time (maturity)
 (2) place (position)
 (3) none of these
 (4) both of these
- 107.** Identify the incorrect statement for sex determination in humans :
 (1) Humans contain 23 pairs of autosomes
 (2) Female produce only one type of ovum
 (3) Genetic makeup of sperm determine the sex of the child
 (4) In males, two types of gametes are produced
- 108.** Observe the given pedigree :
-
- Inheritance of which disorder can be explained by this pedigree ?
- (1) Colourblindness
 (2) Haemophilia
 (3) Myotonic dystrophy
 (4) Sickle cell anaemia
- 109.** Read the following statements and choose the correct option.
 I. Failure of segregation of chromosomes during cell division results in aneuploidy.
 II. Chromosomal disorders are mainly determined by alteration or mutation in a single gene.
 III. Thalassemia and cystic fibrosis are Mendelian disorders.
 IV. Sickle cell anaemia is an X-linked trait.
 V. Haemophilia is an autosome-linked recessive disease.
- (1) I and III alone are correct
 (2) I, III and IV alone are correct
 (3) III and IV alone are correct
 (4) II and IV alone are correct

- 110.** If gene frequency between genes a and c is 2%, b and c is 13%, b and d 4%, a and b 15%, c and d 17%. What will be the sequence of these genes in a chromosome? -
- a, b, c, d
 - a, c, b, d
 - d, b, a, c
 - a, d, b, c
- 111.** If the minimum and maximum height of sugarcane plant is 50 cm and 200 cm respectively and this character is regulated by 3 pairs of genes. Then find out the height of plants produced in the progeny of cross aabbCC × AABBcc :
- 75 cm
 - 150 cm
 - 50 cm
 - 125 cm
- 112.** Which of the following ratios is generally constant for a given species?
- A + T / G + C
 - T + C/A + G
 - A + C / T + G
 - G + C/A + T
- 113.** A bacteriophage with radioactive DNA and protein when infects a bacterium the radioactivity inside the bacterium will be in :
- DNA
 - Protein
 - Both (1) and (2)
 - All parts of bacterial cell
- 114.** From the given table which one of the following option is true for m-RNA, t-RNA and r-RNA :-
- | m-RNA | t-RNA | r-RNA |
|---------------|-------------|------------------|
| Highly stable | Soluble RNA | Act as an enzyme |
 - | m-RNA | t-RNA | r-RNA |
|-------------|-------------|-----------------|
| Adapter RNA | Largest RNA | Single stranded |
 - | m-RNA | t-RNA | r-RNA |
|--------------------------|-------------|---------------------|
| Have message for protein | adapter RNA | play catalytic role |
 - | m-RNA | t-RNA | r-RNA |
|-------------|---------------|-----------------|
| Soluble RNA | Highly stable | Double stranded |
- 115.** The Okazaki fragments in DNA chain growth-
- Result in transcription
 - Polymerize in the 3'-to-5' direction and forms replication fork
 - Prove semi-conservative nature of DNA replication
 - Polymerize in the 5'-to-3' direction
- 116.** In eukaryotes, the RNA polymerase that synthesizes tRNA is RNA polymerase ____ and is also responsible for formation of ____ r-RNA:
- II, 5.8 S
 - I, 5 S
 - III, 5 S
 - II, 18 S
- 117.** Assertion :- UGG is a chain termination codon.
Reason :- It does not code any amino acid.
- If both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
 - If both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
 - If Assertion is True but the Reason is False
 - If both Assertion & Reason are false.
- 118.** For every single amino acid incorporated in polypeptide chain ATP and GTP molecules used
- 1, 4
 - 1, 6
 - 1, 2
 - 1, 3
- 119.** Assertion :- The gene i codes for the repressor of the lac operon.
Reason :- The y-gene codes for permease, which increases permeability of the cell to β galactosidase.
- If both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
 - If both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
 - If Assertion is True but the Reason is False
 - If both Assertion & Reason are false.

