Form Number : _____ Paper Code : 1001CM302115067

ALLEN CAREER INSTITUTE KOTA (RAJASTHAN) path to success

CLASSROOM CONTACT PROGRAMME
(Academic Session : 2015 - 2016)

ENTHUSIAST COURSE

TARGET : PRE-MEDICAL - 2016

Test Type : MAJOR Test Pattern : AIPMT

TEST DATE : 04 - 01 - 2016

TEST SYLLABUS : 11th SYLLABUS

Important Instructions / महत्वपूर्ण निर्देश

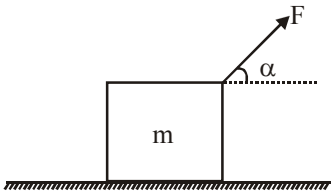
Do not open this Test Booklet until you are asked to do so
इस परीक्षा पुस्तिका को जब तक ना खोलें जब तक कहा न जाऐ।

1. A seat marked with Reg. No. will be allotted to each student. The student should ensure that he/she occupies the correct seat only. If any student is found to have occupied the seat of another student, both the students shall be removed from the examination and shall have to accept any other penalty imposed upon them.
   प्रत्येक विद्यार्थी का रजिस्ट्रेशन नं. के अनुसार स्थान नियत है तथा वे अपने नियत स्थान पर ही बैठें। यदि कोई विद्यार्थी किसी दूसरे विद्यार्थी के स्थान पर बैठा पाया गया तो दोनों विद्यार्थियों को परीक्षा कक्ष से बाहर कर दिया जाएगा और दोनों को कोई अन्य जुर्माना भी स्वीकार्य होगा।
2. Duration of Test is **3 Hours** and Questions Paper Contains **180** Questions. The Max. Marks are **720**.
   परीक्षा की अवधि 3 घण्टे है तथा प्रश्न पत्र में **180** प्रश्न हैं। अधिकतम अंक **720** हैं।
3. Student can not use log tables and calculators or any other material in the examination hall.
   विद्यार्थी परीक्षा कक्ष में लोग टेबल, केल्कूलेटर या किसी अन्य सामग्री का उपयोग नहीं कर सकता है।
4. Student must abide by the instructions issued during the examination, by the invigilators or the centre incharge.
   परीक्षा के समय विद्यार्थी को परिवीक्षक द्वारा दिये गये निर्देशों की पालना करना आवश्यक है।
5. Before attempting the question paper ensure that it contains all the pages and that no question is missing.
   प्रश्न पत्र हल करने से पहले विद्यार्थी आश्वस्त हो जाए कि इसमें सभी पेज संलग्न हैं अथवा नहीं।
6. Each correct answer carries 4 marks, while **1 mark will be deducted for every wrong answer.** Guessing of answer is harmful.
   प्रत्येक सही उत्तर के 4 अंक हैं। **प्रत्येक गलत उत्तर पर 1 अंक काट लिया जाएगा।** उत्तर को अनुमान से भरना हानिकारक हो सकता है।
7. A candidate has to write his / her answers in the OMR sheet by darkening the appropriate bubble with the help of **Blue / Black Ball Point Pen only** as the correct answer(s) of the question attempted.
   परीक्षार्थी को हल किये गये प्रश्न का उत्तर OMR उत्तर पुस्तिका में सही स्थान पर **केवल नीले / काले बॉल पॉइन्ट पेन** के द्वारा उचित गोले को गहरा करके देना है।
8. **Use of Pencil is strictly prohibited.**
   पेन्सिल का प्रयोग सर्वथा वर्जित है।

Note : In case of any Correction in the test paper, please mail to **dlpcorrections@allen.ac.in** within 2 days along with **Paper code** and Your **Form No**.
नोट: यदि इस प्रश्न पत्र में कोई Correction हो तो कृपया **Paper code** एवं आपके **Form No.** के साथ 2 दिन के अन्दर **dlpcorrections@allen.ac.in** पर mail करें।

Corporate Office : ALLEN CAREER INSTITUTE, "SANKALP", CP-6, Indra Vihar, Kota (Rajasthan)-324005
+91-744-5156100 info@allen.ac.in www.allen.ac.in

1. At the instant t = 0 a force F = kt (k is a constant) acts on a small body of mass m resting on a smooth horizontal surface. The time, when body leaves the surface is :-



(1) mg k sin α (2) $\frac{k\sin\alpha}{mg}$

(3) $\frac{mg\sin\alpha}{k}$ (4) $\frac{mg}{k\sin\alpha}$

2. A gas bubble from an explosion under water oscillates with a period proportional of $P^a d^b E^c$ where P is the static pressure, d is the density of water and E is the energy of explosion. Then a, b and c are :-

(1) $-\frac{5}{6},\frac{1}{2},\frac{1}{3}$ (2) $\frac{1}{2},-\frac{5}{6},\frac{1}{3}$

(3) $\frac{1}{3},\frac{1}{2},-\frac{5}{6}$ (4) 1, 1, 1

3. If r denotes the distance between the sun and the earth, then the angular momentum of the earth around the sun is proportional to :-

(1) r^3/r (2) r

(3) $\sqrt{r}$ (4) r^2

4. If three particles each of mass M are placed at the corners of an equilateral triangle of side a, the potential energy of the system and the work done if the side of the triangle is changed from a to 2a, are-

(1) $\frac{3GM}{a},\frac{3GM}{2a}$ (2) $-\frac{3GM^2}{a},\frac{3GM^2}{2a}$

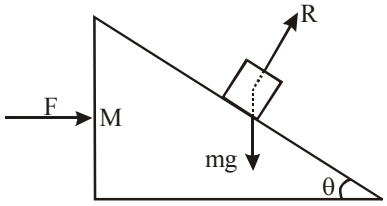
(3) $-\frac{3GM^2}{a},\frac{3GM^2}{4a^2}$ (4) $-\frac{3GM^2}{a},\frac{3GM}{2a}$

5. During an adiabatic process the pressure of the gas is found to be proportional to the cube of the absolute temperature. The ratio $C_P/C_V = \gamma$ for the gas is:

(1) 3/2 (2) 2

(3) 4/3 (4) 5/3

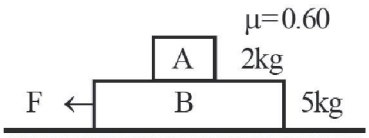
6. If there is no friction between the block (m) and wedge (M) the minimum force required (F) to keep the block stationary with respect to the wedge:-



(1) mg (2) (m + M)g sinθ

(3) (m + M)g cosθ (4) (m + M)g tan θ

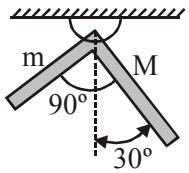
7. Two block (A) 2 kg and (B) 5 kg rest one over the other on a smooth horizontal plane. The cofficient of static and dynamic friction between (A) and (B) is the same and equal to 0.60. The maximum horizontal force that can be applied to (B) in order that both (A) and (B) do not have any relative motion : (g = 10 m/s^2)



(1) 42 N (2) 42 kgf

(3) 5.4 kgf (4) 1.2 N

8. Two uniform rods of equal length but different masses are rigidly joined to form an L-shaped body, which is then pivoted as shown in figure. If in equilibrium the body is in the shown configuration, ratio M/m will be :-



(1) 2 (2) 3

(3) $\sqrt{2}$ (4) $\sqrt{3}$

9. A body weighs 700 gm wt. on the surface of the earth. How much will it weigh on the surface of a planet whose mass is $\frac{1}{7}$ and radius half of that of the earth-

(1) 200 gm wt (2) 400 gm wt

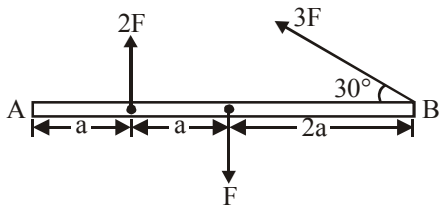
(3) 50 gm wt (4) 300 gm wt

10. A particle executes simple hormonic motion between x = –A and x = +A. It starts from x = 0 moves in +x-direction. The time taken for it to move from x = 0 to x = $\frac{A}{2}$ is T_1 and to move from $\frac{A}{2}$ to $\frac{A}{\sqrt{2}}$ is T_2, then

(1) $T_1 < T_2$ (2) $T_1 = T_2$

(3) $T_2 = 2T_1$ (4) $T_1 = 2T_2$

11. Three forces F, 2F and 3F act on a rod AB which is pivoted at A. The anticlockwise moment of forces F, 2F and 3F about the pivot are respectively :-



(1) + 2Fa; – 3Fa; + 6Fa

(2) –2Fa; + 2Fa + 6Fa

(3) – 2Fa; – 2Fa; – 6Fa

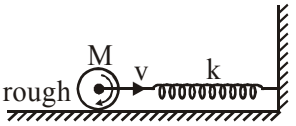
(4) +2Fa; – 2Fa; + 6Fa

12. A projectile is projected from ground with initial velocity $\vec{u} = u_0\hat{i} + v_0\hat{j}$. If acceleration due to gravity (g) is along the negative y-direction then find maximum displacement in x-direction.

