NUCLEUM CAREER INSTITUTE
The core of knowledge

# CODE - A

Nucleum NEET Test Series 2022,Test 07

## REMEMBER

## "NO ONE IS YOU AND THAT IS YOUR POWER"

### Important Instructions:

1. The Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars carefully with blue/black ballpoint pen only. Each subject contains two sections Section A contains 35 question which are all mandatory and Section B contains 15 question in which only 10 questions are to be attempted.
2. The test is of 3 hours and 20 minutes duration and Test Booklet contains 200 questions. Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total score. The maximum marks are 720.
3. Use Blue/Black Ballpoint Pen Only for writing particulars on this page/marking responses.
4. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
5. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator before leaving the Hall. The candidates are allowed to take away Test Booklet only with them.
6. The CODE for this Booklet is A for English Medium and B for Hindi Medium. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet & Answer Sheet.
7. The candidate should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Roll no. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
8. Use of white fluid for correction is not permissible on the Answer Sheet.
9. Each candidate must show on demand his/her Admit Card to the Invigilator.
10. No candidate, without special permission of the Superintendent or Invigilator, would leave his/her seat.
11. The candidates should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty And sign the Attendance Sheet. Cases where a candidate has not signed the Attendance Sheet will be deemed not to have Handed over the Answer Sheet & dealt with as an unfair means case.
12. Use of Electronic/Manual Calculator is prohibited.
13. The candidates are governed by Rules & Regulations of the Institute with regard to their conduct in the Examination Hall, All cases of unfair means will be dealt with as per Rules and Regulations of the Institute.
14. No part of the Test Booklet & Answer Sheet shall be detached under any circumstances.
15. The Candidates will write the correct Test Booklet Code as given in the Test Booklet/Answer Sheet in the Attendance Sheet.

Name of the Candidate (in Capitals) :_____

Roll Number (in Figures) : _____

(in Words ) :_____

Centre of Examination (in Capitals) :_____

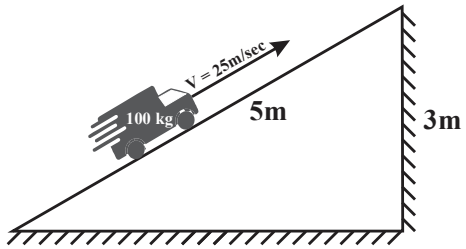
Candidate's Signature :_____ Invigilator's Signature:_____

| SUBJECT | TOPIC |
| --- | --- |
| PHYSICS | Work Power & Energy |
| CHEMISTRY | Chemical Equilibrium , ionic equilibrium |
| BIOLOGY | Human reproduction,<br>Molecular basis of inheritance |

# PHYSICS

## SECTION - A

**1.** A truck is moving up the incline plane with constant speed 25m/sec if mass of the truck is 100 kg what is the power of truck engine




(1) 12 kw (2) 20 kw

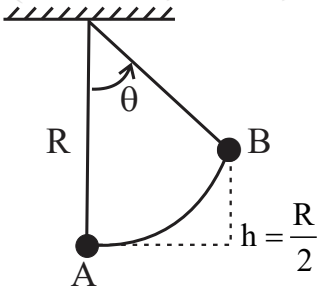
(3) 15 kw (4) 10 kw

**2.** The force required to just move a body up an inclined plane is double the force required to just prevent the body from sliding down the plane. The coefficient of friction is μ. The inclination θ of the plane is –

(1) $\tan^{-1}(\mu)$ (2) $\tan^{-1}(\mu/2)$

(3) $\tan^{-1}(2\mu)$ (4) $\tan^{-1}(3\mu)$

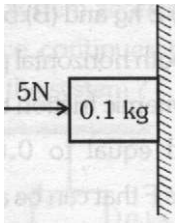
**3.** Tangential acceleration at point B




