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Academic Director
Alpha 360 Degree Pvt. Ltd.

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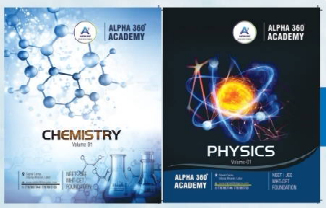

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- NEET/JEE तयारीसाठी विश्वासार्ह दिशा
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ALPHA 360 DEGREE ACADEMY

Date : 19-05-2026 Time : 3 Hrs

Physics : 45	Chemistry : 45	Biology : 90	Total : 180
Mark's-720	RE-NEET ALPHA TEST SERIES		TEST-01

Exam Syllabus

Physics : Mechanics, Mechanical Properties of Solids & Fluids
Chemistry : Organic Chemistry
Biology : 11th Zoology

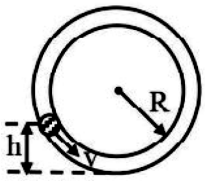
Physics

01. A heavy particle of mass m, oscillates through 180° ins ide of a smooth hemisphere of rad ius R as shown If V is speed of particle at any instant, the normal reaction on it at that instant will be -

1) $\frac{mV^2}{R}$ 2) $\frac{3mV^2}{R}$

3) $\frac{3mV^2}{2R}$ 4) $\frac{2mV^2}{R}$

02. With what minimum speed v must a small ball should be pushed inside a smooth vertical tube from a height h so that it may reach the top of the tube ? Radius of the lube is R.



1) $\sqrt{2g(h+2R)}$ 2) $\frac{5R}{2}$

3) $\sqrt{g(5R-2h)}$ 4) $\sqrt{2g(2R-h)}$

03. A car is moving on an unbanked circular bend of radius 50 m at a speed of 36 km/hr. The angle of banking required for the safe turning of the car is-(g = 10 m/s^2)

1) $\tan^{-1}(0.5)$ 2) $\tan^{-1}(0.2)$

3) $\tan^{-1}(\sqrt{0.2})$ 4) $\tan^{-1}(\sqrt{0.5})$

04. A man is standing on a weighing machine placed in a lift. When stationary his weight is recorded as 40kg If the lift is accelerated upwards with an acceleration of 2 m/s^2, then the weight recorded in the machine will be

1) 32 kg 2) 40 kg
3) 42 kg 4) 48 kg

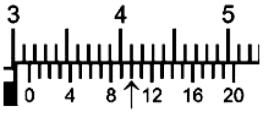
05. An object is thrown along a direction inclined at an angle of 45° with the horizontal direction. The horizontal range of the particle is equal to

1) Vertical height
2) Twice the vertical height
3) Thrice the vertical height
4) Four times the vertical height

06. The smallest division on the main scale of a Vernier calipers is 0.1 cm. 20 th divisions of the Vernier scale correspond to 19th divisions of the main scale. The figure first below the shows the reading of this calipers with no gap between its two jaws. The second figure shows the reading with a solid sphere held between the jaws. The correct diameter of the sphere is

Zero Error :

Vernier scale Reading :



1) 3.150 2) 3.145
3) 3.115 4) 3.195

07. The dimensional formula for magnetic flux is
1) $[ML^2T^{-2}A^{-1}]$ 2) $[ML^3T^{-2}A^{-2}]$
3) $[M^0L^{-2}T^2A^{-2}]$ 4) $[ML^2T^{-1}A^2]$

08. The value of resistance is 10.845 W and the value of current is 3.23 A. The potential difference is 35.02935 volt. Its value insignificant number would be
1) 35 V 2) 35.0 V
3) 35.03 V 4) 35.029 V

09. A uniform chain of length 2m is kept on a table such that a length of 60cm hangs freely from the edge of the table. The total mass of the chain is 4kg The work done in pulling the entire chain on the table ($g = 10\ m/s^2$)
1) 12.9 J 2) 6.3 J
3) 3.6 J 4) 2.0 J

10. Two balls are dropped to the ground from different heights. Second ball is dropped 2s after the other but they both strike the ground at the same time If the first ball takes 5s to reach the ground, then the difference in initial heights is ($g = 10\ m/s^2$)
1) 20 m 2) 80 m
3) 170 m 4) 40 m

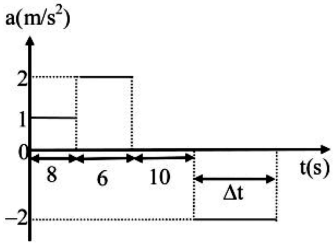
11. A fireman of mass 60kg slides down a pole. He is pressing the pole with a force of 600 N. The coefficient of friction between the hands and the pole is 0.5, w ith what acceleration will the fireman slide down ($g = 10\ m/s^2$)
1) $1\ m/s^2$ 2) $2.5 m/s^2$
3) $10\ m/s^2$ 4) $5\ m/s^2$

12. The period of a body under SHM i.e. presented by $T = P^aD^bS^c$; wherre P is pressure, D is density and S is surface tension. The value of a, b and c are
1) $-\frac{3}{2},\frac{1}{2},1$ 2) $\frac{1}{2},-\frac{3}{2},-\frac{1}{2}$
3) $\frac{1}{2},-\frac{3}{2},-\frac{1}{2}$ 4) $1,2,\frac{1}{3}$

13. A car is going in south with a speed of 5 m/s. To a man sitting in car a bus appears to move towards west with a speed of $2\sqrt{6}$ m/s. What is the actual speed of the bus?
1) 4 m/s 2) 3 m/s
3) 7 m/s 4) none ofthese

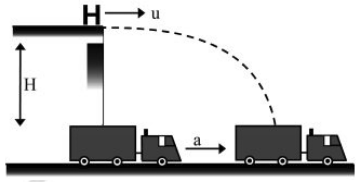
14. **Statement I:** The area of force-displacement diagram gives work done.
Statement II: The power delivered by gravitational force is always negative.
1) Statement I is correct, but Statement II is inconect
2) Statement I is incorrect, but Statement II isconect
3) Both Statement I and Statement II are correct
4) Both Statement I and Statement II are incorrect

15. A train travels between two of its station stops with the acceleration schedule shown Δt is the time interval during which train breaks to stop.



1) Δt = 12 sec
2) Distance between two stations is 416 m
3) Δt = 15 sec
4) Distance between two station is 510 m

16. A stunt performer is to run and dive off a tall platform and land in a net in the back of a truck below. Originally the truck is directly under the platform, it starts forward with a constant acceleration a at the same instant the performer leaves the platform. If the platform is H above the net in the truck, then the horizontal velocity u that the performer must have as he leaves the platform is -

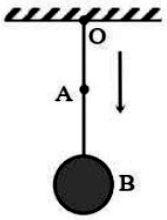


1) $a\sqrt{2H/g}$ 2) $a\sqrt{H/2g}$
3) $\sqrt{g/2H}$ 4) None of these

17. A pump e jects 1200 kg of water from 10m deep well at speed of'20 m/s in40 second Find the average rate at w hich the pump is working
1) 3000W 2) 6000W
3) 9000W 4) 2400W

18. A particle is moving along a circular path of radius 3 meter in such a way that the distance travelled measured along the circumference is given by $S = \frac{t^2}{2} + \frac{t^3}{3}$. The acceleration of particle when t = 2 sec is -
1) $1.3\ m/s^2$ 2) $13\ m/s^2$
3) $3\ m/s^2$ 4) $10\ m/s^2$

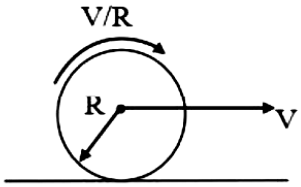
19. A smooth rubber cord of length *l* with spring constant k is suspended from O. The other end is fitted with a bob B A small sleeve of mass m starts falling from O. Neslectinathe masses of the cord and bob find the maximum elongation of the cord -



1) $\frac{mg}{k}\left[1+\sqrt{1+\frac{2kl}{mg}}\right]$ 2) $\frac{mg}{k}\left[\sqrt{1+\frac{2kl}{mg}}\right]$

3) $\frac{mg}{k}$ 4) $\frac{mg}{k}\left[\sqrt{1+\frac{k}{mg}}\right]$

20. A disc is performing pure rolling on a smooth stationary surface with constant angular velocity as shown in figure. At any instant, for the lower most point of the disc



1) Velocity is v, acceleration is zero
2) Velocity is zero, acceleration is zero
3) Velocty is v, acceleration is $\frac{v^2}{R}$
4) Velocity is zero, acceleration is nonzero