(1) $\frac{u_0^2}{2g}$ (2) $\frac{2u_0v_0}{g}$

(3) $\frac{v_0^2}{2g}$ (4) $\frac{4u_0v_0}{g}$

13. A solid sphere rolls without slipping and presses a spring of spring constant k as shown in figure. Then, the maximum compression in the spring will be :-



(1) $v\sqrt{\frac{2M}{3k}}$ (2) $v\sqrt{\frac{2M}{5k}}$

(3) $v\sqrt{\frac{5k}{7M}}$ (4) $v\sqrt{\frac{7M}{5k}}$

14. Hot water cools from 60°C to 50°C in the first 10 minutes and to 42°C in the next 10 minutes. The temperature of the surroundings is :

(1) 30°C (2) 20°C (3) 15°C (4) 25°C

15. The volume of a gas is reduced adiabatically to $(1/4)^{th}$ of its volume at 27°C. If $\gamma = 1.4$ the new temperature is

(1) (300) $4^{0.4}$ K (2) (300) $2^{0.4}$ K

(3) 300 $(4)^{1.4}$ K (4) (300) $2^{1.4}$ K

16. A particle moves along x-axis in such a way that its co-ordinate x varies with time t according to the equation $x = (2 - 5t + 6t^2)$m. The initial velocity of the particle is :-

(1) –5 m/s (2) 6 m/s

(3) –3 m/s (4) 3 m/s

17. A physical quantity X is given by $X = \frac{2k^3\ell^2}{m\sqrt{n}}$ The percentage error in the measurements of k, ℓ, m and n are 1%, 2%, 3% and 4% respectively. The value of X is uncertain by

(1) 8 %

(2) 10 %

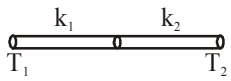
(3) 12 %

(4) None of the above

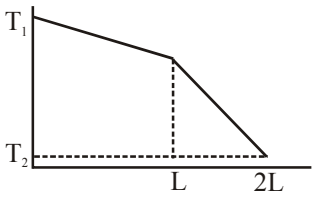
18. A wire elongates by ℓ mm when a load W is hanged from it. If the wire goes over a pulley and two weights W each are hung at the two ends, the elongation of the wire will be (in mm)

(1) Zero (2) $\ell/2$ (3) ℓ (4) 2ℓ

19. Two rods of same length and same area of cross section are joined.



Temperature of two ends are as shown in figure. As we move along the rod, temperature are as shown in following :

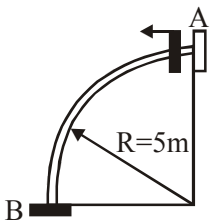


(1) $K_1 > K_2$ (2) $K_1 = K_2$
(3) $K_1 < K_2$ (4) None of these

20. The maximum velocity of a body undergoing S.H.M. is 0.2 m/s and its acceleration at 0.1 m from the mean position is 0.4 m/s^2. The amplitude of the S.H.M. is
(1) 0.25 m, (2) 0.3m
(3) 0.1 m (4) 1.05 m

21. A body of mass 1 kg crosses a point O with a velocity 60 ms^{-1}. A force of 10 N directed towards O begins to act on it. It will again cross O in :-
(1) 24 s (2) 12 s
(3) 6 s (4) will never return to O

22. A bead of mass $\frac{1}{2}$kg starts from rest from A to move in a vertical plane along a smooth fixed quarter ring of radius 5 m, under the action of a constant horizontal force F = 5 N as shown. The speed of bead as it reaches the point B is [Take g = 10 m/s^2] :-



(1) 14.14 m/s (2) 7.07 m/s
(3) 5 m/s (4) 25 m/s

23. The work done in doubling the radius of a soap bubble of radius 2cm will be (S.T. of soap solution = 30 dyne/cm)
(1) 9.043×10^3 erg (2) 4.521×10^3 erg
(3) 2.695×10^3 erg (4) 1.507×10^3 erg

24. Two thermometers X and Y have ice points marked at 15° and 25° and steam points marked as 75° and 125° respectively. When thermometer X measures the temperature of a bath as 60° on it, what would thermometer Y read when it is used to measure the temperature of the same bath ?
(1) 60° (2) 75° (3) 100° (4) 90°

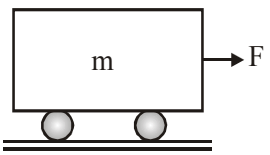
25. Two objects A and B of equal mass are suspended from two springs of spring constants k_A and k_B if the objects oscillate vertically in such a manner that their maximum kinetic energies are equal, then the ratio of amplitudes of A and B is

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

26. An aeroplane is flying in a horizontal direction with a velocity of 360 km hr^{-1} and at a height of 1960 m. When it is vertically above the point P on the ground a bomb is dropped from the aeroplane which strikes the ground at a point Q. What will be the time taken by the bomb to hit the ground:-

(1) 10 s (2) $10\sqrt{2}$ s
(3) 20 s (4) $20\sqrt{2}$ s

27. A car of mass m is accelerating on a level smooth road under the action of a single force F. The power delivered to the car is constant and equal to P. If the velocity of the car at an instant is v, then after travelling how much distance it becomes double?



(1) $\frac{7mv^3}{3P}$ (2) $\frac{4mv^3}{3P}$
(3) $\frac{mv^3}{P}$ (4) $\frac{18mv^3}{7P}$

28. Consider the following two statement A and B, and identify the correct choice in the given answers

A : The excess pressure inside a small liquid drop is more than that of a big drop.

B : As the aeroplane moves fast on the runway the pressure is more on the upper surface of its wings and less on the bottom surface of the wings.

(1) Both A and B are true

(2) A is true but B is false

(3) A is false but B is true

(4) Both A and B are false

29. We have half a bucket (6ℓ) of water at 20°C. If we want water at 40°C, how much steam at 100°C should be added to it ?

(1) 200 g (2) $\frac{2000}{9}$ g (3) 2 kg (4) $\frac{200}{3}$ g

30. A man can hear sounds in frequency range 120 Hz to 12020 Hz. only. He is vibrating a piano string having a tension of 240 N and mass of 3 gm. The string has a length of 8m. How many different frequencies can he hear ?

(1) 240 (2) 238

(3) 50 (4) 242

31. If the angular velocity of a merry-go-round is 60°/sec and you are 3.5 m from the centre of rotation, your linear velocity will be :-

(1) $\frac{22}{7}$ m/s (2) $\frac{7\pi}{3}$ m/s

(3) $\frac{7\pi}{6}$ m/s (4) π m/s

32. A particle moves in a circular path of radius R with an angular velocity $\omega = a - bt$ where a and b are positive constants and t is time. The magnitude of the acceleration of the particle after time $\frac{2a}{b}$ is :-

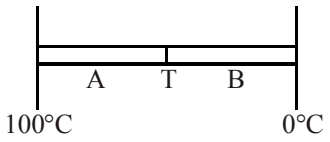
(1) $\frac{a}{R}$ (2) a^2R

(3) $R(a^2 + b)$ (4) $R\sqrt{a^4 + b^2}$

33. The height of water in a tank is H. The range of the liquid emerging out from a hole in the wall of the tank at a depth $\frac{3H}{4}$ form the upper surface of water, will be

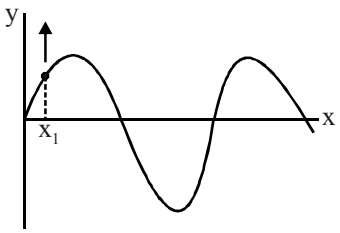
(1) H (2) $\frac{H}{2}$ (3) $\frac{3H}{2}$ (4) $\frac{\sqrt{3}H}{2}$

34. Two rods having same area are used to connect two reservoirs at temperature 100°C and 0°C as shown. The temperature of junction is 70°C. If the rods are now interchanged, the temperature of junction will be