- 120.** Match column I with column II and find the correct answer

	Column-I		Column-II
(a)	Monoploidy	(i)	$2n-1$
(b)	Monosomy	(ii)	$2n+1$
(c)	Nullisomy	(iii)	$2n+2$
(d)	Trisomy	(iv)	$2n-2$
(e)	Tetrasomy	(v)	x
		(vi)	$3n$

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

- 121.** Steps in DNA fingerprinting are :-

Isolation of DNA



Digestion of DNA by (A)



Separation of DNA by (B)



Transferring of DNA to (C)



DNA hybridisation using (D)



Detecting of hybridised DNA by (E)



Complete the accompanying flowchart, A, B, C, D and E in the flowchart are :

- (1) A-Restriction endonuclease, B-Electrophoresis, C-Nitrocellulose or nylon, D-Labelled VNTR probe, E-Autoradiography
 (2) A-Electrophoresis, B-Restriction endonuclease, C-Nitrocellulose or nylon, D-Labelled VNTR probe, E-Autoradiography
 (3) A-Restriction endonuclease, B-Electrophoresis, C-Labelled VNTR probe D-Nitrocellulose or nylon, E-Autoradiography
 (4) A-Restriction endonuclease, B-Electrophoresis, C-Nitrocellulose or nylon, D-Autoradiography, E-Labelled VNTR probe.

- 122.** Match the following (column I with column II)

	Column-I		Column-II
(a)	Chromosome 1	(i)	4.6×10^6 bp
(b)	Human genome	(ii)	231 genes
(c)	Genome E.coli	(iii)	2968 genes
(d)	Chromosome Y	(iv)	30000 genes

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

- 123.** Read the following statements :

- (i) Eukaryotic gene is split-gene as alongwith exons, introns are also present
 (ii) The split gene arrangements represent probably an ancient feature of eukaryotic genome
 (iii) The presence of introns is reminiscent of antiquity in eukaryotes
 (iv) The process of splicing suggest the dominance of RNA-world during early evolution
 (v) Few prokaryotes also possess introns alongwith exons

Which of the above statements are correct ?

- (1) (i), (iii) and (iv)
 (2) (i) and (ii)
 (3) (i), (ii), (iii), (iv) and (v)
 (4) (iii), (iv) and (v)

- 124.** If there are 10,000 nitrogenous base pairs in a DNA then how many nucleotides are there -

- (1) 500
 (2) 10,000
 (3) 20,000
 (4) 40,000

- 125.** Pollination process in angiosperm and gymnosperm perform as:

- (1) Entomophily
 (2) Anemophily
 (3) Ornithophily
 (4) None of these

- 126.** Type of pollination observed in maize is

- (1) Anemophily
 (2) Ornithophily
 (3) Entomophily
 (4) Hydrophily

- 127.** If female parent produces unisexual flowers, there is:-

- (1) no need of emasculation & bagging
 (2) need of emasculation & bagging
 (3) no need of emasculation but bagging is needed
 (4) no need of bagging but emasculation is needed

128. Which of the following cross is used to find out the homozygosity or the heterozygosity of a dominant individual :-

- Test cross
- Back cross
- Reciprocal cross
- Out cross

129. Incomplete dominance occurs in :-

- Mirabilis flower colour
- Antirrhinum flower colour
- Starch grain size in pea seed
- All of the above

130. Given below are two statements :

Statement-I : ABO blood group system provide a good example of multiple alleles.

Statement-II : Multiple allele can be found in one individual of human population.

In the light of the above statements, choose the most appropriate answer from the options given below.

- Both Statement-I and Statement-II are incorrect.
- Statement-I is correct but Statement-II is incorrect.
- Statement-I is incorrect but Statement-II is correct.
- Both Statement-I and Statement-II are correct.