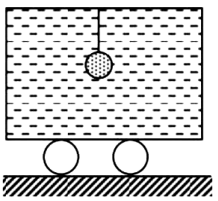
21. A circular platform is mounted on a vertical friction-less axle. Its radius is r = 2m and its moment of inertia is I = 200 kg-m^2 It is initially at rest. A 70 kg man stands on the edge of the platform and begins to walk along the edge at speed v_0 = 1.0 m/s relative to the ground. The angular velocity of the platform is -
1) 1.2 rad/s 2) 0.4 rad/s
3) 2.0 rad/s 4) 0.7 rad/s

22. A rigid body is rotating about a vertical axis at n rotations per minute, Ifthe axis slowly becomes horizontal in t seconds and the body keeps on rotating at n rotatioas per minute then the torque acting on the body will be, ifthe moment of inertia of the body about axis of rotation is I -
1) zero 2) $\frac{2\pi nl}{60t}$
3) $\frac{2\sqrt{2}\pi nl}{60t}$ 4) $\frac{4\pi nl}{60t}$

23. A thin ring of radius R is made of a material of density ρ and Young's modulus Y. The ring is rotated about its centre and in its own plane with an angular velocity ω such that the small increment in the radius of the ring is ΔR
1) $\Delta R=\frac{2\rho\omega^2R^3}{Y}$ 2) $\Delta R=\frac{\rho\omega^2R^3}{2Y}$
3) $\Delta R=\frac{\rho\omega^2R^3}{3Y}$ 4) $\Delta R=\frac{\rho\omega^2R^3}{Y}$

24. A wire suspended vertically from one of its ends is stretched by attaching a weight of 200 N to the lower end. The weight stretches the wire by 1 mm. Then the elastic energy stored in the wire -
1) 0.1 J 2) 0.2 J
3) 10 J 4) 20 J

25. **Assertion:** A bob made of material of density ρ_s is suspended from the ceiling of a cart by means of a massless rigid rod. The cart contains a liquid of density ρ_L. The card suddenly starts accelerating towards right The bob will move towards right, if $\rho_s > \rho_L$



Reason: The torque of buoyant force about the point of suspension will he less than the torque of gravitational force about the point of suspension.
1) If both (A) and (R) are true, and (R) is the correct explanation of (A).
2) If both (A) and (R) are true but (R) is not the conect explanation of (A).
3) If (A) is true but{R) is false.
4) If (A) is false but (R) is true.

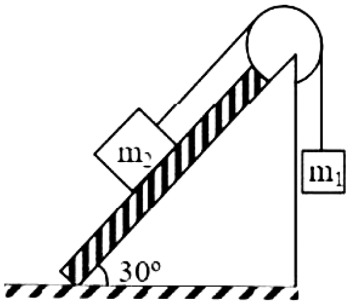
26. The pressure inside two soap bubbles are 1.02 atm and 1.03 atm respectively. The ratio of their volumes is -
1) 102 : 103 2) 103 : 102
3) $(103)^3 : (102)^3$ 4) 27 : 8

27. In a I J-tube the radii of two columns are respectively r_1 and r_2. When a liquid of density $\rho(\theta = 0°)$ is filled in it, a level difference of h is observed on two arms, then the surface tens ion of the liquid is -

1) $\frac{\rho g h r_1 r_2}{2(r_2 - r_1)}$ 2) $h\rho g(r_2 - r_1)$

3) $\frac{h\rho g(r_2 - r_1)}{2}$ 4) $\frac{h\rho g}{2(r_2 - r_1)}$

28. The mass of block m_1 = 4 kg and m_2 = 20 kg, m_2 slides on the incline on a film of oil 7 μm thick. Assume linear velocity profile. Block m_2 is cube of length 10cm. viscosity of oil is 7×10^{-3} Pa-s: Terminal velocity of blocks is -

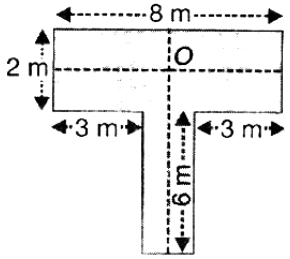


1) 2 m/s 2) 3 m/s
3) 4 m/s 4) 5 m/s

29. If the terminal speed of a sphere of gold (density = 19.5 kg/m^3) is 0.2 m/s in a viscous liquid (density = 1.5kg/m^3), find the terminal speed of a sphere of silver (density =10.5 kg/m^3) of the same size in the sameliquid-

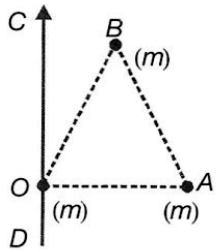
1) 0.1 m/s 2) 0.2 m/s
3) 0.4 m/s 4) 0.133 m/s

30. The distance of the centre of mass of the T-shaped plate from O is



1) 7 m 2) 2.7 m
3) 4 m 4) 1 m

31. Three point masses m are placed at the vertices of an equilateral triangle of side a. Moment of inertia of the system about an axis COD passing through a mass m at O and lying in the plane of AOB and perpendicular to OA is



1) $2ma^2$ 2) $\frac{2}{3}ma^2$

3) $\frac{5}{4}ma^2$ 4) $\frac{7}{4}ma^2$

32. Two discs one of density 7.2 g/cm^3 and the other of density 8.9 gm/cm^3, are of same mass and thickness. Their moments of inertia are in the ratio

1) $\frac{8.9}{7.2}$ 2) $\frac{7.2}{8.9}$

3) (8.9 × 7.2) : 1 4) 1 : (8.9 × 7.2)

33. A flywheel of mass 50 kg and radius of gyration about its axis of rotation of 0.5 m is acted upon by a constant torque of 12.5 N-m. Its angular velocity at t = 5 seconds is

1) 2.5 rad/s 2) 5 rad/s
3) 7.5 rad/s 4) 10 rad/s

34. A spherical solid ball of 1 kg mass and radius 3 cm is rotating about an axis passing through its centre with an angular velocity of 50 rad/s. The kinetic energy of rotation is

1) 4500 J 2) 90 J
3) (9/20) J 4) (9/10) J

35. The angular velocity of the body changes from ω_1 *to* ω_2 without applying torque but by changing moment of inertia. The initial radius of gyration to the final radius of gyration is

1) $\omega_2 : \omega_1$ 2) $\omega_2^2 : \omega_1^2$

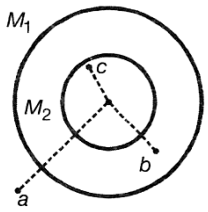
3) $\sqrt{\omega_2} : \sqrt{\omega_1}$ 4) $\frac{1}{\omega_2} : \frac{1}{\omega_1}$

36. A particle of mass m is projected with a velocity v making an angle of 45° with the horizontal. The magnitude of angular momentum of the projectile about an axis of projection when the particle is at maximum height h is

1) Zero 2) $\frac{mv^3}{4\sqrt{2}g}$

3) $\frac{mv^2}{\sqrt{2}g}$ 4) $m\sqrt{2gh^3}$

37. Two concentric spherical shells of uniform density of mass M_1 and M_2 are situated as shown in figure. The force on a particle of mass m located at the position r = a (The distance r is measured from the centre of the shells) is



1) $\frac{GM_1m}{b^2}$ 2) $\frac{GM_2m}{b^2}$

3) $\frac{G(M_1+M_2)m}{a^2}$ 4) Zero

38. Two masses 800 kg and 600 kg are placed at a distance 0.25 m. The gravitational potential (in J/kg) at a point distance 0.20 m from 800 kg mass and 0.15 m from 600 kg mass is (G is the gravitational constant)

1) Zero 2) – 4000 G

3) – 8000 G 4) – 16000 G

39. There is a region of gravitational force in which gravitational field intensity I is given by

$I = a\hat{i} + b\hat{j} - c\hat{k}$

The workdone by the gravitational force to displace a point mass m in the region from point (0, 0, 0) to (1, 2, 3) is

1) m(a + 2b – c) 2) $m = \left(\frac{ab^2}{c^3}\right)$

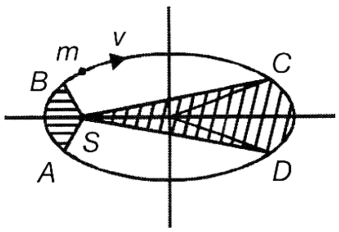
3) m(a + 2b – 3c) 4) 6 mabc

40. A body of mass m is at rest at a distance R (radius of earth) above the surface of earth. Take M the mass of earth, then what velocity should be given to the body to enable it to escape from the earth's gravitational field?