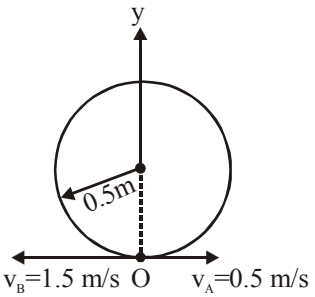
(1) 70°C (2) 30°C (3) 50°C (4) 40°C

35. The diagram shows snapshot of a wave at time t = 0. The particle at $x = x_1$ is moving upward at that instant. Direction of propagation of wave is



(1) +y (2) –y (3) + x (4) –x

36. Two particles A and B start at the origin O and travel in opposite directions along the circular path at constant speeds 0.5 m/s and 1.5 m/s, respectively. The time when they collide with each other :-



(1) 0.785 s (2) 1.57 s (3) 3.14 s (4) 6.28 s

37. A ball falling freely from a height of 4.9 m/s, hits a horizontal surface. If e = $\frac{3}{4}$, then the ball will hit the surface, second time after :-

(1) 1.0 s (2) 1.5 s

(3) 2.0 s (4) 3.0 s

38. The magnitudes of gravitational field at distances r_1 and r_2 from the centre of a uniform sphere of radius R and mass M are F_1 and F_2 respectively. Then-

(1) $\frac{F_1}{F_2}=\frac{r_1}{r_2}$ if $r_1 < R$ and $r_2 < R$

(2) $\frac{F_1}{F_2}=\frac{r_2^2}{r_1^2}$ if $r_1 < R$ and $r_2 < R$

(3) All the above

(4) None of the above

39. A Carnot engine operating between temperatures T_1 and T_2 has efficiency $\frac{1}{6}$. When T_2 is lowered by 60 K ; its efficiency increases to $\frac{1}{3}$. Then T_1 and T_2 are respectively :-

(1) 360 K and 300 K

(2) 372 K and 330 K

(3) 330 K and 268 K

(4) 310 K and 248 K

40. A motorcyclist is approaching a large wall with a velocity of 90 km/hr. A car is chasing him with a velocity of 108 km/hr. If the car sounds a horn at 30 Hz, beat frequency heard by motorcyclist is ____ Hz. Take velocity of sound = 330 m/s.

(1) 8.55 Hz (2) 7.05 Hz

(3) 5 Hz (4) 3.45 Hz

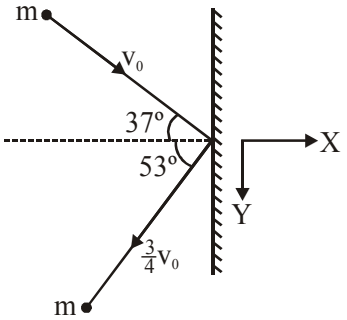
41. A particle moves in space according to equation $\vec{r}=(\sin t\,\hat{i}+\cos t\,\hat{j}+t\,\hat{k})m$.

Find time 't' when position vector and acceleration vector are perpendicular to each other :-

(1) 1 (2) $\frac{\pi}{4}$

(3) always (4) never

42. A ball of mass m moving with velocity v_0 collides a wall as shown in figure. After impact it rebounds with a velocity $\frac{3}{4}v_0$. The impulse acting on ball during impact is :-



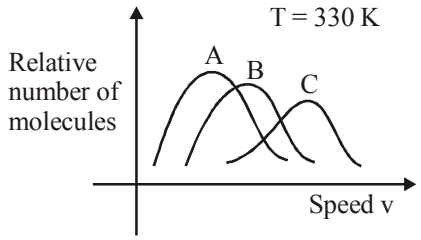
(1) $-\frac{m}{2}v_0\hat{j}$ (2) $-\frac{3}{4}mv_0\hat{i}$

(3) $-\frac{5}{4}mv_0\hat{i}$ (4) None of these

43. A skylab of mass m kg is first launched from the surface of the earth in a circular orbit of radius 2R (from the centre of the earth) and then it is shifted from this circular orbit to another circular orbit of radius 3R. The minimum energy required to shift the lab from first orbit to the second orbit are-

(1) $\frac{mgR}{6}$ (2) $\frac{mgR}{12}$ (3) mgR (4) mgR

44. Maxwell distribution function is shown in figure for different gases, which of the following is correct matching?



(1) A → Ne, B → O_2, C → He

(2) A → Ne, B → He, C → O_2

(3) A → O_2, B → He, C → Ne

(4) A → O_2, B → Ne, C → He

45. Two waves represented by

$y_1 = 10 \sin (2000\pi t + 2x)$

and $y_2=10\sin\left(2000\pi t+2x+\frac{\pi}{2}\right)$ are superposed at any point at a particular instant. The resultant amplitude is :

(1) 10 units (2) 20 units

(3) 14.1 units (4) zero

Use stop, look and go method in reading the question

46. A sample of ammonium phosphate, $(NH_4)_3 PO_4$, contains 6 moles of hydrogen atoms. The number moles of oxygen atoms in the sample is :-

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

47. At low pressures, van der Waals' equation is written as $\left(P+\frac{a}{V^2}\right)V=RT$. The compressibility factor will be :-

(1) $\left(1-\frac{a}{RTV}\right)$ (2) $\left(1-\frac{RTV}{a}\right)$

(3) $\left(1+\frac{a}{RTV}\right)$ (4) $\left(1+\frac{RTV}{a}\right)$

48. The elements X, Y and Z forms oxides which are acidic, basic and amphoteric respectively, then correct order of their electronegativities is :-

(1) X > Y > Z (2) Z > Y > X

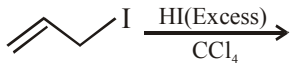
(3) X > Z > Y (4) Y > X > Z

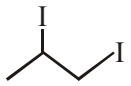
49. (i) $Al \xrightarrow{N_2} A$ (ii) $Al \xrightarrow{C} B$

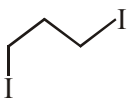
Here A & B on hydrolysis respectively gives :-

(1) NH_3, C_2H_2 (2) NO, CH_4

(3) NH_3, CH_4 (4) NO, C_2H_2

50.  :-

(1)  (2) 

(3)  (4) 

51. Rearrange the following (I to IV) in the order of increasing masses :-

(I) 0.5 mole of O_3

(II) 0.5 gm atoms of oxygen

(III) 3.011×10^{23} molecules of O_2

(IV) 5.6 litre of CO_2 at STP

(1) II < IV < III < I (2) II < I < IV < III

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

52. Consider the reaction at 300 K

$$C_6H_6(\ell)+\frac{15}{2}O_2(g)\rightarrow 6\ CO_2(g)+3H_2O(\ell);$$

$\Delta H = -3271$ kJ

What is ΔU for the combustion of 1.5 mole of benzene at 27°C?

(1) –3267.25 kJ (2) –4900.88 kJ

(3) –4906.5 kJ (4) –3274.75 kJ

53. Which of the following statement is correct for peroxide ion :-

A. has completely filled antibonding molecular orbitals

B. is diamagnetic

C. has bond order one

D. is isoelectronic with Neon

(1) B, C (2) A, B, D

(3) A, B, C (4) A, D

54. Which one is a pseudo alum :-

(1) $(NH_4)_2SO_4.Fe_2(SO_4)_3.24H_2O$

(2) $K_2SO_4.Cr_2(SO_4)_3.24H_2O$

(3) $MnSO_4.Al_2(SO_4)_3.24H_2O$

(4) None of these

55. $Ph-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_3 \xrightarrow[h\nu]{Cl_2(1\ mol)}$ Major product :-

(1) $Ph-CH_2-\underset{\displaystyle Cl}{\underset{|}{\overset{\displaystyle CH_3}{\overset{|}{C}}}}-CH_3$ (2) $Ph-\underset{\displaystyle Cl}{\underset{|}{\overset{\displaystyle CH_3}{\overset{|}{CH}}}}-CH-CH_3$

(3) $Ph-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-Cl$ (4) $Ph-\underset{\displaystyle Cl}{\underset{|}{\overset{\displaystyle CH_3}{\overset{|}{C}}}}-CH_2-CH_3$

56. The vapour density of a mixture containing NO_2 and N_2O_4 is 27.6. The mole fraction of N_2O_4 in the mixture is :-

(1) 0.1 (2) 0. 2 (3) 0.5 (4) 0.8

57. Consider the following reaction.

$$C_6H_6(\ell) + \frac{15}{2}O_2(g) \longrightarrow 6CO_2(g) + 3H_2O(g)$$

Signs of ΔH, ΔS and ΔG for the above reaction will be

(1) +, – , + (2) –, + , –

(3) – , + , + (4) +, +, –

58. Which one is polar :-

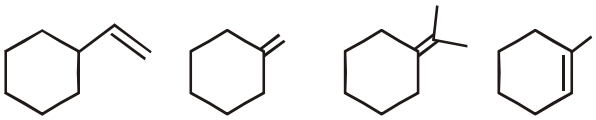
(1) I_3^{-1} (2) CO_3^{-2} (3) XeF_4 (4) PH_3