131. In pedigree analysis, symbol  is used for-

- Heterozygous for autosomal recessive
- Affected individuals
- Death
- Carrier for sex linked recessive

132. What is the genetic disorder in which an individual has an overall masculine development, gynaecomastia, and is sterile?

- Edward syndrome
- Down's syndrome
- Turner's syndrome
- Klinefelter's syndrome

133. Match the column and select the correct answer using the codes given below

Column-I	Column-II
(a) Sigma factor	(i) 5' → 3'
(b) Capping	(ii) Initiation
(c) Tailing	(iii) Termination
(d) Coding strands	(iv) 5' end
	(v) 3' end

(1) a-(iii), b-(v), c-(iv), d-(ii)

(2) a-(ii), b-(iv), c-(v), d-(i)

(3) a-(ii), b-(iv), c-(v), d-(iii)

(4) a-(iii), b-(v), c-(iv), d-(i)

134. Given below are two statements:

Statement-I: Splicing refers to joining of exons in a defined order.

Statement-II: In capping an unusual nucleotide is added to 3'-end of hn-RNA.

In the light of the above statements, choose the most appropriate answer from the options given below:

- Both Statement-I and Statement-II are incorrect.
- Statement-I is correct but statement-II is incorrect.
- Statement-I is incorrect but Statement-II is correct.
- Both Statement-I and Statement-II are correct.

135. During DNA replication process, deoxyribonucleoside triphosphate acts as :-

- Substrate
- Energy source
- Enzyme
- Both (1) and (2)

136. How many statement are correct -

- LH acts on Sertoli cells and stimulates synthesis and secretion of androgen
- The acrosome is filled with enzyme, that help fertilisation of ovum
- FSH stimulates secretion of some factors which help in process of Fertilization
- The Human male ejaculate about 200-300 million sperm during a coitus with 60% of have normal shape and size. and at least 40% of them must show vigorous motility.

(1) a, b are correct

(2) b, d are correct

(3) c, d are correct

(4) a, d, are correct

- 137.** Atmosphere of earth just before the origin of life consisted of:-
 (1) Water vapours, CH₄, NH₃ and Oxygen
 (2) CO₂, NH₃ and CH₄
 (3) CH₄, NH₃, H₂ and water vapours
 (4) CH₄, O₃, O₂ and water vapours.
- 138.** Which of the following depicts the correct pathway of transport of sperms:
 (1) Rete testis → Vasa efferentia → Epididymis → Vas deferens
 (2) Rete testis → Epididymis → Vasa efferentia → Vas deferens
 (3) Rete testis → Vas deferens → Vasa efferentia → Epididymis
 (4) Vasa efferentia → Rete testis → Vas deferens → Epididymis
- 139.** The theory of spontaneous generation says that
 (1) Life originated from the decaying and rotting matter like straw, mud etc
 (2) Life came on the earth from outer space
 (3) Life comes from pre-existing life only
 (4) Life started with the replication of self replicating metabolic capsules
- 140.** Which is not included in the female accessory ducts ?
 (1) Fallopian tubes
 (2) Clitoris
 (3) Uterus
 (4) Vagina
- 141.** When more than one adaptive radiation appeared to have occurred in an isolated geographical area, one can call this
 (1) Divergent evolution
 (2) Convergent evolution
 (3) Homologous organs
 (4) Both (1) and (2)
- 142.** Consider the following four statements (A-D) and select the option that correctly identifies the true (T) and false (F) ones:
 (A) The opening of the vagina is often covered partially by membrane called hymen.
 (B) The edges of the fallopian tube posses finger like projections called Isthmus.
 (C) The Alveoli cells secrete milk which is stored in their cavity.
 (D) The clitoris lies at the upper junction of two labia majora below the urethral opening.
 (1) A - T, B - T, C - F, D - F
 (2) A - T, B - F, C - F, D - T
 (3) A - T, B - F, C - T, D - F
 (4) A - F, B - T, C - T, D - F
- 143.** What is **incorrect** for evolution ?
 (1) Fossils provide most reliable information about evolution
 (2) Early embryonic development stages of higher animals are similar
 (3) Fore limbs of cows and wings of birds are homologous
 (4) Variations among individuals are not important in natural selection
- 144.** Choose the statement which is **not incorrect**
 (1) Each primary Oocyte gets surrounded by layer of granulosa cells and is called secondary follicle
 (2) Secondary follicle is characterized by fluid filled cavity antrum.
 (3) Spermatids are transformed into sperms by a process called spermiation
 (4) Tertiary follicle changes into mature follicle graafian follicle
- 145.** Which of the following event is example of directional natural selection?
 (1) Resistant for DDT in insect
 (2) Vestigial organ
 (3) Survival of human babies with average body weight
 (4) None of these
- 146.** **Assertion :** - Endometrium is necessary for implantation of the fertilised ovum and other event of pregnancy.
Reason : - The corpus luteum secretes large amount of progesterone, which is essential for maintenance of the endometrium.
 (1) If both Assertion and Reason are True and Reason is a 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 the Reason is False.
 (4) If both Assertion and Reason are False.