1) $\sqrt{\frac{2GM}{R}}$ 2) $\sqrt{\frac{GM}{R}}$

3) $\sqrt{\frac{GM}{2R}}$ 4) $\frac{\sqrt{GM}}{R}$

41. The figure shows elliptical orbit of a planet m about the sun S. The shaded area SCD is twice the shaded area SAB. If t_1 is the time for the planet to move from C to D and t_2 is the time to move from A to B then



1) $t_1 = 4t_2$ 2) $t_1 = 2t_2$

3) $t_1 = t_2$ 4) $t_1 > t_2$

42. The radii of circular orbits of two satellites A and B of the earth, are 4R and R, respectively. If the speed of satellite A is 3 V, then the speed of satellite B will be

1) $\frac{3V}{4}$ 2) 6 V

3) 12 V 4) $\frac{3V}{2}$

43. Centre of mass of three particles of masses 1 kg, 2 kg and 3 kg lies at the point (1,2,3) and centre of mass of another system of particles 3 kg and 2 kg lies at the point (–1, 3, –2). Where should we put a particle of mass 5 kg so that the centre of mass of entire system lies at the centre of mass of 1st system?

1) (0,0,0) 2) (1,3,2)

3) (–1,2,3) 4) (3,1,8)

44. Two bodies of mass 10 k and 2 kg are moving with velocities $2\hat{i} - 7\hat{j} + 3\hat{k}$ and $-10\hat{i} + 35\hat{j} - 3\hat{k}$ m/s respectively. The velocity of their centre of mass is

1) $2\hat{i}\ m/s$ 2) $2\hat{k}\ m/s$

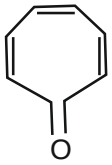
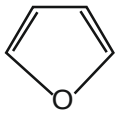
3) $(2\hat{j} + 2\hat{k})m/s$ 4) $(2i + 2\hat{j} + 2\hat{k})m/s$

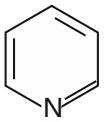
45. The mass of a planet is six times that of the earth. The radius of the planet is twice that of the earth. If the escape velocity from the earth is v, then the escape velocity from the planet is

1) $\sqrt{3}v$ 2) $\sqrt{2v}$

3) v 4) $\sqrt{5v}$

46. Which of the following is incorrectly mnatched?

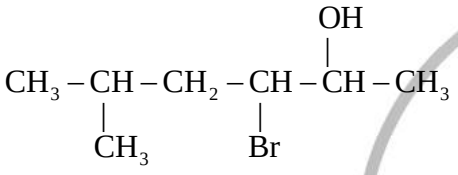
1)  Tropone 2)  Furan

3)  Thiophene 4)  Aniline

47.. Number CH_2 unit present in n-Decyl and Number of CH_3 units present in Neopentyl group is respectively

1) 10,2 2) 9, 3
3) 8,2 4) 7,3

48. IUPAC name of



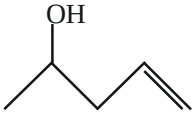
1) 3-Bromo-5-Methylhexetan-2-ol
2) 2-Hydroxy-3-bromo-5-methylhexane
3) 2-Hydroxy-3-bromo-5-methylhexane
4) 3-Bromo-2-hydroxy-5-methyl hexane

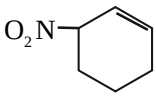
49. IUPAC name of 

1) 7-Hydroxyheptan-2-one
2) 7-Hydroxy-2-oxoheptane
3) 1-Hydroxy-6-oxoheptane
4) 6-oxoheptan-1-ol

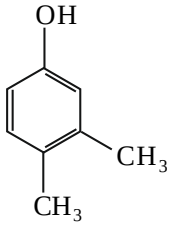
50. Which of the following match is not correct?

1) 2-Chlorohexane 

2) pent-4-en-2-ol 

3) 3-Nitrocyclohexene 

4) 6-Hydroxyheptanal 

51. IUPAC name of 

1) 3,4-Dimethylphenol
2) 1-Hydroxy-3,4-dimethyl benzene
3) 1,2-Dimethyl phenol
4) 4,5-Dimethylphenol

52. Hybridisation state of second and third carbon atom from left to right in given molecule

$H_2C = CH - CH_2 - CH_2 - C \equiv CH$

1) $sp^2 - sp^3$ 2) $sp^2 - sp$
3) $sp^2 - sp^3$ 4) $sp^2 - sp^2$

53. $CH_3 - CH_2 - O - CH_2 - CH_3$ and

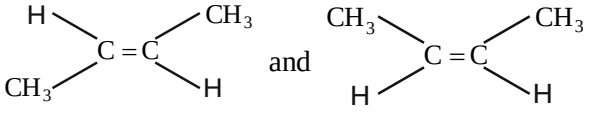
$CH_3 - O - CH_2 - -CH_2 - CH_3$ are

1) Metamers
2) Position isomers
3) Functional group isomers
4) Chain isomers

54. Repulsive interaction between adjacent bond is known as

1) Torsional strain 2) Stearic strain
3) Angle strain 4) None of these

55. Which of the following statement is correct for the given pair of compounds



1) Boiling point **cis** > **trans**
2) Dipole moment **cis** > **Trans**
3) Melting point **Trans** > **Cis**
4) All

56. The compound which rotates plane polarised light is called as
1) optically inactive compoun
2) chiral compound
3) optically active compound
4) Both 2 and 3

57. Which of the following statement is correct
1) Racemic mixture is equimolar mixture of enatiomers
2) The process of conversion of enantiomers into racemic mixture is known as optical resolution
3) Racemic mixture is represented by prefix 'dℓ' or '±' sign before the name
4) All

58. Which of the following carbocation is most stable?

1) $CH_3-\overset{\oplus}{C}H_2$ 2) $CH_3-\underset{\oplus}{\overset{CH_3}{\overset{|}{C}}}H$

3) $CH_3-\underset{CH_3}{\overset{CH_3}{\overset{|}{\underset{|}{C}}}}\oplus$ 4) $\overset{\oplus}{C}H_3$

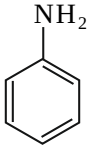
59. Which of the following is an example of electrophile?
1) R_3N 2) R_2NH
3) H_2O 4) SO_3

60. in the given groups how many groups show –I effect?
–CN , –COOH , $–NO_2$, –COOR , –OR , $–CH_3$, $—CH_2-CH_3$
1) 2 2) 3
3) 4 4) 5

61. Which of the following molecule has a conjugated system?

1) 

2) $CH_2=CH-CH=CH_2$

3) 

4) All of the above

62. Analyse the given two reactions –

1) $CH_2=CH_2+H^+\longrightarrow\overset{\oplus}{C}H_2-CH_3$

2) $CH_2=CH_2+\overset{\Theta}{C}N\longrightarrow\overset{\Theta}{C}H_2-CH_2-CN$

In the above reaction which effect opperates –
1) +E & –E 2) –E & +E
3) +I & –I 4) –I & +I

63. $CH_3-\overset{\overset{O}{\|}}{C}-OH\xrightarrow[\text{electrolysis}]{NaOH}\text{Product}$

Product formed in the above reaccion is -
1) CH_3-CH_3
2) CH_4
3) $CH_3-CH_2-CH_3$
4) $CH_3-CH_2-CH_2-CH_3$

64. Which of the following is correct for Halogenation of alkane?
1) Reactivity of Halogens F–F >Cl–Cl >Br–B >I–I
2) Rate of replacement of hydrogen 3° > 2° > 1°
3) Flourination is too voilent to be controlled
4) All

65. Which of the following reaction is incorrect
1) $CH_4+O_2\xrightarrow{cu/573k/100atm}CH_3-OH$

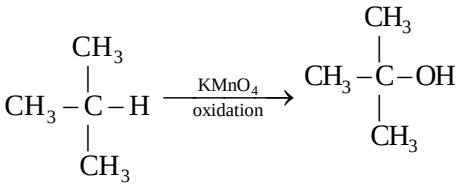
2) $CH_4+O_2\xrightarrow[\Delta]{MO_2O_3}H-\overset{\overset{O}{\|}}{C}-H$

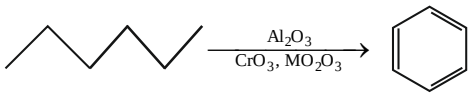
3) $CH_3-CH_3\xrightarrow[\Delta]{(CH_3COO)_2Mn}CH_3-\overset{\overset{O}{\|}}{C}-OH$

4) $\underset{CH_3}{\overset{CH_3}{\overset{|}{\underset{|}{CH_3-C-H}}}}\xrightarrow[\text{oxidation}]{KMnO_4}$

$CH_3-CH_2-CH_2-\overset{\overset{O}{\|}}{C}-OH$

66. Which of the following reaction is correct?

1) 