59. Catenation power order is Ge < Si < C then C–C, Si–Si and Ge–Ge bond energies are respectively (in KJ/mole) :-

(1) 170, 180, 350 (2) 180, 170, 350

(3) 350, 170, 180 (4) 350, 180, 170

60. Arrange the following alkenes in increasing order of their enthalpy of hydrogenation (–ΔH) :-



P **Q** **R** **S**

(1) R < S < Q < P (2) R < S < P < Q

(3) P < Q < R < S (4) P < Q < S < R

61. Equivalent weight of FeS_2 in the half reaction, $FeS_2 \longrightarrow Fe_2O_3 + SO_2$ is:-

(1) M/10 (2) M/11 (3) M/6 (4) M/1

62. Consider the following reaction

$$C(s) + O_2(g) \longrightarrow CO_2(g) + x\ kJ$$

$$CO(g) + \frac{1}{2}O_2(g) \longrightarrow CO_2(g) + y\ kJ$$

The heat of formation of CO(g) is :

(1) –(x + y)kJ/mol (2) (x – y)kJ/mol

(3) (y – x)kJ/mol (4) None of these

63. Correct increasing order of number of σ & π bonds in following structures are :-

I. $H_2S_2O_6$ II. H_2SO_3 III. H_2SO_5

(1) I, II, III (2) II, III, I

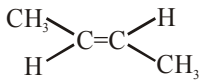
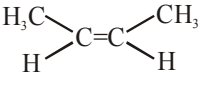
(3) II, I, III (4) I, III, II

64. In which compound peroxide bond is present :-

(1) Pb_2O_3 (2) SiO_2 (3) BaO_2 (4) PbO_2

65. $CH_3–C\equiv C–CH_3 \xrightarrow[CH_3COOH]{BH_3,\ THF}$ Major product :-

(1) $CH_3–CH_2–\overset{\overset{O}{\|}}{C}–CH_3$ (2) $CH_3–CH_2–CH_2–\overset{\overset{O}{\|}}{C}–H$

(3)  (4) 

66. The oxidation states of S-atoms in Caro's and Marshells' acids are :-

(1) + 6, + 6 (2) +6, +4

(3) +6, – 6 (4) + 4, + 6

67. Based on the values of B.E. given $\Delta_fH°$ of N_2H_4 (g) is :

Given : N – N =159 kJ mol^{-1}; H–H = 436 kJ mol^{-1}

N ≡ N = 941 kJ mol^{-1} ; N–H = 398 kJ mol^{-1}

(1) 711 kJ mol^{-1} (2) 62 kJ mol^{-1}

(3) –98 kJ mol^{-1} (4) –711 kJ mol^{-1}

68. Hydrogen peroxide can be used as :-

(1) an oxidant

(2) an reductant

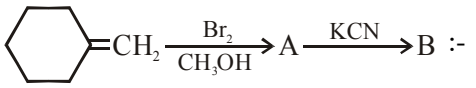
(3) an acid

(4) an oxidant, reductant & acid

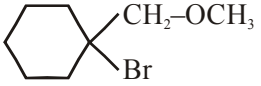
69. Which of the following is electrophilic in nature ?

(1) CO_2 (2) H_3O^+

(3) CH_4 (4) $\overset{\ominus}{A}lCl_4$

70.  :-

(1) A is 

(2) A is 

(3) B is 

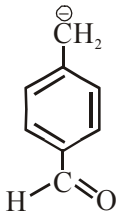
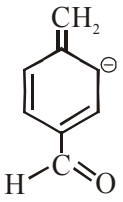
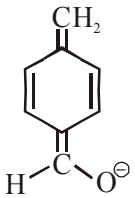
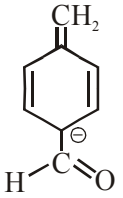
(4) B is 

71. If in Bohr's model, for unielectronic atom, time period of revolution is represented as $T_{n,Z}$ where n represents shell no. and Z represents atomic number then the value of $T_{1,2} : T_{2,1}$ will be :-
(1) 8 : 1 (2) 1 : 8
(3) 1: 1 (4) 1 : 32

72. For a reaction, the value of K_p increases with increase in temperature. The ΔH for the reaction would be :-
(1) positive (2) negative
(3) zero (4) cannot be predicted

73. Hydrogen gas is prepared by using C-coke and steam in presence of Fe_2O_3/Cr_2O_3 then process is known as :-
(1) Bosch process (2) Uyeno process
(3) Lane process (4) None of these

74. The most stable resonating structure is :-

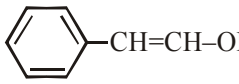
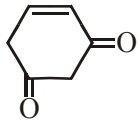
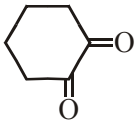
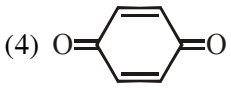
(1) 
(2) 
(3) 
(4) 

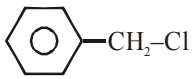
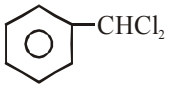
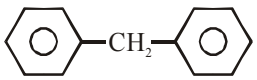
75. Which of the following reagent is used to distinguish propene and propyne :-
(1) Br_2, CCl_4 (2) Dil. $KMnO_4$ / $OH^{\ominus}$
(3) Conc. H_2SO_4 (4) $AgNO_3$ in NH_4OH

76. What is the shortest wavelength for Paschen series of Li^{2+} ion :-
(1) $\frac{R}{9}$ (2) $\frac{9}{R}$
(3) $\frac{1}{R}$ (4) $\frac{9R}{4}$

77. If 20 mL of 0.1 M NaOH is added to 30 mL of 0.2 M CH_3 COOH (pK_a = 4.74), the pH of the resulting solution is :-
(1) 4.44 (2) 9.56 (3) 8.96 (4) 9.26

78. Which gives green color in flame test :-
(1) $CaCl_2$ (2) $MgCl_2$
(3) $BaCl_2$ (4) NaCl

79. Tautomerism is not exhihited by :-
(1)  (2) 
(3)  (4) 

80.  $+ CH_2Cl_2 \xrightarrow{AlCl}$ A, 'A' is :-
(1)  (2) 
(3)  (4) 

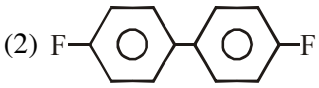
81. Which of the following set of quantum numbers belong to highest energy :-
(1) n = 4, ℓ = 0, m = 0, s = + $\frac{1}{2}$
(2) n = 2, ℓ = 0, m = 0, s = + $\frac{1}{2}$
(3) n = 3, ℓ = 1, m = 1, s = + $\frac{1}{2}$
(4) n = 3, ℓ = 2, m = 1, s = + $\frac{1}{2}$

82. What is the molar solubility of Ag_2CO_3 ($K_{sp} = 4\times10^{-13}$) in 0.1 M Na_2CO_3 solution :-
(1) 10^{-6} (2) 10^{-7}
(3) 2×10^{-6} (4) 2×10^{-7}

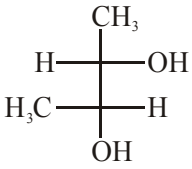
83. Correct order of density is :-
(1) Li < Na < K < Rb < Cs
(2) Li < K < Na < Rb < Cs
(3) Cs < Rb < K < Na < Li
(4) K < Li < Na < Rb < Cs

84. Which of the following would the optically active :-

(1) $CH_2=C=CH_2$

(2) 

(3) $CH_3–CH=C=CH–CH_3$

(4) 

85. Which of the following represent friedel-craft reaction :-

(1) $C_6H_6+C_2H_5–Cl \xrightarrow{AlCl_3} C_6H_5–C_2H_5+HCl$

(2) $C_6H_5–OH+HCl \xrightarrow{ZnCl_2} C_6H_5Cl+H_2$

(3) $C_6H_5–Cl+CH_3COCl \xrightarrow{AlCl_3} C_6H_5COCH_3+Cl_2$

(4) $C_2H_5–Br+Mg \xrightarrow{ether} C_2H_5MgBr$

86. The density of gas A is twice that to B at the same temperature the molecular weight of gas B is twice that of A. The ratio of pressure of gas A and B will be :-