147. **Statement-I :** According to theory of special creation, diversity was always the same since creation and will be same in future

Statement-II : According to this theory, earth is about 6000 years old.

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

148. **Statement-I :** The secretory phase in the human menstrual cycle is also called luteal phase and lasts for 14 days.

Statement-II : Placenta secretes oxytocin during parturition.

- (1) Statement I is true but Statement II is false
- (2) Statement I is false but Statement II is true
- (3) Both Statement I and Statement II are true
- (4) Both Statement I and Statement II are false

149. **Assertion (A):** Disturbance in genetic equilibrium or Hardy-Weinberg equilibrium would be interpreted as resulting in evolution.

Reason (R): According to Hardy-Weinberg principle, allele frequencies in a population are stable and is constant from generation to generation.

- (1) Both (A) and (R) are true and (R) is the correct explanation of (A)
- (2) Both (A) and (R) are true but (R) is not the correct explanation of (A)
- (3) (A) is true statement but (R) is false.
- (4) Both (A) and (R) are false.

150. **Assertion (A):** Evolution is not a directed process in the sense of determinism.

Reason (R): It is a stochastic process based on chance events in nature and chance mutation in the organisms.

- (1) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are true but (R) is not the correct explanation of (A).
- (3) (A) is true statement but (R) is false.
- (4) Both (A) and (R) are false.

151. Extrusion of second polar body from egg nucleus occurs

- (1) After entry of sperm and before completion of fertilization
- (2) After completion of fertilization
- (3) Before the entry of sperm
- (4) Without any relation with sperm entry

152. Which one of the following statements is correct?

- (1) Australopithecus is the real ancestor of modern man
- (2) Neanderthal man is the direct ancestor of Homo sapiens
- (3) Homo erectus is the ancestor of man
- (4) Cro-magnon man's fossils has been found in Ethiopia

153. Which of the following depicts the correct presentation of various events during a menstrual cycle:-

- (1) Menses → Secretory phase → Ovulation → Follicular phase
- (2) Follicular phase → Ovulation → Menses → Luteal phase
- (3) Luteal phase → Ovulation → Follicular phase → Menstruation
- (4) Menstruation → Proliferative phase → Ovulation → Secretory phase

154. Consider the following three statements and select the correct option stating which one is true (T) and which one is false (F).

- (A) The skull of baby chimpanzee is more like adult human skull than adult chimpanzee skull.
- (B) the first mammals were like shrews.
- (C) the work of Thomas Malthus on populations influenced Lamarck †

(1)

(A)	(B)	(C)
T	F	T

(2)

(A)	(B)	(C)
F	T	T

(3)

(A)	(B)	(C)
T	T	F

(4)

(A)	(B)	(C)
F	T	F

155. **Assertion :-** In pregnancy the level of the other hormones like estrogen, progestogens, cortisol, prolactin, and thyroxine are increase in maternal blood.