(1) g/2 (2) g

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

**4.** A block of mass 0.1 kg, is pressed against a wall with a horizontal force of 5N as shown in the figure. If the coefficient of friction between the wall and the block is 0.5 then the frictional force acting on the block will be ($g = 9.8\ m/s^2$) –




(1) 9.8 N (2) 2.5 N

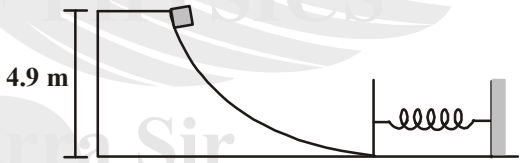
(3) 0.98 N (4) 0.49 N

**5.** The magnitude of two vectos are 16 and 12 units respectively and the magnitude of their scalar product is $96\sqrt{2}$ units. The angle between the vectors would be

(1) 30° (2) 45°

(3) 60° (4) 90°

**6.** Fig. shows a smooth curved track terminating a smooth horizontal part. A spring of spring constant 400 N/m is attached at one end to the wedge fixed rigidly with the horizontal part. A 40 gm. mass is relased from rest at a height of 4.9 m. on the curved track. Find the maximum compression of the spring-




(1) 17.60 cm. (2) 11.2 cm.

(3) 4.9 cm. (4) 9.8 cm.

**7.** If the speed of a vehicle increases by 2 m/s., its kinetic energy is doubled. Then the original speed of the vehicle is-

(1) $\left(\sqrt{2}+1\right)m/s$

(2) $\sqrt{2}m/s$

(3) $2\left(\sqrt{2}+1\right)m/s$

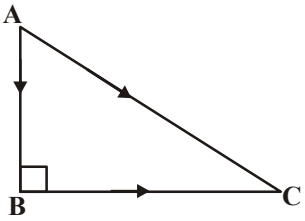
(4) $\sqrt{2}\left(\sqrt{2}+1\right)m/s$

**8.** A body constrained to move in the z-direction, is subjected to a force given by $\vec{F}=\left(2\hat{i}+15\hat{j}+6\hat{k}\right)N$. What is the work done by the force in moving the body a distance 10 m along z-axis?

(1) 50 J (2) 150 J

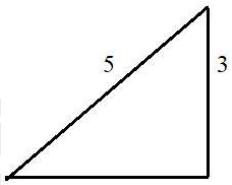
(3) 60 J (4) 80 J

**9.** The work done in moving a particle under the effect of a conservative force, from position A to B is 3 joule and from B to C is 4 joule. The work done in moving the particle from A to C is-




(1) 5 joule
(2) 7 joule
(3) 1 joule
(4) –1 joule

**10.** The work done in pushing a block of mass 10 kg from bottom to the top of a frictionless inclined plane 5 m long and 3 m high is-
($g = 9.8$ m/sec$^2$)




(1) 392 J (2) 294 J
(3) 98 J (4) 0.98 J

**11.** A force $\vec{F} = 2\hat{i} - 3\hat{j} + 7\hat{k}$ (N) acts on a particle which undergoes a displacement $\vec{r} = 7\hat{i} + 3\hat{j} - 2\hat{k}$ (M). Calculate the work done by the force
(1) 37 J (2) –9 J
(3) 49 J (4) 14 J

**12.** A block slides with constant velocity on a plane inclined at an angle θ. The same block is pushed up the plane with an initial velocity $v_0$. The distance covered by the block before coming to rest is

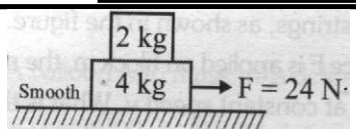
(1) $\frac{v_0^2}{2g\sin\theta}$ (2) $\frac{v_0^2}{4g\sin\theta}$
(3) $\frac{v_0^2\sin^2\theta}{2g}$ (4) $\frac{v_0^2\sin^2\theta}{4g}$

**13.** A body of mass m accelerates uniformly form rest to $\upsilon_1$ in time $t_1$. As a function of t, the instantaneous power delivered to the body is-