(1) 1 : 6 (2) 1 : 1

(3) 4 : 1 (4) 1 : 4

87. Match List I with List II with correct code :-

List I			List II	
	$1E_1$	$1E_2$ $1E_3$		
(A)	1510	- -	(1)	H
(B)	495	6500 10200	(2)	Li
(C)	840	1630 13100	(3)	Be
(D)	600	2050 3100	(4)	B

(1E in $KJmol^{-1}$)

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

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

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

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

88. Mercury cathode can not be used for alkali metals in their fused state because :-

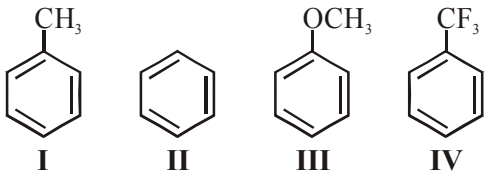
(1) Metal salt not decomposes

(2) Metal forms amalgam with Hg

(3) Metals are strong reducing agent

(4) None of these

89. Find the decreasing order of reactivity towards electrophilic substitution reaction :-

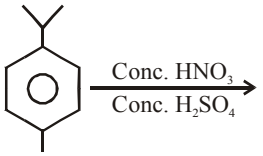


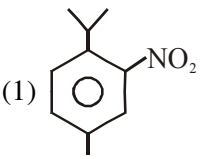
(1) II > I > III > IV

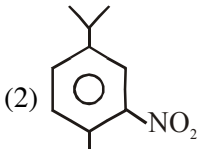
(2) III > I > II > IV

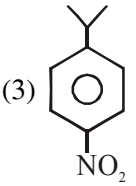
(3) III > I > IV > II

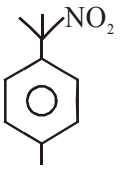
(4) II > I > IV > III

90.  Major product :-

(1) 

(2) 

(3) 

(4) 

91. Read the following statements :

A. Photoperiod affects reproduction in seasonal breeders, both plants and animals

B. Increase in body mass is considered as reproduction

C. Metabolism is a defining feature of all living organism with out exception

D. Self consciousness is a defining property of every living organism

Choose the correct statements

(1) A and B (2) B and C

(3) A and C (4) B and D

92. Choose the incorrect statement of following :-

(1) Dinoflagellates have stiff cellulose plates on the outer surface.

(2) Euglenoids have two flagella one lies longitudinally and the other transversely.

(3) Slime mould's spores are dispersed by air current.

(4) In diatoms the cell wall from two thin overlapping shells.

93. Which of the following is incorrect for *Neopilina*?

(1) Connecting link in between Annelida and Mollusca

(2) Segmented mollusc

(3) Unsegmented annelid

(4) Trochophore larva

94. Which of the following gives the most durable wood?

(1) *Shorea robusta* (2) *Cedrus deodara*

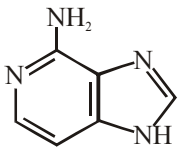
(3) *Dalbergia sissoo* (4) *Tectona grandis*

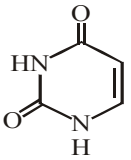
95. In animal cells other than ribosome, which is the cellular organelle which is membrane less?

(1) Golgi bodies (2) Sphaerosonc

(3) Centrioles (4) Mitochondria

96. Identify the molecules (a) and (b) shown below and select the right option :-

(a) 

(b) 

Option : -

	Molecule	Present in	Biomolecule
1	(b) Thymine	DNA	Pyrimidine
2	(a) Guanine	DNA	Purine
3	(a) Adenine	RNA and DNA	Purine
4	(b) Uracil	DNA	Purine

97. Which one of the following is the correct matching of the site of action on the given substrate, the enzyme acting upon it and the end product :

(1) Small intestine : proteins $\xrightarrow{\text{pepsin}}$ amino acids

(2) Stomach : fats $\xrightarrow{\text{lipase}}$ micelles

(3) Duodenum : tryglycerides $\xrightarrow{\text{trypsin}}$ monoglycerides

(4) Small intestine : starch $\xrightarrow{\alpha-\text{amylase}}$ disaccharide (maltose)

98. Coconut fruit develops from :-

(1) Monocarpellary Superior ovary

(2) Monocarpellary Inferior ovary

(3) Multicarpellary Superior ovary

(4) Multicarpellary Inferior ovary

99. During muscle contraction the following events do not take place :-

A Shortening of A-Band.

B I-band discoloration

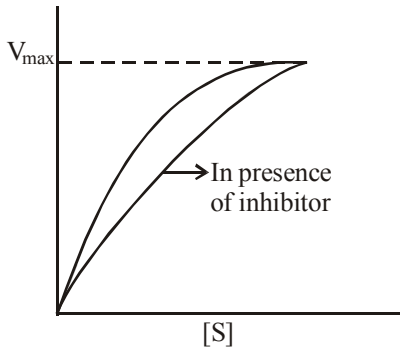
C Shortening of sarcomeres.

D Lengthening of I-Band.

(1) A & B (2) A, B & C

(3) A, B and D (4) A, C and D

100. Which of the following statement is **correct** regarding the given graph?



(1) Permanent binding of inhibitor with enzyme.
(2) Km remains the same
(3) It represents inhibition of succinate dehydrogenase by malonate.
(4) It represents inhibition of cytochrome oxidase by cyanide.

101. Both the words in a biological name when handwritten are underlined, or printed in italics to indicate :-
(1) They are endangered
(2) They are living
(3) Their latin origin
(4) Now they are extinct

102. Which statement is correct about pteridophytes :-
(1) Gametophyte is autotrophic, while sporophyte is parasite.
(2) Sporophyte is semiparasite and gametophyte is autotrophic.
(3) Both gametophyte and sporophyte are usually autotrophic
(4) Only sporophyte is autotrophic, while gametophyte is parasite.

103. In the given examples, how many animals are of class-Aves :
Corvus, Columba, Pteropus, Macropus, Calotes, Hemidactylus, Psittacula, Struthio and Macaca
(1) Three (2) Four
(3) Five (4) Two

104. The vascular cambium of roots resembles the vascular cambium of stem in
(1) Its origin from ground tissue
(2) Its wavy outline
(3) Its function
(4) All of these

105. Regarding differences between animal & plant cells, which of the following statement is correct?
(1) Animal cells contain centrioles & cell wall, plant cells do not
(2) Animal cells contain centrioles & plant cells contain plastids, cell wall and large central vacuole
(3) Animal cells do not contain centrioles plant cells contain
(4) Animal cells contain plastids, while plants cells do not contain

106. During processing of hn-RNA in eukaryotes after transcription, the following event is true :-
(1) In tailing, adeneylate residues are added at 5^{th} end in a template dependent manner
(2) The process of splicing represents the dominance of RNA world
(3) The split gene arrangements represents probably an advanced feature of genome
(4) In prokaryotes RNA polymerase II transcribe hn-RNA

107. Which of the following condition causes activation of RAAS pathway ?
(1) Low glomerular filteration rate
(2) Increased BCOP
(3) Excessive amino acid in glomerular filterate
(4) All of the above

108. Which of the following statements is **not correct**?
(1) Stamens in flowers of tulip are polyandrous
(2) Stamens in flowers of citrus are polyadelphous
(3) Ovary is half inferior in the flowers of guava
(4) Ovary is superior in the flowers of petunia

109. Read the following statements (A-D) :-
(A) A neural signal reaching the neural muscular junction releases adrenalin.
(B) Many monomeric proteins called meromyosin constitute one thin filament.
(C) A complex protein troponin is distributed at irregular intervals on the tropomyosin.
(D) During shortening of muscle, the I-bands get reduced.
How many of the above statements are true ?
(1) Four (2) One
(3) Three (4) Two

110. Identify the **correct** match from the **column-I, II** and **III**

Column-I		Column-II		Column-III	
1	Magnesium	a	Maintain structure of ribosome	i	Essential for formation of chlorophyll
2	Iron	b	Maintain anion-cation balance in cells	ii	Component of energy related compound
3	Sulphur	c	Constituent of ferredoxin	iii	Determine solute concentration in the cells
4	Chlorine	d	Constituent of coenzyme-A	iv	Component of methionine

Options :-

(1) 2–b–iii, 1–a–i, 3–d–ii, 4–c–iv

(2) 1–c–iv, 2–d–iii, 3–b–i, 4–a–ii

(3) 2–a–iii, 2–c–iv, 3–b–i, 4–d–ii

(4) 1–a–ii, 2–c–i, 3–d–iv, 4–b–iii

111. Choose the correct statement :-

(1) *E. coli* show amphitrichous nature

(2) *Rhodospirillum* is a example of purple sulphur bacteria

(3) *Acetobacter aceti* is a example of facultative anaerobic

(4) *Nitrosomonas* and *Nitrobacter* are example of nitrogen fixating bacteria.