2) 

3) $CH_4 + H_2O \xrightarrow[1000°C]{Ni} CO + H_2$

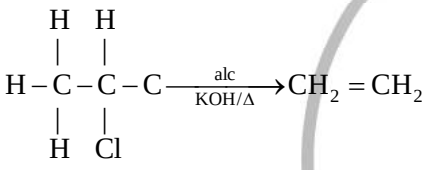
4) All

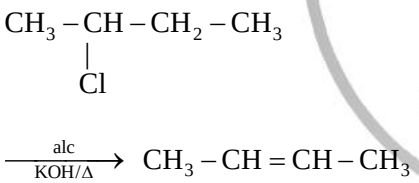
67. An alkene Ⓐ contains 3 C – C , 8 C – H sigma bond and one C = C bond. Ⓐ on ozonolysis gives two moles of same aldehyde, then IUPAC name of A is –

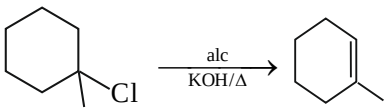
1) But-1-ene 2) 2-Methylprop-1-ene

3) Pent-2-ene 4) But-2-ene

68. Which of the following is incorrect?

1) 

2) 

3) 

4) All

69. Which of the following is correct?

1) Alkyl halide on heating with alcoholic potash (alk KOH) give HX and alkene.

2) Reactivity of alkyl halide towards dehydrohalogenation (β-elimination)

$R - I > R - Br > R - Cl$

3) Reactivity of different alkyl halide towards β-elimination $3^o > 2^o > 1^o$

4) All

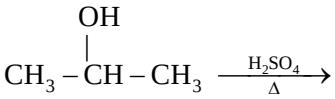
70. Which of the following is correct

1) Dehalogenation of vicinaldihalide gives alkene when heated with Zn.

2) In vicinal dihalide two halogen atoms are attached with same carbon.

3) In Geminal dihalide two halogen atoms are attached to adjacent carbon atom

4) Vicinal dihalide on dehalogenation gives alkene of double carbon as of vincinal diholide

71. 

Which of the following statement is correct about the above reaction?

1) The reaction is known as acidic hydration reaction

2) Propene is formed as product

3) This reaction is a type of β-elimination reaction

4) All

72. Which of the following statement is incorrect?

1) Generally alkenes are colourless and odour less

2) Ethene is colourless with a faint sweet smell

3) Alkenes are soluble in H_2O

4) Alkenes are soluable in benzene

73. $CH_3 - CH = CH_2 \xrightarrow[CCl_4]{Br_2-Br}$

The correct statement about the above reaction is

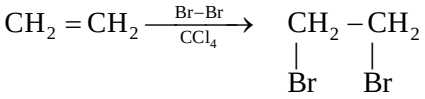
1) Vicinal dihalide is formed as product

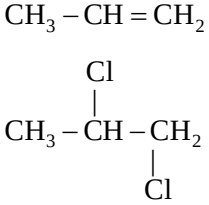
2) Cyclic balonium ion is formed as inter mediate

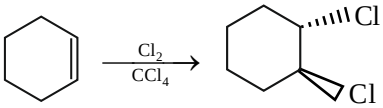
3) This reaction is used for test of unsaturation

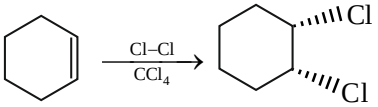
4) All

74. Which of the following reaction is incorrect

1) 

2) 

3) 

4) 

75. The incorrect statement about the given reaction is

$$CH_3-CH=CH_2 \xrightarrow[\text{O-C-O-O-C}]{HBr}$$

1) $CH_3-CH_2-\overset{O}{C}H_2$ is formed as intermediate
2) In the above reaction product formed according anti to markonikov's rule
3) $CH_3-\overset{O}{C}H-CH_2-Br$ is formed as intermediate
4) 1-Bromopropane is formed as major product

76. $CH_3-CH_2-CH_2-CH_2-CH=CH_2$ $\xrightarrow[CCl_4]{HBr}$ Ⓐ ; $\xrightarrow[\text{Peroxide}]{HBr}$ Ⓑ

Correct statement about above reaction is –
1) Product Ⓐ and Ⓑ are identical
2) Product Ⓐ and Ⓑ position isomers
3) Ⓐ is 2-Bromobexane and Ⓐis i-Bromohexane
4) Both (2) and (3)

77. Baeyers Reagent with alkene gives –
1) Geminal diol 2) Syn vicinal diol
3) Anti vicinal diol 4) Carbonyl compound

78. $(CH_3)_2C=CH-CH_3 \xrightarrow{kmNo_4/H^+}$ Product

Product formed in tghe above reaction is

1) $CH_3-\overset{O}{\overset{\|}{C}}-CH_3$ and $CH_3-\overset{O}{\overset{\|}{C}}-H$
2) $CH_3-\overset{O}{\overset{\|}{C}}-OH$ and $CH_3-\overset{O}{\overset{\|}{C}}-OH$
3) $CH_3-\overset{O}{\overset{\|}{C}}-CH_3$ and CO_2
4) None

79. Which of the following is incorrectly matched
1) $CH_3-C\equiv CH$ Methyl acetylene
2) $CH_3-CH_2-C\equiv CH$ Ethylacetylene
3) $CH_3-C\equiv C-CH_3$ Dionethylacetylene
4) $H-C\equiv -H$ Ethylene

80. Total number of alkyne of of 5th member Alkyne series is
1) 5 2) 4
3) 7 4) 8

81. Which of the following statement is incorrect about ethyne ?
1) in ethyne molecule there are three sigma bond in which two C – H sigma bond is formed by axial overlapping of sphybrid orbital and 1'S' orbital while sigma bond between C – C is formed by sp hybrid orbital of carbon
2) p orbital of one Pi bond is perpendicular to - p - orbital of other Pi bond
3) Hybridisation of C-atom is sp, bond angle is 180^O and Geometry is linear
4) pi-bonds are formed by colateral overlapping of two perpendicular p-orbitals

82. While synthesis of alkyne from vicinal dihalide in first step of dehydrogenation alcoholic KOH may be taken while in second step $NaNH_2$ is essentially used because
1) After first dehydrahalogenation vinyl halide is formed in which resonance between halogen and π-bond takes in which resonance between halogen and π-bond takes place so second dehydrahalogenation is easy
2) After first dehydrohalogenation formed vinyl halide (Alkenyl halide) has double bond character between 'C–X' bond due to resonance so second dehydrohalogenation is difficult so strong base like $NaNH_2$ is required
3) First dehydratiatogenation is difficult than second
4) in first dehydrohalogenation $NaNH_2$ can not be used

83. $H-C\equiv C-H \xrightarrow[DEL\ H_2SO_4]{HgSO_4} CH_3-\overset{O}{\overset{\|}{C}}-CH_3$ which statement is correct?
1) in this reaction enol is formed intermediate which tautomerises to corresponding carbonyl compound
2) Above reaction is addition of water
3) for above reaction heat is required for reaction
4) all of these

84. Linear polymeresation of acetylene gives polyacetylene which of the following statement is correct

1) The structure of polyacetylene

$$+(CH=CH-CH=CH-CH=CH)+_n$$

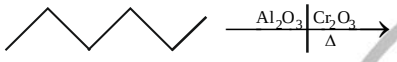
2) in polyacetylene conjugated sysgem is present so delocalisation of electron takes place so behaves as conductior of electricity

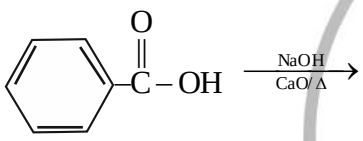
3) Thin film of polyacetylene can be used as electrode in battery. These films are good conductor, lighter and cheaper than the metal conductor

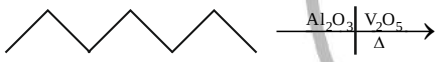
4) All of these

85. From which of the following reaction benzane is not formed as product :

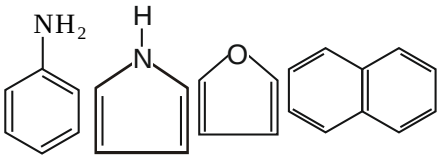
1) $3H-C\equiv C-H \xrightarrow[\text{873 k}]{\text{Red Hot fe tube}}$

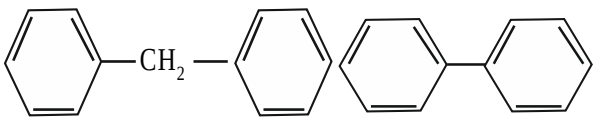
2) 