(1) $\frac{m\upsilon_1 t}{t_1}$ (2) $\frac{m\upsilon_1^2 t}{t_1}$
(3) $\frac{m\upsilon_1 t^2}{t_1}$ (4) $\frac{m\upsilon_1^2 t}{t_1^2}$

**14.** The momentum of a body is increased by 50%. The K.E. of the body will be increased by-
(1) 50 % (2) 125 %
(3) 330 % (4) 400 %

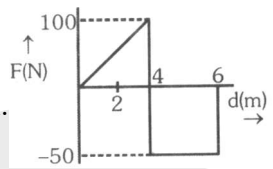
**15.**



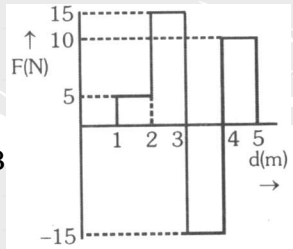

In the arrangement coefficient of friction between the two blocks is $\mu = 1/2$. The force of friction acting between the two blocks is

(1) 8 N (2) 6 N
(3) 10 N (4) 12 N

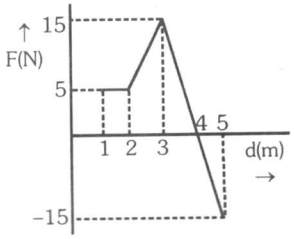
**16.** Calculate the work done for following F-d curves

A. 

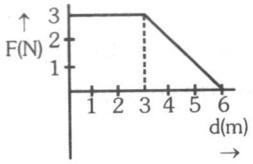
(P) 100 J

B 

(Q) 13.5 J

C. 

(R) 15 J

D 


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

**17.** Two bodies of masses 1 kg and 2 kg moving with same velocity are stopped by the same force. Then the ratio of their stopping distances is

(1) 1 : 2 (2) 2 : 1
(3) $\sqrt{2}:1$ (4) $1:\sqrt{2}$

**18.** The upper half of an inclined plane of inclination θ is perfectly smooth while lower half is rough. A block starting from rest at the top of the plane will again come to rest at the bottom, if the coefficient of friction between the block and lower half of the plane is given by –

(1) $\mu = 2\tan\theta$ (2) $\mu = \tan\theta$

(3) $\mu = \frac{1}{\tan\theta}$ (4) $\mu = \frac{2}{\tan\theta}$

**19.** If $K_i$ and $K_f$ are the initial and final values of kinetic energy of a body respectively, then the work done by the net force on the body is equal to –

(1) $\frac{K_f K_i}{K_f - K_i}$ (2) $K_f - K_i$

(3) $\frac{K_f + K_i}{2}$ (4) $\frac{K_f K_i}{K_f + K_i}$

**20.** A force F = 20 + 10y acts on a particle in y-direction where F is in newton and y in meter. Work done by this force to move the particle from y = 0 to y = 1 m is –

(1) 20 J (2) 30 J

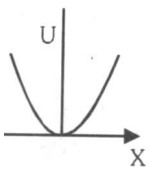
(3) 5 J (4) 25 J

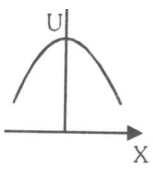
**21.** The relation between conservative force and potential energy U is given by

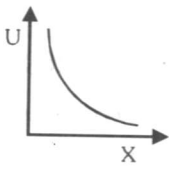
(1) $\vec{F} = \frac{dU}{dx}$ (2) $\vec{F} = \int U\,dx$

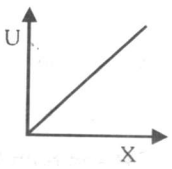
(3) $\vec{F} = \frac{dU}{dx}$ (4) $F = \frac{dU}{dx}$

**22.** The graph between potential energy U and displacement X in the state of stable equilibrium wll be

(1) 


(2) 


(3) 