Reason :- Increased production of these hormones is essential for supporting the fetal growth metabolic changes in the mother and maintenance of pregnancy.

- (1) If both Assertion and Reason are True and Reason is a 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 the Reason is False.
- (4) If both Assertion and Reason are False.

- 156.** Choose the correct match with reference to the embryonic development events.
- (1) **After 3 months** → Formation of Embryo's heart
 - (2) **1st sign of growing foetus** → Development of limbs and digits
 - (3) **1st movement of foetus** → During 5th month of pregnancy
 - (4) **By the end of 1st trimester** → Body is covered by fine hairs, eyelids separates and eyelashes are formed
- 157.** Which of the following group of hormones are produced during pregnancy?
- (1) Progestogens, hPL and relaxin
 - (2) hCG, hPL and relaxin
 - (3) Estrogens, hPL and relaxin
 - (4) hCG, estrogens and relaxin
- 158.** Which **hormone** is essential for maintenance of the endometrium of Uterus:-
- (1) FSH
 - (2) LH
 - (3) Relaxin
 - (4) Progesterone
- 159.** Foetal ejection reflex triggers:-
- (1) Release of relaxin from maternal pituitary
 - (2) Release of oxytocin from foetal pituitary
 - (3) Release of progesterone from placenta
 - (4) Release of oxytocin from maternal pituitary
- 160.** During **parturition** process -
- (1) Progesterone and Estrogen hormone level increases
 - (2) Progesterone and Estrogen hormone level decreases.
 - (3) Progesterone hormone level increases and Estrogen hormone level decreases
 - (4) Progesterone hormone level decreases and Estrogen hormone level increases
- 161.** Given below are two statements regarding oogenesis.
- Statement I:** The primary follicles get surrounded by more layers of granulosa cells, a theca and shows fluid filled cavity antrum. Now it is called secondary follicle.
- Statement II:** Graafian follicle ruptures to release the secondary oocyte from the ovary by the process called ovulation.
- In the light of the above statements, choose the correct answer from the options given below:
- (1) **Statement I** is correct but **Statement II** is incorrect
 - (2) **Statement I** is incorrect but **Statement II** is correct
 - (3) Both **Statement I** and **Statement II** is correct
 - (4) Both **Statement I** and **Statement II** is incorrect
- 162.** What is the function of copper T.
- (1) To inhibit ovulation
 - (2) To prevent fertilization
 - (3) To inhibit gametogenesis
 - (4) To prevent insemination
- 163.** Select the **correct** statements -
- (a) Venereal diseases can spread through inheritance.
 - (b) Lippe loop is a type of contraceptive used as Non-medicated IUD.
 - (c) Genital herpes is a sexually transmitted disease which is not completely curable.
 - (d) In GIFT, the embryos are transferred to assist those females who cannot conceive.
- (1) a, c
 - (2) b, d
 - (3) d, a
 - (4) b, c
- 164.** Which could be used as a emergency contraceptives
- (1) Implants
 - (2) Tubectomy
 - (3) IUD's
 - (4) Vaults