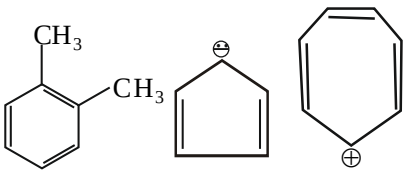
3) 

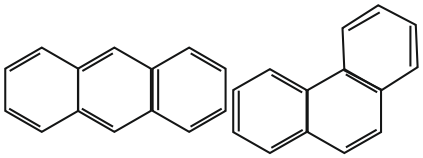
4) 

86. Among the following total number of benzenoid aromatic compounds are





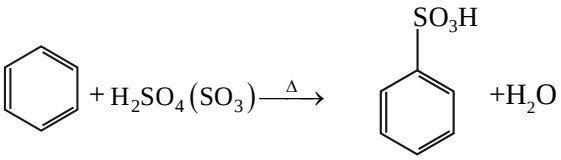


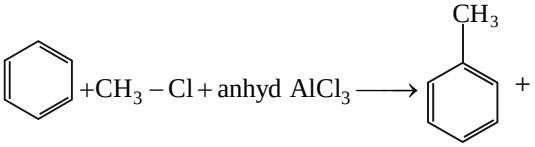


1) 9 2) 8

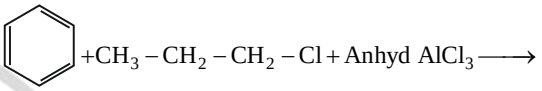
3) 7 4) 6

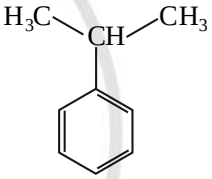
87. Which of the following reaction is not correct ?

1) 

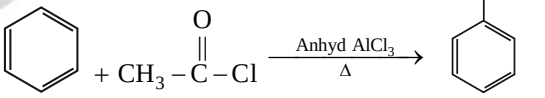
2) 

HCl

3) 



+ HCl

4) 

88. Which of the following statement is incorrect?

1) Benzene and polynuclar hydrocarbon containing more than two benzene ring fused together are carcinogenic

2) In complete compustion of organic material like tobacco, coal, petrolium produces cancer producing substances

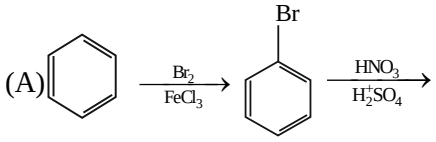
3) Cancer producing substances enter into human body and undergoes various biochemical reactions and finally damages DNA and cause cancer

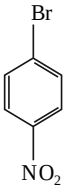
4) Halogens are deactivating and meta directing

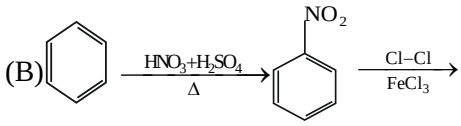
89. Match the coloum1 with coloum 2 correctlly

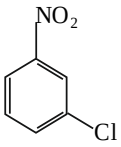
COLOUM 1 **COLOOUM 2**

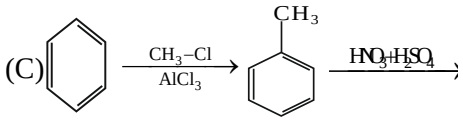
Reaction **major product**

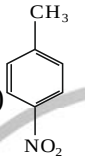
(A) 

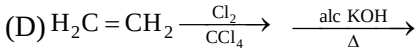
(P) 

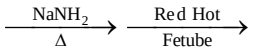
(B) 

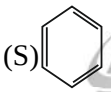
(Q) 

(C) 

(R) 

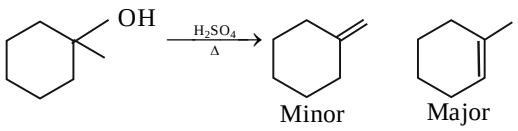
(D) 

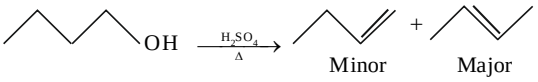


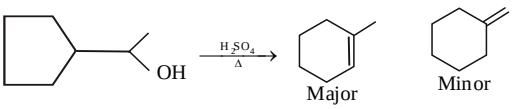
(S) 

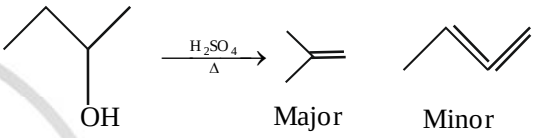
1) A–P, B–Q, C–R, D–S
2) A–P, B–R, C–Q, D–S
3) A–P, B–S, C–R, D–Q
4) A–P, B–Q, C–S, D–R

90. Which of the following reaction is incorrect?

1) 

2) 

3) 

4) 

Space For Rough Work

91. Mukesh was a chain smoker and ultimately got detected with emphysema which is a respiratory disorder. In his case:
1) The plasma membrane must be damaged
2) The respiratory muscles must be damaged
3) The alveolar walls must be damaged
4) The bronchioles must be damaged

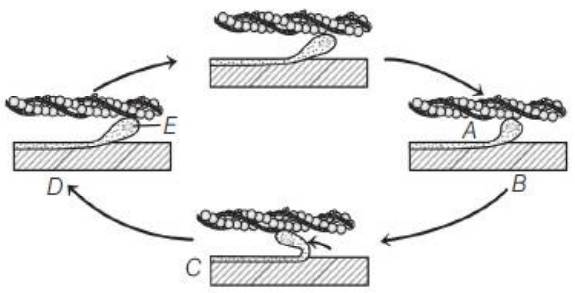
92. Most primitive chordates and ectoparasite on fishes belong to the class
1) Chondrichthyes. 2) Amphibia.
3) Cyclostomata. 4) Osteichthyes.

93. Match the columns.

Column I	Column II
(a) Uremia	1. Excess of protein level in urine
(b) Haematuria	2. Presence of high ketone bodies in urine
(c) Ketonuria	3. Presence of blood cells of urine
(d) Glycosuria	4. Presence of glucose in urine
(e) Proteinuria	5. Presence of excess urea in blood

1) a—2, b—1, c—3, d—4, e—5
2) a—3, b—5, c—2, d—l, e—4
3) a—5, b—3, c—4, d—2, e—1
4) a—5, b—3, c—2, d—4, e—1

94. Identify A to E in the given diagram.



1) A–Cross-bridge, B–Cross-bridge formation C–Breakage of cross-bridge, D–Sliding E–ATP
2) A–Cross-bridge, B–Cross-bridge formation, C–Sliding/rotation, D–Breaking of cross-bridge, E–ATP
3) A–Cross-bridge, B–Breaking of cross-bridge, C–Sliding/rotation, D–Cross-bridge formation, E–AMP
4) A–Cross-bridge, B–Cross-bridge formation, C–Sliding/rotation, D–ADP, E–Breaking of cross-bridge

95. When does carbaminohemoglobin dissociate to release CO_2 ?
1) When pCO_2 and pO_2 are equal
2) When pCO_2 is high and pO_2 is low
3) When pO_2 is high and pCO_2 is low
4) None of the above

96. Choose the incorrect pair.
1) Globular head of meromyosin – Active ATPase enzyme
2) Thin fibrous membrane holding – M-line thick filaments in A-band
3) Dark bands – Isotropic band
4) None of the above

97. Which of the following is not a fish ?
1) Devilfish 2) Cuttlefish
3) Jellyfish 4) All of these

98. Calcium is important in skeletal muscle contraction because it
1) detaches the myosin head from the actin filament
2) activates the myosin ATPase by binding to it
3) binds to troponin to remove the masking of active sites on actin for myosin
4) prevents the formation of bonds between the myosin cross-bridges and the actin filament

99. Which of the following is a chronic disorder in which alveolar walls are damaged ?
1) Flu 2) Silicosis
3) Pneumonia 4) Emphysema

100. The triangular bone scapula is found on
1) dorsal part of thorax between 2nd and 7th ribs
2) ventral part of thorax between 2nd and 7th ribs
3) medial part of thorax between 2nd and 7th ribs
4) None of the above

101. Match the column-I with column-II :

Column-I	Column-II
(a) Chelonia	(i) Alligator
(b) Rhynchocephalia	(ii) Chameleon
(c) Crocodilia	(iii) Sphenodon
(d) Squamata	(iv) Testudo

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

102. Underproduction of hormones by the adrenal cortex alters carbohydrate metabolism, causing acute weakness and fatigue leading to a disease called
1) Addison's disease 2) Hoshimoto's disease
3) Grave's disease 4) Gushing syndrome

103. Upon stimulation of skeletal muscles, calcium is immediately made available for binding to troponin from
1) blood
2) lymph
3) sarcoplasmic reticulum
4) bone

104. Match the column-I with column-II :

Column-I	Column-II
(a) Gnathostomata	(i) Air bladder
(b) Cyclostomata	(ii) Warm blooded animals
(c) Reptilia	(iii) Bears jaw
(d) Aves	(iv) Devoid of scales
(e) Osteichthyes	(v) Cold blooded animals

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

105. Out of 'X ' pairs of ribs in humans only 'Y ' pairs are true ribs. Select the option that correctly represents values of X and Y and provides their explanation.
1) X = 12, Y = 7 — True ribs are attached dorsally to vertebral column and ventrally to the sternum.
2) X = 12, Y = 5 — True ribs are attached dorsally to vertebral column and sternum on the two ends.
3) X = 24, Y = 7 — True ribs are dorsally attached to vertebral column, but are free on ventral side.
4) X = 24, Y = 12 — True ribs are dorsally attached to vertebral column, but are free on ventral side.