112. Choose the incorrect match from following :-

(1) Phycomycetes - *Albugo*

(2) Ascomycetes - *Agaricus*

(3) Basidiomycetes - *Ustilago*

(4) Deuteromycetes - *Trichoderma*

113. The most unique mammalian characteristic is the presence of :

(1) Two pairs of limbs

(2) Mammary glands

(3) Four chamberd Heart

(4) Internal fertilisation

114. Which of the following shows abnormal secondary growth?

(1) *Zea* (2) *Triticum*

(3) Both of these (4) Date Palm

115. Which one of the following stage is correctly described with their event?

(1)	Anaphase I	The bivalent chromosomes align on the equatorial plate
(2)	Diakinesis	Beginning of dissolution of synaptonemal complex
(3)	Metaphase	Spindle fibres attach to kinetochores of chromosomes
(4)	Zygotene	Apperance of recombination nodule

116. Watson and Crick proposed certain features for double helical model of structure of DNA. Which of the following is not a feature of double helical structure of DNA ?

(1) Two chains are anti-parallel to each other.

(2) Nitrogen bases of two strands are complementary and paired through covalent bonds.

(3) Each DNA strand is made up of nucleotides.

(4) Nitrogen bases are present towards inner side of double helix.

117. Micturition is :-

(1) Removal of urea from blood

(2) Removal of uric acid

(3) Passing out urine

(4) Removal of faeces

118. Umbellate clusters type of inflorescence present in:

(1) Soyabean (2) Petunia

(3) China rose (4) Onion

119. Match the following :-

(i)	Fibrous Joint	(a)	Between two adjacent vertebrae
(ii)	Cartilagenous Joint	(b)	Between humerus and pectoral girdle
(iii)	Pivot Joint	(c)	Sutures
(iv)	Ball and Socket Joint	(d)	Between atlas and axis

(1) iv – (d), iii – (b), i – (c), ii – (a)

(2) i – (a), ii – (c), iii – (d), iv – (b)

(3) i – (c), ii – (a), iii – (d), iv – (b)

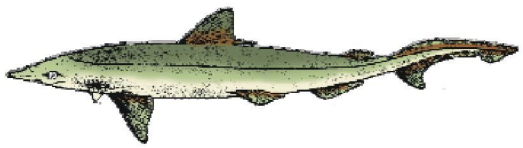
(4) i – (a), ii – (d), iii – (b), iv – (c)

120. Read the following four statements (A–D) :-
(A) *Azotobacter* and *Beijerinckia* differ from *Rhizobium* on the basis of type or nature of biological nitrogen fixation.
(B) Lightning and UV radiations are energy sources for reduction of atmospheric nitrogen to nitrogen oxides.
(C) *Frankia* and *Rhizobium* show similar type of nitrogen fixation but they differ in their host.
(D) Since the amino acids contain more nitrogen than the amides, they (amino acids) are transported via xylem.
How many of the above statements are wrong?
(1) Four (2) Three
(3) Two (4) One

121. Which of the following option is incorrect about bacterial pili.
(1) They are made up of pilin protein
(2) They are shorter than flagella
(3) They help in genetic recombination
(4) They play an important role in movement

122. Which option is not related with Gymnosperm:-
(1) Nitrogen fixing Cyanobacteria
(2) Mycorrhiza
(3) More than one Archegonia
(4) Independent free living gametophyte

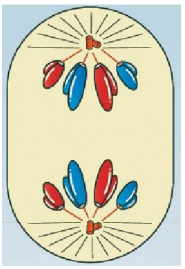
123. Read the following statements :
A. Mouth is located ventrally.
B. Notochord is persistent troughout life.
C. Gill slits are seperate and with operculum.
D. Air bladder are absent.



How many of the above statements are correct for given figure :
(1) Four (2) Three (3) Two (4) One

124. Which one of the following is not a blood clotting factor :-
(1) Ca^{++} (2) Prothrombin
(3) Heparin (4) PTA

125. Given below figure represent the stage of cell division. Read the following statements.



(i) Nucleolus, golgi complex and ER reform
(ii) Chromatids move to opposite pole.
(iii) Activity of recombinase enzyme.
(iv) Homlogous chromosomes separate while sister chromatids associated at their centromere
(v) Initiation of the assembly of mitotic spindle
How many of the above statement are not true with respect to above figure.
(1) Four (2) Three
(3) Five (4) Two

126. With respect to the polarity of coding strand :-
(1) Promoter is located towards 5'– end of structural gene.
(2) Terminater is located towards 5'– end of the structural gene.
(3) Promoter is present towards 3'– end of the structural gene.
(4) Terminator is present towards both sides of structural gene.

127. Read the following statements and mark the number of correct statements:-
(A) The neural system of all the animals is composed of highly specialised cells called nephron which can detect, receive and transmit different kinds of stimuli.
(B) The neural organization is very simple in lower invertebrates.
(C) The vertebrates have a highly developed neural system.
(D) Neural system of Hydra is composed of a network of neurons.
(1) One (2) Two
(3) Four (4) Three

128. If lamina of leaf is entire or when incised, the incisions do not touch the midrib, then leaf is said to be :-
(1) Simple leaf
(2) Pinnately compound leaf
(3) Palmately compound leaf
(4) Alternate leaf

129. Given statement is related to which process?
"The passing on of the electrons removed as part of the hydrogen atoms to molecular O_2 with simultaneous synthesis of ATP".
(1) Kreb's cycle (2) Glycolysis
(3) ETS of photosynthesis (4) ETS of respiration

130. Find the correct match :-

(1)	Auxin	Apical dominance
	Gibberellin	Flowering in pineapple
	Cytokinin	Phloem transport
	ABA	Promotes seed dormancy
(2)	Auxin	Parthenocarpy
	Gibberellin	Bolting
	Cytokinin	Richmond-lang effect
	ABA	Closure of stomata
(3)	Auxin	Malting
	Gibberellin	Herbicide
	Cytokinin	Flowering in mango
	ABA	Overcomes apical dominance
(4)	Auxin	Phloem transport
	Gibberellin	Closure of stomata
	Cytokinin	Parthenocarpy
	ABA	Bolting

131. Read the following pair :-
(A) Diatoms-haploid body
(B) Dinoflagellates-water bloom
(C) Slime mould -decomposer nature
(D) Euglenoids-some time behave like predator
(E) Protozoa-Unicellular prokaryotes
Choose the correct pair :-
(1) A, B, C, D (2) B, C, D, E
(3) B, C, D (4) A, C, D, E

132. Which characters are developed first time in the members of phylum plathyhelminthes :
A. Triploblastic B. Bilateral symmetry
C. Excretory structure D. Coelom
(1) Only A, B (2) Only B, C
(3) Only A, B and C (4) All A, B, C and D

133. Which of the following is correct match of animal with it's common name :
(1) Exocoetus - Flying frog
(2) Betta - Fighting fish
(3) Hyla - Tree lizard
(4) Trygon - dog fish

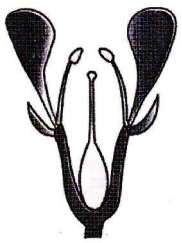
134. .....A..... which connect bone to bone is made up of .....B..... tissues.
(1) A-Tendon-B-WFCT
(2) A-Ligament-B-WFCT
(3) A-Tendon-B-YFCT
(4) A-Ligament-B-YFCT

135. In which chromosome centromer is situated slightly away from the middle of the chromosome resulting in to one shorter arm and one longer arm.
(1) Metacentric (2) Submetacentric
(3) Telocentric (4) Acrocentric

136. Which of the following hormone helps in secretion of HCl from stomach ?
(1) renin and CCK (2) gastrin
(3) secretin and CCK (4) somatomedin

137. Restoration of resting potential of the membrane at the site of excitation is achieved by :-
(1) Diffusion of K^+ outside the membrane
(2) Diffusion of Na^+ outside the membrane
(3) Diffusion of K^+ inside the membrane
(4) Diffusion of Na^+ inside the membrane

138. Represented below is the certain type of flower. Which one of the following option could be an example of this flower.