- 165.** Which of the following disease is completely curable if detected early and treated properly?
- HIV infections
 - Hepatitis-B
 - Genital herpes
 - Gonorrhoea
- 166.** In which ART, the semen is artificially introduced into the female?
- IUI
 - ZIFT
 - IUT
 - GIFT
- 167.** In which of the following techniques, the embryos are transferred to assist those females who cannot conceive?
- GIFT and ZIFT
 - ICSI and ZIFT
 - GIFT and ICSI
 - ZIFT and IUT
- 168.** Mole and marsupial mole, mouse and Lemur, Bobcat and Tasmanian tiger cat, Anteater and wolf, Lemur and spotted cuscus
How many of them shows convergent evolution.
- One
 - Two
 - Three
 - Four
- 169.** Which of the following structures are different in fundamental but evolving for the same function as a result of convergent evolution.
- Wing of birds and insects
 - Flippers of Whale and Dolphins
 - Heart of pigeon and Rabbit
 - Mouth parts of insects
- 170.** Which of the following is not a correct evolutionary sequence?
- Early reptile → Sauropsids → Thecodont → Dianosaurs
 - Ramapithecus → Australopithecus → Homo habilis → Java man
 - Tracheophytes → Rhynia → Psilophyton → Bryophytes
 - Homo habilis → Homo erectus → Cromagnon man → Modern man
- 171.** Primitive atmosphere was reducing because:
- Hydrogen atoms were few
 - Hydrogen atoms were active and in greater number
 - Nitrogen atoms were more
 - Oxygen atoms were more
- 172.** Which of the following events is **not** associated with ovulation in human females?
- LH surge
 - Decrease in Estrogen
 - Full development of graafian follicle
 - Release of secondary oocyte
- 173.** In which condition, the embryo differentiates into ectoderm and endoderm?
- After fertilisation
 - After implantation
 - Before fertilisation
 - Before implantation
- 174.** Read the following statements carefully and select the **correct** statements:
- hPL plays a major role in parturition.
 - Foetus shows movements first time in the 7th month of pregnancy.
 - Signal for parturition comes from fully developed foetus and placenta.
 - Embryo's heart is formed by the 2nd month of pregnancy.
- (i) and (ii)
 - (iii) only
 - (ii) and (iv)
 - (i) and (iv)
- 175.** Match List-I with List-II:
- | | List-I | List-II |
|----|-------------|---|
| A | Parturition | I. Several antibodies for new-born babies |
| B. | Placenta | II. Collection of ovum after ovulation |
| C. | Colostrum | III. Foetal ejection reflex |
| D | Fimbriae | IV. Secretion of the hormone hCG |
- Choose the correct answer from the options given below:-
- A-III, B-IV, C-I, D-II
 - A-I, B-IV, C-II, D-III
 - A-II, B-III, C-IV, D-I
 - A-III, B-IV, C-II, D-I

- 176.** During oogenesis, primary oocyte are temporarily arrested at -
 (1) Metaphase-I of meiotic division stage
 (2) Prophase-I of meiotic division stage
 (3) Metaphase-II of meiotic division stage
 (4) Prophase-II of meiotic division stage
- 177.** **Statement-I :** The contraceptive 'SAHELI' blocks estrogen receptors in the uterus preventing eggs from getting implanted.
Statement-II : Tubectomy is a method of sterilization in which small part of vas deferens is removed or tied up.
 (1) Statement I is correct but Statement II is false
 (2) Statement I is incorrect but Statement II is true
 (3) Both Statement I and Statement II are true
 (4) Both Statement I and Statement II are false.
- 178.** Given below are two statements: one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.
Assertion (A): Amniocentesis for sex determination is one of the strategies of Reproductive and Child Health Care Programme.
Reason (R): Ban on amniocentesis checks increasing menace of female foeticide.
 In the light of the above statements, choose the **correct** answer from the options given below:
 (1) Both (A) and (R) are true and (R) is not the correct explanation of (A)
 (2) (A) is true but (R) is false.
 (3) (A) is false but (R) is true.
 (4) Both (A) and (R) are true and (R) is the correct explanation of (A)
- 179.** Progestogen based contraceptives include all except-
 (1) Progestasert
 (2) LNG-20
 (3) Multiload 375
 (4) Implants
- 180.** Which of the following statements are **correct** for declined population growth:-
 (A) Increase in death rate
 (B) Lack of awareness of contraceptive methods
 (C) Decrease in maternal mortality rate (MMR)
 (D) Increase in infant mortality rate (IMR)
 (E) Increase in maternal mortality rate (MMR)
 (1) A, C, D
 (2) A, D, E
 (3) B, C, D
 (4) B, D, E