106. Identify the coelenterate.
1) Sea pen 2) Seahorse
3) Sea urchin 4) Sea cucumber

107. Select the correct option.
1) 11th and 12th pairs of ribs are connected to the sternum with the help of hyaline cartilage
2) Each rib is a flat thin bone and all the ribs are connected dorsally to the thoracic vertebrae and ventrally to the sternum
3) There are seven pairs of vertebrosternal, three pairs of vertebrochondral and two pairs of vertebral ribs
4) 8th, 9th and 10th pairs of ribs articulate directly with the sternum

108. Human kidneys can produce urine nearly ..... concentrated than the initial filtrate formed.
1) 1/5 times 2) 10 times
3) 5 times 4) 4 times

109. Which one is incorrectly matched ?
1) Heavy meromyosin — Globular head
2) Smooth muscle — Involuntary muscle
3) Red muscle — Myoglobin
4) Troponin — Fibrous protein

110. Given below are two statements :
Statement I : The skin of cartilaginous fishes is tough, containing minute placoid scales.
Statement II : In cartilaginous fish, teeth are modified placoid scales that are directed forward.
In the light of the above statements, choose the most appropriate answer from the options given below:
1) Both Statement I and Statement II are correct.
2) Statement I is correct but Statement II is incorrect.
3) Statement I is incorrect but Statement II is correct.
4) Both Statement I and Statement II are incorrect.

111. Which of the following diseases is an autoimmune disorder ?
1) Myasthenia gravis
2) Arthritis
3) Osteoporosis
4) Gout

112. Fill in the blanks:
a. Ascending limb of Henle's loop is ...(i)... to water whereas the descending limb is ...(ii)... to it.
b. Reabsorption of water from distal parts of the tubule is facilitated by hormone ...(iii)....
c. Dialysing fluid contain all the constituents as in the plasma except ...(iv)... .
d. A healthy adult human excrete (on an average) ...(v)... of urea/day.
1) (i)—Permeable, (ii)—Impermeable, (iii)—Aldosterone, (iv)—Proteins, (v)—12 to 16 mg
2) (i)—Impermeable, (ii)—Permeable, (iii)—ADH, (iv)—Proteins, (v)—12 to 16 mg
3) (i)—Permeable, (ii)—Impermeable, (iii)—ADH, (iv)—Nitrogenous wastes, (v)—25 to 30 gm
4) (i)—Impermeable, (ii)—Permeable, (iii)—ADH, (iv)—Nitrogenous wastes, (v)— 25 to 30 gm

113. What would be the cardiac output of a person having 72 heartbeats per minute and a stroke volume of 50 mL?
1) 360 mL 2) 3600 mL
3) 7200 mL 4) 5000 mL

114. The characteristics given below are associated with which class ?
I. Body is covered by dry and cornified skin, epidermal scales or scutes.
II. Do not have external ear openings.
III. Mode of locomotion is creeping or crawling.
IV. Some members shed their scales as skin cast.
V. Sexes are separate.
1) Aves 2) Amphibia
3) Reptilia 4) Osteichthyes

115. Actin and myosin filaments of muscles are also called
1) thick and thin filaments, respectively
2) thin and thick filaments, respectively
3) black and white filaments, respectively
4) white and black filaments, respectively

116. Mary is about to face an interview. But during the first five minutes before the interview she experiences sweating, increased rate of heart beat, respiration, etc. Which hormone is responsible for her restlessness ?
1) Estrogen and progesterone
2) Oxytocin and vasopressin
3) Adrenaline and noradrenaline
4) Insulin and glucagon.

117. ECG depicts the depolarisation and repolarisation processes during the cardiac cycle. In the ECG of a normal/healthy individual, one of the following waves is not represented.
1) Depolarisation of atria
2) Repolarisation of atria
3) Depolarisation of ventricles
4) Repolarisation of ventricles

118. Which of the following statement(s) is/are correct ?
(i) Maximum iodine is stored in thyroid gland.
(ii) Calcitonin is non-iodinised hormone secreted by parafollicular cells of thyroid gland.
(iii) Calcitonin (TCT) regulates the blood Ca^{+2} level.
(iv) TCT is hypocalcemic factor.
1) All of these 2) None of these
3) (i), (ii) and (iii) 4) Only (iv)

119. Which of the following cells does not exhibit phagocytic activity ?
1) Monocytes 2) Neutrophil
3) Basophil 4) Macrophage

120. Excretory organ in arthropods is
1) green gland.
2) green gland and Malpighian tubules.
3) nephridia.
4) Malpighian tubules.

121. Read the following statements.
I. Systemic aorta originates from left ventricle and distributes deoxygenated blood to lungs.
II. Pulmonary arch originates from right ventricle and carries oxygenated blood to various body parts except lungs.
III. Coronary veins return deoxygenated blood from heart wall to right auricle.
Which of the following statement(s) correctly identifies the function of blood vessels associated with human heart ?
1) Only III 2) I and II
3) I, II and III 4) I and III

122. Indicate whether the following statements are true (T) or false (F).
a. Micturition is carried out by a reflex.
b. ADH helps in water elimination, making the urine hypotonic.
c. Protein-free fluid is filtered from blood plasma into the Bowman's capsule.
d. Henle's loop plays on important role in concentrating the urine.
e. Glucose is actively reabsorbed in the proximal convoluted tubule.
1) a—T, b—F, c—T, d—T, e—T
2) a—T, b—F, c—T, d—F, e—T
3) a—F, b—T, c—F, d—T, e—F
4) a—T, b—F, c—F, d—T, e—T

123. The second heart sound (dupp) is associated with the closure of
1) tricuspid valve
2) semilunar valve
3) bicuspid valve
4) tricuspid and bicuspid valves

124. Path of water through a sponge is
1) Ostia → Spongocoel → Osculum
2) Osculum → Spongocoel → Ostia
3) Ostia → Spongocoel → Ostia
4) Spongocoel → Ostia → Osculum

125. Identify A, B and C in the given diagram.

1) A–Troponin, B–Tropomyosin, C– F-actin
2) A–Thick filament, B–Troponin, C–Tropomyosin
3) A–Myosin filament, B–Troponin, C–Tropomyosin
4) A–Meromyosin, B–Troponin, C–Tropomyosin

126. Which of the following statements is incorrect ?
(i) The pituitary gland is located in a bony cavity called sella tursica and is attached to hypothalamus by a stalk.
(ii) Adenohypophysis consists of two portions, pars distalis and pars intermedia.
(iii) Pars intermedia secretes only one hormone called melanocyte stimulating hormone (MSH).
(iv) Prolactin regulates the growth of the salivary glands and formation of saliva in them.
(v) LH and FSH stimulate gonadal activity and hence are called gonadotrophins.
1) Only (i) and (ii) 2) Only (iv)
3) Only (iv) and (v) 4) Only (v)

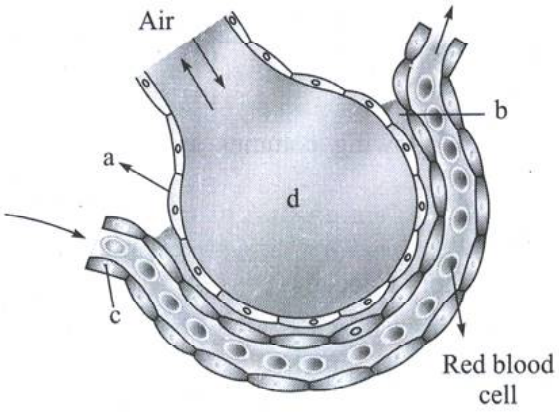
127. **Assertion 1) :** Muscle fibre is a syncytium.
Reason (R) : The sarcoplasm of muscle fibre contains numerous nuclei.
1) If both A and R are true and R is the correct explanation of A
2) If both A and R are true, but R is not the correct explanation of A
3) If A is true, but R is false
4) If A is false, but R is true