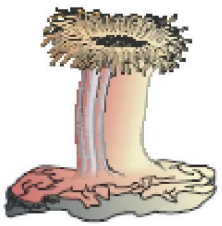
(1) Guava (2) Cucumber
(3) Rose (4) China rose

139. In glycolysis there is one step where NAD^+ is reduced, this is when :-
(1) PEP is converted into pyruvic acid.
(2) Fructose–1, 6–Bisphosphate is converted into 3–PGAL
(3) 3–PGAL is converted into 1,3–BisPGA
(4) 3–PGA is converted into 2–PGA

140. Long day plants show flowering when :-
(1) Concentration of P_r is high.
(2) Concentration of P_{fr} is high.
(3) Day length is longer than 15 hours.
(4) Day length shorter than critical photoperiod.

141. Which of the following is true for alternation of generation?
(1) The sporophyte, Undergoes syngamy to produce spores.
(2) The gametophyte, Undergoes syngamy to produce spores.
(3) The sporophyte, undergoes meiosis to produce spores.
(4) The gametophyte, undergoes meiosis to produce gametes.

142. Which of the following is correct match of animal with it is common name in given diagrame :-



(1) Sycon - Bath sponge
(2) Adamsia - Sea anemone
(3) Pennatula - Sea pen
(4) Mendrina - Brain coral

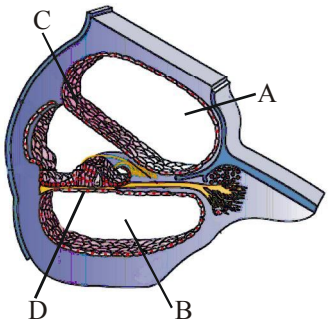
143. How many of the following statements are incorrect for Reptiles :
A. They have creeping or crowing mode of locomotion
B. Heart is usually four - chambered
C. Snakes and lizards shed their scales as skin cast
D. Fertilisation is internal
(1) Four (2) Three (3) Two (4) One

144. Matrix of connective tissue is secreted by :-
(1) Fribroblast (2) Mast cell
(3) 1 and 2 both (4) Mesenchymal cell

145. The product of meiosis have 5 pg of DNA and 10 chromosomes. Find the amount of DNA and number of chromosomes for its mother cell when it enters G_2 stage of cell cycle.
(1) 20 pg DNA, 20 chromosomes
(2) 10 pg DNA, 20 chromosomes
(3) 40 pg DNA, 10 chromosomes
(4) 20 pg DNA, 40 chromosomes

146. Which of the following vitamins are fat soluble?
(1) A, B, C, K (2) A, B, D, E
(3) A, D, E, K (4) A, D, C, K

147.

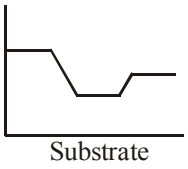


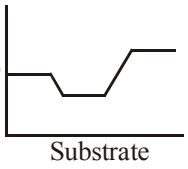
Identify A, B, C, D in the given figure :-

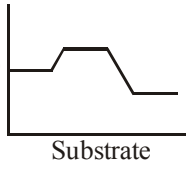
	A	B	C	D
(1)	Scala vestibuli	Scala tympani	Reissner's membrane	Basilar membrane
(2)	Scala tympani	Scala vestibuli	Basilar membrane	Reissner's membrane
(3)	Scala tympani	Scala vestibuli	Reissner's membrane	Basilar membrane
(4)	Scala vestibuli	Scala tympani	Basilar membrane	Reissner's membrane

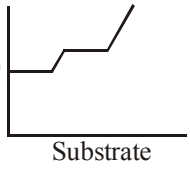
148. Read the following statements :-
(A) It is chronic disorder.
(B) Major cause of it is cigrette smoking.
(C) It is an allergy.
(D) Alveolar walls are damaged.
(E) Respiratory surface is decreased.
(F) It is due to inflammation of bronchi and bronchioles.
How many of above statements are correct about Emphysema disorder ?
(1) Two (2) Three
(3) Four (4) One

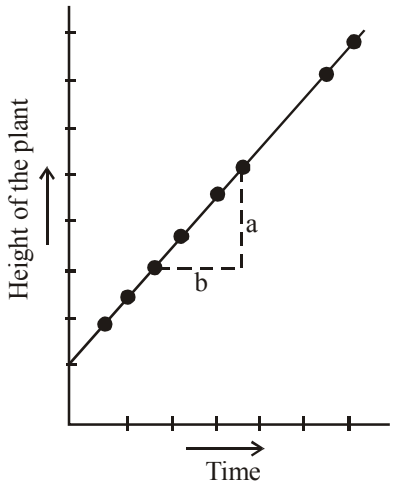
149. Which of the following graph correctly represents the variation in value of RQ when initially respiratory substrate was carbohydrate then fat and after that protein?

(1) 

(2) 

(3) 

(4) 

150. 

Which of the following statements are **correct** regarding the type of growth represented by the above diagram?

(A) It is observed during early stage of zygotic division.

(B) It represents root growth at tip.

(C) Number of dividing cells remain the same.

(D) Represented by expression $L_t = L_0 + rt$

(1) A and C (2) B, C and D

(3) A, B and D (4) A, B and C

151. A feature common in gametophyte and sporophyte of mosses and ferns is-

(1) Independent existance

(2) Photosynthetic nature

(3) Presence of vascular tissue

(4) Unbranched habit

152. In which option, animals are not of same phylum

(1) *Scypha*, *Spongilla* and *Euspongia*

(2) *Physalia*, *Adamsia* and *Meandrina*

(3) *Pennatula*, *Gorgonia* and *Pleurobranchia*

(4) *Planaria*, *Taenia* and *Fasciola*

153. The origin of cambium ring in a dicot root is

(1) Partly primary and partly secondary

(2) Only primary

(3) Mainly primary and partly secondary

(4) Only secondary

154. If coastal cartilage is replaced by bones then

(1) Volume of thoracis cage will not increased

(2) Volume of thoracic cage will not decreased

(3) Breathing will stop

(4) All the above statements are wrong

155. Match the following and select the **correct** answer:-

(a)	Cisternae	(i)	Condence form of chromatin
(b)	Cristae	(ii)	Thylakoids
(c)	Chromosome	(iii)	Infolding in mitochondria
(d)	Chlorophyll	(iv)	Disc-shaped sacs in golgi appratus

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

156. Glisson's capsule is associated with :

(1) liver (2) pancreas (3) lungs (4) kidney

157. Which of the following statement is false :-

(1) Androgen play a stimulatory role in the process of spermatogenesis.

(2) Androgens act on the central neural system and influence the male sexual behaviour.

(3) Androgens stimulate high pitch of voice in male.

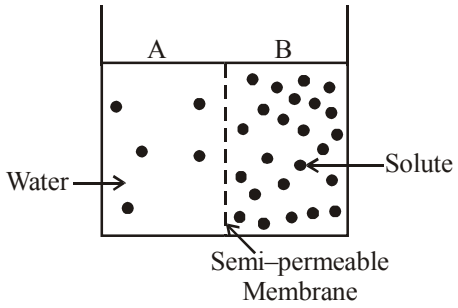
(4) Androgens produce anabolic effect on protein.

158. Which of the following stage in cardiac cycle is of longest duration ?

(1) Atrial systole (2) Ventricle diastole

(3) Joint diastole (4) Atrial diastole

159.



How many statements are **correct** about the above given diagram?

(A) Water potential of chamber A is positive while that of B is negative.

(B) Level of solution must increase in chamber–B

(C) Diffusion pressure of chamber B is lower than chamber A.

(D) Addition of solute in chamber A may attain the equilibrium between two chambers.