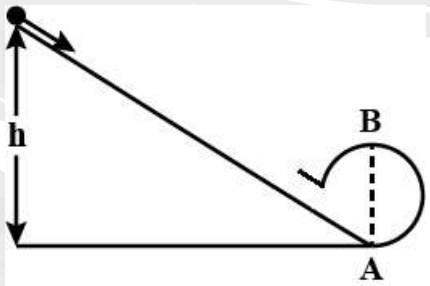

(4) 


**23.** The potential energy of a particle in a force field is $U = \frac{A}{r^2} - \frac{B}{r}$ Where A and B are positive constants and r is the distance of particle from the centre of the field. For stable equilibrium, the distance of the particle is

(1) $\frac{B}{2A}$ (2) $\frac{2A}{B}$

(3) $\frac{A}{B}$ (4) $\frac{B}{A}$

**24.** A body initial at rest and sliding along a frictionless track from a height h (as shown in the figure) just completes a vertical circle of diameter AB = D. The height h is equal to




(1) $\frac{3}{2}D$

(2) D

(3) $\frac{7}{5}D$

(4) $\frac{5}{4}D$

**25.** A massless spring of spring constant k, has extension y and potential energy E. It is now stretched from y to 2y. The increase in its potential energy is –

(1) 3E (2) 2E

(3) E (4) 4E

**26.** One horse power is equal to –

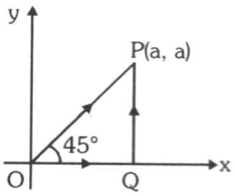
(1) 740 watt

(2) 546 watt

(3) 746 watt

(4) 700 watt

**27.** A particle is moved from (0, 0) to (a, a) under a force $\vec{F}=\left(3\hat{i}+4\hat{j}\right)$ from two paths. Path1 is OP and path 2 is OQP. Let $W_1$ and $W_2$ be the work done by this force in these two paths. Then




(1) $W_1 = W_2$ (2) $W_1 = 2W_2$

(3) $W_2 = 2W_1$ (4) $W_2 = 4W_1$

**28.** A crane lifts weight of 7.5 kg to a height of 15m in 15 seconds. The power of the crane is

(1) 63.5 watt (2) 73.5 watt

(3) 83.5 watt (4) 113.5 watt

**29.** If two person A and B take 2 seconds and 4 seconds respectively to lift an object to the same height h, then the ratio of their powers is

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

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

**30.** A car of mass m starts from rest and accelerates so that the instantaneous power delivered to the car has constant magnitude $P_0$. The instataneous velocity of the car is proportional to

(1) $t^2$ (2) $t^{1/2}$

(3) $t^{-1/2}$ (4) $\frac{1}{\sqrt{m}}$

**31.** A body constrained to move along y-axis is subjected to a constant force $\vec{F}=-\hat{i}+2\hat{j}+3\hat{k}$N. The work done by this force in moving the body a distance of 4m along y-axis is –

(1) 4J (2) 8J

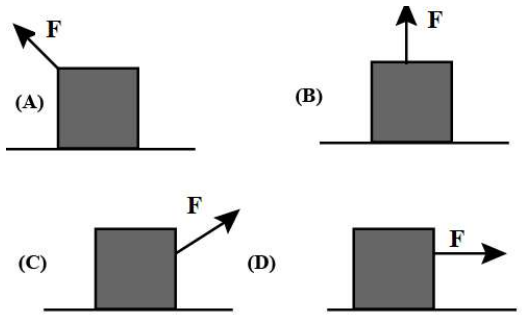
(3) 12J (4) 24J

**32.** A uniform chain of length L and mass M is lying on a smooth table and one third of its length is hanging vertically down over the edge of the table. If g is acceleration due to gravity, work required to pull the hainging part on the table is –

(1) MgL (2) MgL/3

(3) MgL/9 (4) MgL/18

**33.** Figure shows four situations in which a force is applied to ablock. In all four cases, the force has the same magnitude, and the displacement of the block is to the right and of the same magnitude. Which of the following cases work done by the applied force on the block is zero?