128. Read the following statements and select the incorrect ones.
A. Circulatory system in arthropods is of closed type.
B. Parapodia in annelids help in swimming.
C. Phylum Mollusca is the second largest animal phylum.
D. Aschelminthes are dioecious.
1) (A) and (C) only 2) (A) only
3) (C) only 4) (C) and (D) only

129. Arrange the following events in chronological order during the beginning of cardiac cycle.
I. SAnode generates action potential.
II. Atrial systole
III. Joint diastole
IV. Ventricular diastole
V. Ventricular systole
VI. Atrial diastole
Choose the correct option.
1) III $\rightarrow$ II $\rightarrow$ I $\rightarrow$ IV $\rightarrow$ V $\rightarrow$ VI
2) I $\rightarrow$ III $\rightarrow$ II $\rightarrow$ IV $\rightarrow$ V $\rightarrow$ VI
3) III $\rightarrow$ I $\rightarrow$ II $\rightarrow$ V $\rightarrow$ VI $\rightarrow$ IV
4) II $\rightarrow$ IV $\rightarrow$ I $\rightarrow$ III $\rightarrow$ V $\rightarrow$ VI

130. Which one can pass easily through cell membrane of target cells and bind to internal receptors
1) Thyroxine, insulin
2) Somatostatin, oxytocin
3) Insulin, glucagon
4) Cortisol, testosterone

131. Recognise the figure and find out the correct matching.



1) a—endothelium, b—basement membrane, c—alveolar wall, d—pulmonary cavity
2) a—mesothelium, b—basement substance, c—alveolar wall, d—alveolar cavity
3) a—alveolar wall, b—basement membrane, c—alveolar cavity, d—blood capillary
4) a—alveolar wall, b—basement substance, c—blood capillary, d—alveolar cavity

132. Which of the following statements are correct ?
I. Closure of atrioventricular valves produces 'dupp' sound.
II. Acardiac cycle consists of a systole and a diastole of both atria and ventricles.
III. The average number of the times, a normal heartbeats in one minute is 72.
IV. Change in the blood volume in all the chambers of the heart occurs during the cardiac cycle.
The option with correct statements is
1) I, II and III 2) II, III and IV
3) I, II and IV 4) I, III and IV

133. Select the correct options -
A. There are about 1-2 million islets of Langerhans in a normal *pancreas*.
B. Islets of Langerhans represent only 1-2% of the pancreatic tissue.
C. Insulin is secreted by a-cells of islets of Langerhans.
D. Insulin and glucagon are the amino acid hormones.
E. Glucose homeostasis in blood is maintained jointly by insulin and glucagon.
F. The testosterone is secreted by seminiferous tubules.
1) A, B and E 2) B, C and D
3) D, E and F 4) A, C and E

134. The pivot joint between atlas and axis is a type of
1) fibrous joint 2) cartilaginous joint
3) synovial joint 4) saddle joint

135. Which of the following muscular disorders is inherited?
1) Muscular dystrophy
2) Myasthenia gravis
3) Botulism
4) Tetany

136. Which of the following does not favour the formation of large quantities of dilute urine ?
1) Caffeine
2) Renin
3) Atrial-natriuretic factor
4) Alcohol

137. Neural signals through the sympathetic nerves (ANS) can increase the rate of heartbeat by
1) increasing heart output
2) increasing the strength of ventricular contraction
3) Both 1) and 2)
4) increasing the contraction of atrium

138. Given below are two statements: One is labelled as Assertion (A) and the other is labelled as Reason (R)
Assertion (A) : Ascending limb of the loop of Henle is impermeable to water and allows transport of electrolytes actively or passively.
Reason (R) : Dilution of filtrate takes place due to efflux of electrolytes in the medullary fluid.
In light of the above statements, choose the correct answer from the options given below :
1) (A) is True, (R) is False
2) (A) is False, (R) is True
3) Both (A) and (R) are True and (R) is the correct explanation of (A)
4) Both (A) and (R) are True but (R) is not the correct explanation of (A)

139. Find out the correct order of number of bones in the human skull (i.e. cranial bone, facial bone, hyoid bone and middle ear bone, respectively).
1) 14, 8, 1 and 3 2) 6, 8, 14 and 1
3) 14, 8, 3 and 1 4) 8, 14, 1 and 6

140. **Statement I :** At the tissue site where partial pressure of CO_2 is high due to catabolism, CO_2 diffuses into blood (RBCs and plasma) and forms HCO_3^- and H^+ while at the alveolar site where pCO_2 is low, the reaction proceeds in the opposite direction leading to the formation of CO-and H_2O.
Statement II : Oxygen dissociation curve is highly useful in studying the effect of factors like pCO_2, FT concentration, etc., on binding of O_2 with haemoglobin.
1) Only statement I is correct
2) Only statement II is correct
3) Both statements I and II are correct
4) Both statements I and II are incorrect

141. Choose the incorrect pair.
1) Facial bones – Made up of 14 skeletal elements
2) Sacral vertebrae – One and fused
3) Vertebrochondral ribs – False ribs (8th, 9th, 10th)
4) Hinge joint – Adjacent lumbar vertebrae

142. According to the accepted concept of hormone action, if receptor molecules are removed from target organs, then the target organ will
1) Continue to respond to the hormone without any difference
2) Not respond to the hormone
3) Continue to respond to the hormone but will require a higher concentration
4) Continue to respond to the hormone but in the opposite direction

143. When a neuron is in resting state, *i.e.*, not conducting any impulse the axonal membrane is
1) Comparatively more permeable of K^+ ions and nearly impermeable to Na^+ ions
2) Comparatively more permeable to Na^+ ions and nearly impermeable of K^+ ions
3) Equally permeable to both Na^+ and K^+ ions
4) Impermeable to both Na^+ and K^+ ions

144. Given below are two statements :
Statement I : Concentrated urine is formed due to counter current mechanism in nephron.
Statement II : Counter current mechanism helps to maintain osmotic gradient in the medullary interstitium.
In the light of the above statements, choose the most appropriate 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 are correct.
4) Both Statement I and Statement II are incorrect.

145. Identify the correct statement for human heart.
1) Volume of both the atria is greater than the volume of both the ventricles
2) Volume of both the ventricle is greater than the volume of both the atria
3) Interventricular septum separates the right and the left atria
4) Atrioventricular septum is not found in human heart

146. Partial pressure of oxygen in alveolar air is
1) 45 mm Hg 2) 125 mm Hg
3) 100 mm Hg 4) 104 mm Hg

147. Collecting duct also plays a role in the maintenance of pH and ionic balance of blood by the
1) Selective reabsorption of H^+ and K^+ ions
2) Selective secretion of H^+ and K^+ ions
3) Filtration of H^+ and K^+ ions
4) All of the above

148. **Statement I :** The cerebral hemispheres are connected by nerve tract known as corpus callosum.
Statement II : The brain stem consists of the medulla oblongata, pons and cerebrum.
In the light of the above statements, choose the most appropriate answer from the options given below :
1) Both Statement I and Statement II are correct.
2) Both Statement I and Statement II are incorrect.
3) Statement I is correct and Statement II is incorrect.
4) Statement I is incorrect and Statement II is correct.

149. Accessory excretory human organs is/are
1) Skin 2) Skin and liver
3) Skin and lungs 4) Skin, lungs and liver

150. Which wave of human heart out of PQRST is used for determining the heartbeat of an individual ?
1) P 2) QRS
3) T 4) RS

151. Gregarious pest is
1) *Aedes*. 2) *Anopheles*.
3) *Locust*. 4) *Culex*.

152. All the components of the nodal tissue are autoexcitable. Why does the SA node act as the normal pacemaker ?
1) SA node has the lowest rate of depolarisation
2) SA node is the only component to generate the threshold potential
3) Only SA node can convey the action potential to the other components
4) SA node has the highest rate of depolarisation

153. Different types of excretory structures and animals are given below. Match them appropriately and mark the correct answer from among those given below:

Excretory structure/organ	**Animals**
a. Protonephridia	i. Prawn
b. Nephridia	ii. Cockroach
c. Malpighian tubules	iii. Earthworm
d. Green gland or Antennal gland	iv. Flatworms

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

154. The binding of the neurotransmitter with the receptors opens ion channels allowing the entry to ions which can generatea new potential in the
1) Pre-synaptic membrane
2) Post-synaptic membrane
3) Synaptic cleft
4) Synaptic vesicles

155. _____is unsegmented, triploblastic and eucoelomate.
1) *Pheretima*. 2) *Laccifer*.
3) *Pila*. 4) All of these.