(1) Four (2) Three

(3) Two (4) One

160. Which one of the following option contain all the **correct** informations?

	Calvin cycle	C_4 pathway	Photorespiration
(1)	4 ATP and 4NADPH.4H$^+$ required for production of 4 molecules of 3-PGAL	Co-operative photosynthesis	Glycolate produced in peroxisome
(2)	Universal pathway for production of glucose in all the photosynthetic plants	Chloroplast dimorphism	75% carbon saved
(3)	2ATP and 2NADPH.2H$^+$ required during carboxylation stage	C_4 acid transported from bundle sheath cells to mesophyll cells	Major site is chloroplast
(4)	Reduction of NADP$^+$ occur	CO_2 concentrating mechanism	No synthesis of sugar

161. Which one of the following is not a ecological importance of moss plants :-

(1) Some mosses provide food for herbaceous mammals birds and other animals

(2) Very high water holding capacity of mosses is useful for trans-shipment of living materials

(3) Mosses along with lichens are the pioneering organism to colonise rocks

(4) Mosses form dense mats on the soil and reduce the impact of falling rain

162. Which of the following statements is correct for Phylum Mollusca :

(1) The body is covered by chitinous exoskeleton

(2) They have jointed appendages

(3) All marine

(4) Male and female are seperate

163. Companion cells are absent in

(1) Halophytes (2) Xerophytes

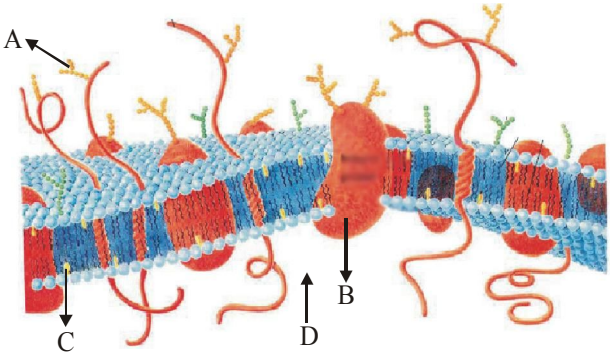
(3) Monocots (4) Gymnosperms

164. Which type of development is found in cockroach ?

(1) Hemimetabolus (2) Paurometabolus

(3) Ametabolus (4) Holometabolus

165. Identify the components labelled A,B,C and D in the diagram below from the list (i) to (viii) :-



Components :-

(i) Sugar (ii) Cytoplasm

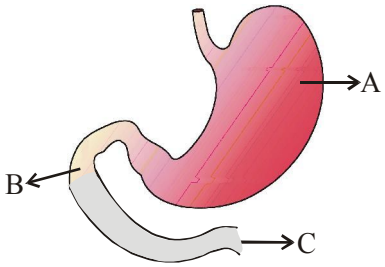
(iii) Cellulose (iv) Cholesterol

(v) Nucleoplasm (vi) Peripheral Protein

(vii) Integral Protein (viii) Ribosome

	A	B	C	D
(1)	(i)	(vi)	(iii)	(ii)
(2)	(iii)	(vii)	(iv)	(v)
(3)	(i)	(vii)	(iv)	(ii)
(4)	(i)	(vii)	(viii)	(ii)

166. Identify the substance absorbed which is marked as A, B and C in following diagram :-



(1) A-Alcohol, B-Bile salt, C-Fat

(2) A-Alcohol, B-Iron, C-Glucose

(3) A-Iron, B-Bile salt, C-Glucose

(4) A-Glucose, B-Alcohol, C-Iron

167. Which of the following option gives correct categorisation of hormones according to their chemical nature :-

	A Steroid	B Amino-acid derivative	C Iodothyronines
(1)	Epinephrine, nor-epinephrine	Estradiol, pogesterone	Thyroxine
(2)	Estradiol, pogesterone	Epinephrine, nor-epinephrine	Thyroxine
(3)	Estradiol, epinephrine	Nor-epinephrine, pogesterone	Thyroxine
(4)	Estradiol, pogesterone	Thyroxine	Epinephrine, nor-epinephrine

168. Read the following four statements (a-d) and select the option which includes all correct ones only :-

(a) Exchange of O_2 and CO_2 at alveoli and tissue occur by active transport.

(b) Long exposure to industrial dust leads to inflammation leading to fibrosis and thus causing serious lung damage.

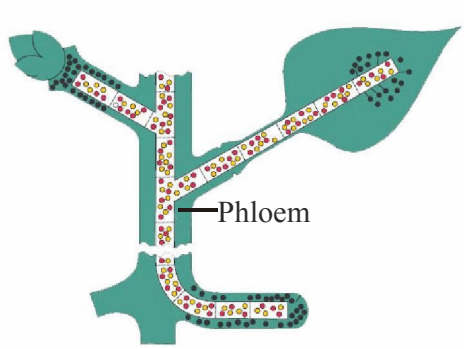
(c) EICM and IICM are muscles actively involved in normal and forced breathing respectively.

(d) Spirometer is unable to find out the functional residual capacity and total lung capacity.

(1) b, c and d (2) b and d

(3) a, b and d (4) a, b, c and d

169. Which of the following is a wrong statement regarding the figure given below?



(1) As hydrostatic pressure in the phloem sive tube increases, mass flow begins.

(2) Loss of solute at the sink end produces a high water potential in the phloem.

(3) At the source end water moves from phloem to xylem.

(4) A disaccharide enters sieve tube cells by active transport in leaves.

170. Which of the following types of plants carry out 2 times of CO_2 fixation by 2 different enzymes in the same cell?

(1) C_3 plants (2) C_4 plants

(3) CAM plants (4) Both (1) and (3)

171. Read the following term carefully.

Cilia, Flagella, Zygote, Water bloom, Phtosynthesis, Pellicle, Peptidoglycan wall, Nitrogen fixation ability, Multicellular, heterocyst, decomposer, pseudopodia.

How many term are not related with kingdom protista :-

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

172. *Apis*, *Bombyx* and *Laccifer* are :-

(1) Economical important insects

(2) Vectors

(3) Living fossils

(4) Gregarious pest

173. When rhytidome is removed, which vital part of the plant is removed?

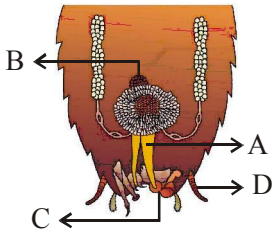
(1) Phloem

(2) Phloem and cambium

(3) Cortex and phloem

(4) None of these

174. Given below the diagram of male reproductive system of cockroach in which various parts are labelled by A, B, C and D. Select the option in which labelled part is correctly identified along with their property or function ?



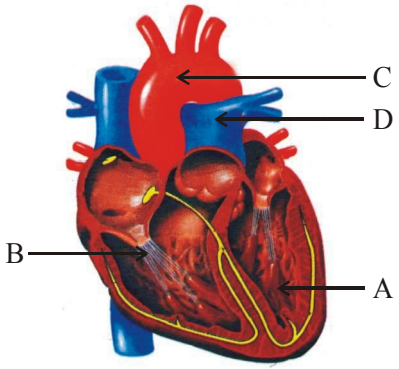
(1) A = Ejaculatory duct and it secretes the inner layer of wall of spermatophore.
(2) B = Phellic gland and it secretes the outer most layer of the wall of spermatophore.
(3) C = Right phallomere and ejaculatory duct opens on it.
(4) D = Anal style and are helps in receiving the sound waves.

175. Consider the following four statements (a-d) and select the option which includes all the correct ones only :-
(a) The codon is read in mRNA in a contiguous fashion.
(b) UAG codon has dual function in protein synthesis.
(c) In actual structure, the tRNA is a compact molecule which looks like inverted 'L'.
(d) 28's' rRNA in bacteria behave as ribozyme.
(1) b, c and d (2) a, b and d
(3) a, c and d (4) a and c

176. Secretin and cholecystokinin are digestive hormones. They are secreted by :
(1) Oesophagus (2) Ileum
(3) Duodenum (4) Stomach

177. **Incorrect** statement is :-
(1) Stems may be modify to perform different functions.
(2) Leaves originate from shoot apical meristems and are arranged in acropetal order
(3) If more than two leaves arise at a node and form a whorl, it is called palmately compound leaves as in *Alstonia*
(4) There may be a variation in the length of stamen filaments within a flower, as in *Salvia* and mustard

178.



In the given diagram of human heart, identify A, B, C and D and choose option accordingly. Which show correct correlation :-
(1) A – Left Ventricle – Its systole pushes the blood in pulmonary arteries.
(2) B – Chordae tendinae – Collagenous cords which prevent prolapse of AV valves into auricles during ventricular systole.
(3) C – Aorta – Carry blood to lungs for oxygenation.
(4) D – Pulmonary veins – Carry oxygenated blood from heart to lungs.

179. Which of the following characteristics/ significances of imbibition shows that imbibition is a type of diffusion?
(1) In imbibition, movement of water occurs according to water potential gradient.
(2) Affinity between adsorbent and the liquid is a pre-requisite for imbibition.
(3) Imbibition pressure help seedlings to emerge out of the soil into the open.
(4) Imbibition cause increase in volume of the solids.

180. During light reaction of photosynthesis which of the following phenomena is observed during both cyclic as well as non-cyclic photophosphorylation?
(1) Release of O_2
(2) Synthesis of reducing power.
(3) Involvement of both PS–I and PS–II.
(4) Chemiosmotic mechanism of ATP formation.

SPACE FOR ROUGH WORK