(1) i (2) ii

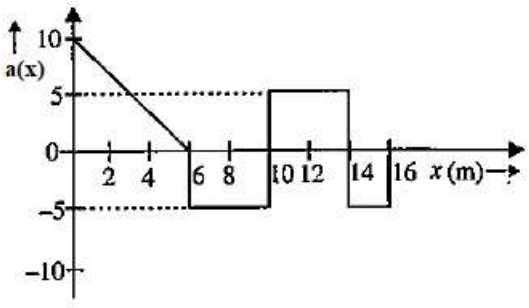
(3) iii (4) iv

**34.** In a ballistics demonstration a police officer fires a buller of mass 50 g with speed 200ms$^{-1}$ on soft plywood of thickness 2cm. The bullet emerges with only 10% of its initial kinetic energy. The emergent speed of the bullet is

(1) $2\sqrt{10}$ms$^{-1}$ (2) $20\sqrt{10}$ms$^{-1}$

(3) $10\sqrt{2}$ms$^{-1}$ (4) $10\sqrt{20}$ms$^{-1}$

**35.** A particle is acted upon by a an acceleration which varies with position x as shown in figure. If the particle at x = 0 has kinetic energy of 25 J, then the kinetic energy of the particle at x=16m is (Mass of particle = 2kg)




(1) 90J

(2) 65J

(3) 140J

(4) 40J

## SECTION - B

**36.** A block of mass 10 kg is moving in x-direction with a constant speed of 10 $ms^{-1}$. It is subjected to a force $F_r = -0.1xJm^{-1}$ during its travel from x=20m to x=30m. Its final kinetic energy will be –

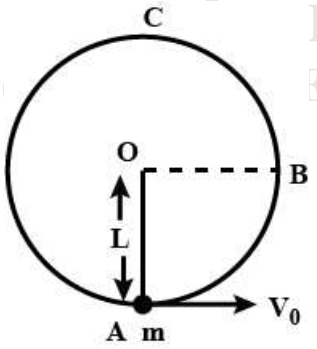
(1) 250 J (2) 275 J

(3) 450 J (4) 475 J

**37.** A body is dropped from a height h. When loss in its potential energyis U then its velocity is v. The mass of th ebody is

(1) $\frac{U^2}{2v}$ (2) $\frac{2v}{U}$ (3) $\frac{2v}{U^2}$ (4) $\frac{2U}{v^2}$

**38.** A bob of mass m is suspended by a light string of length L, it is imparted a horizontal velocity $v_0$ at the lowest point A such that it just completes a circle in the vertical plane.



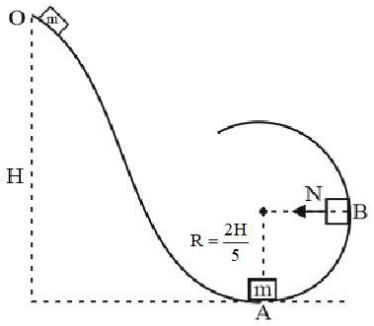

Match column I with column II

| Column I | Column II |
|---|---|
| A. Velocity $v_0$ is | p. 3 |
| B. Velocity at point B is | q. $\sqrt{gL}$ |
| C. Velocity at point C is | r. $\sqrt{5gL}$ |
| D. Ratio of kinetic energy at B and C is | s. $\sqrt{3gL}$ |

(1) A-p, B-q, C-s, D-r (2) A-q, B-r, C-p, D-s

(3) A-r, B-s, C-q, D-p (4) A-s, B-p, C-r, D-q

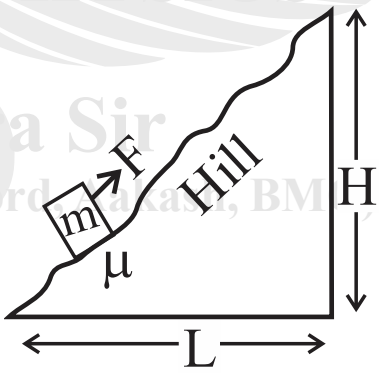
**39.** The force exerted by the circular surface on the body at point B is(N then its value will be)