156. In the mechanism of action of a protein hormone, one of the second messengers is
1) Cyclic AMP 2) Insulin
3) T_3 4) Gastrin.

157. The correct decreasing order of toxicity of nitrogenous waste is
1) Ammonia > Urea > Uric acid
2) Uric acid > Ammonia > Urea
3) Urea > Uric acid > Ammonia
4) Ammonia > Uric acid > Urea

158. Thermostat of the body is found in
1) Skin 2) Thalamus
3) Hypothalamus 4) Pituitary

159. All are the functions of PTH except
1) PTH stimulates bone resorption/dissolution/ demineralisation
2) PTH decreases the blood calcium levels
3) PTH increases Ca^{2+} absorption from the digested food
4) PTH stimulates reabsorption of Ca^{2+} by the renal tubules

160. Hormones of the hypothalamus are produced by
1) Neurosecretory cells
2) Follicular cells
3) α - cells
4) β - cells

161. **Statement-I :** A synapse is formed by the membranes of a pre-synaptic neuron and a post -synaptic neuron, which may or may not be separated by a gap called synaptic cleft.
Statement-II : At electrical synapses, the membranes of pre and post synaptic neurons are in very close proximity.
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 are correct.
4) Both Statement I and Statement II are incorrect.

162. The parts of human brain that helps in regulation of sexual behaviour, expression of excitement, pleasure, rage, fear etc. are :
1) Corpus callosum and thalamus
2) Limbic system and hypothalamus
3) Corpora quadrigemina and hippocampus
4) Brain stem and epithalamus

163. Read the following statements.
i. 20-25 per cent of carbon monoxide is carried by haemoglobin as carbaminohaemoglobin.
ii. Respiratory rhythm is maintained by the respiratory centre in the medulla region of midbrain.
iii. A pneumotaxic centre is present in the medulla region of the brain.
iv. Inspiratory reserve volume includes tidal volume and inspiratory capacity.
1) All statements are incorrect
2) All statements are correct except iii
3) All statements are incorrect except i
4) All statements are incorrect except ii and iv

164. **Statement-I :** Electrical synapses are rare in our system.
Statement-II : Impulse transmission across an electrical synapse is slower than that across a chemical synapse.
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 are correct.
4) Both Statement I and Statement II are incorrect.

165. The diffusion membrane is made up of three major layers namely,
1) The thin squamous epithelium of alveoli, the endothelium of alveolar capillaries and the basement substance
2) The thin endothelium of alveoli, the squamous epithelium of alveolar capillaries and the basement membrane
3) The thin columnar epithelium of alveoli, the mesothelium of alveolar capillaries and the basement substance
4) The thin columnar epithelium of alveoli, the endothelium of alveolar capillaries and the basement membrane

166. Match the column-I with column-II :

	Column-I		Column-II
a.	Unipolar neuron	(i)	Retina of eye
b.	Bipolar neuron	(ii)	Autonomous neural system
c.	Multipolar neuron	(iii)	Cranial nerves
d.	Myelinated nerve	(iv)	Embryonic stage fibre
e.	Unmyelinated nerve	(v)	Cerebral cortex fibre

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

167. Bicarbonate ion is produced inside
1) Lymphocytes 2) Erythrocytes
3) Neutrophils 4) Basophils

168. Which of the following events is involved in the transfer of information across a chemical synapse ?
(i) Neurotransmitters bind to the post-synaptic receptors.
(ii) Calcium channels open in the pre-synaptic region.
(iii) Ion channels open in the post-synaptic membrane.
(iv) Direct flow of ions from one neuron to the next.
1) (i) and (ii) Only
2) (i), (ii) and (iii) only
3) (ii), (iii) and (iv) Only
4) All of these

169. Which of the following statements are correct regarding $Na^+ - K^+$ pump ?
(i) Needs energy (ATP) to work.
(ii) Expels $3Na^+$ for every $2K^+$ ions imported.
(iii) Works against a concentration gradient.
(iv) Maintains resting potential.
1) (i) and (iv) 2) (ii) and (iii)
3) (i) and (iii) 4) All of these

170. Which of the following statements is/are incorrect about the electrical synapse ?
(i) At electrical synapses, the membranes of pre and post synaptic neurons are in very close proximity.
(ii) Electrical current can flow directly from one neuron into the other across the synapses.
(iii) Transmission of an impulse across electrical synapses is very similar to impulse conduction along single axon.
(iv) Electrical synapses pass electrical signal between cells with the use of Ach.
(v) Electrical synapses are fast.
(vi) Electrical synapses are rare in our system.
1) (ii), (iv) and (v) 2) (i) and (iii)
3) (iv) only 4) (i), (v) and (vi)

171. **Statement I :** Chemosensitive area is situated adjacent to the rhythm centre which is highly sensitive to CO_2 and hydrogen ions.
Statement II : Receptors associated with aortic arch and carotid artery can recognise changes in O_2 and H^+ concentration and send necessary signals to the rhythm centre.
1) Only statement I is correct
2) Only statement II is correct
3) Both statements I and II are correct
4) Both statements I and II are incorrect

172. Match the column-I with column-II :

	Column-I		Column-II
a.	Electrical synapse	(i)	Membranes of pre-and post-synaptic neurons are separated by fluid filled space
b.	Chemical synapse	(ii)	Membranes of pre-and post-synaptic neurons are in very close proximity
c.	Receptors	(iii)	Chemicals filled in the vesicle of axon terminals
d.	Neurotransmitter	(iv)	Sites where neurotransmitters bind
		(v)	Adrenergic or cholinergic

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

173. Amygdala and hippocampus form a complex structure called the
1) Brain stem 2) Limbic system
3) Cranial meninges 4) Corpus callosum

174. Match the column-I with column-II :

	Column-I		Clumn-II
a.	Choanocytes	(i)	Leucosolenia
b.	Amphiblastula	(ii)	Ctenophora
c.	Parenchymula	(iii)	Porifera
d.	Comb plates	(iv)	Aschelminthes
e.	Round worms	(v)	Sycon

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

175. **Assertion :** Multipolar neurons have two or more axons and one dendrite.
Reason : Multipolar neurons are found usually in the cerebral cortex.
1) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
2) If both the assertion and the reason are true but the reason is not a correct explanation of the assertion.
3) If the assertion is true but the reason is false.
4) If the assertion is false but the reason is true.

176. Medulla oblongata contains centres which control
1) Respiration
2) Cardiovascular reflexes
3) Gastric secretions
4) All the above

177. Listed below are four respiratory capacities (a-d) and four jumbled respiratory volumes of a normal human adult.

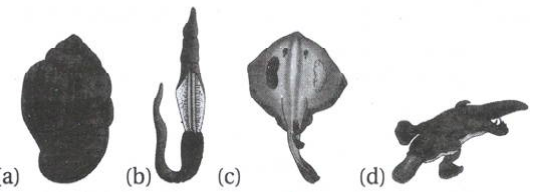
Respiratory capacities	**Respiratory volumes**
(a) Residual volume	2500 mL
(b) Vital capacity	3500 mL
(c) Inspiratory reserve	1200 mL volume
(d) Inspiratory capacity	4500 mL

Which one is a correct matching ?
1) (c) 1200 mL, (d) 2500 mL
2) (d) 3500 mL, (a) 1200 mL
3) (a) 4500 mL, (b) 3500 mL
4) (b) 2500 mL, (c) 4500 mL

178. The steroid responsible for balance of water and electrolytes in our body is
1) Insulin
2) Melatonin
3) Testosterone
4) Aldosterone.

179. Given below are two statements:
Statement I : In the nephron, the descending limb of loop of Henle is impermeable to water and permeable to electrolytes.
Statement II : The proximal convoluted tubule is lined by simple columnar brush border epithelium and increases the surface area for reabsorption.
In the light of the above statements, choose the correct answer from the options given below :
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.

180. Examine the figure given below and identify the option which represents **correct** grouping of the labelled figures (a), (b), (c) and (d)



	a	b	c	d
1)	Balanoglossus	Torpedo	Ornithorhychus	Pila
2)	Pila	Balanoglossus	Torpedo	Ornithorhychus
3)	Pila	Ornithorhychus	Torpedo	Balanoglossus
4)	Balanoglossus	Pila	Ornithorhychus	Torpedo

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