(1) 5 mg (2) 3 mg

(3) 4 mg (4) 6 mg

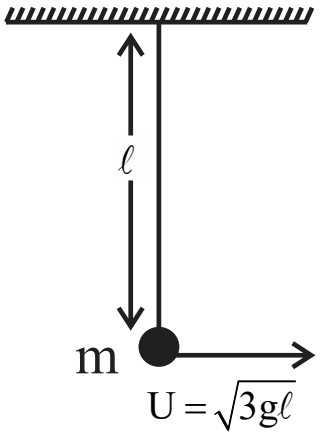
**40.** A block of mass M is pulled with the help of tangential force F up on a rough hill having friction coefficient μ. The work done by frictional force in the up journey of block–




(1) –μ MgL (2) μ MgL

(3) MgH (4) –MgH

**41.** The value of maximum and minimum tension during the circular motion of a mass




(1) 5 Mg, 3 Mg (2) 3 Mg, 2 Mg

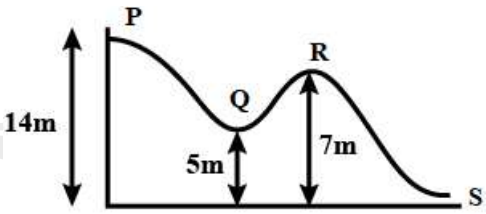
(3) 4 Mg, 3 Mg (4) 4 Mg, 0

**42.** The velocity of a particle of mass 1 kg is given by $v = 10\sqrt{t}$. The work-done by the force acting on the particle during its motion from t = 4 to t = 9 m is

(1) 250 J (2) 300 J

(3) 450 J (4) 500 J

**43.** Figure shows the vertical section of functional surface. A block of mass 2 kg is released from the position P, Its kinetic energy as it reaches the position R is




(1) 108 J (2) 40 J

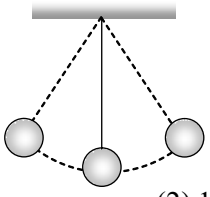
(3) 140 J (4) 280 J

**44.** An engine pump is used to pump a liquid of density $\rho$ continuously through a pipe of cross-sectional area A. If the speed of flow of the liquid in the pipe is v, then the rate at which kinetic energy is being imparted to the liquid is

(1) $\frac{1}{2}A\rho v^3$ (2) $\frac{1}{2}A\rho v^2$

(3) $\frac{1}{2}A\rho v$ (4) $A\rho v$

**45.** What is the velocity of the bob of a simple pendulum at its mean position, if it is able to rise to vertical height of 10 cm (Take $g = 9.8\, m/s^2$)



(1) 0.6 m/s (2) 1.4 m/s

(3) 1.8 m/s (4) 2.2 m/s

**46.** The mass of two substances are 4gm and $9gm$ respectively. If their kinetic energies are same, then the ratio of their momenta will be

(1) 4 : 9 (2) 9 : 4

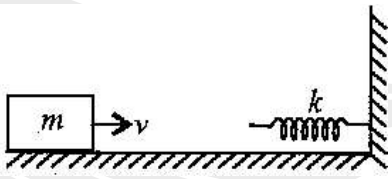
(3) 3 : 2 (4) 2 : 3

**47.** A block of mass M is attached to the lower end of a vertical spring. The spring is hung from a ceiling and has force constant value k. The mass is released from rest with the spring initially unstretched. the maximum extension produced in the length of the spring will be :-

(1) Mg/2k (2) Mg/k

(3) 2 Mg/k (4) 4 Mg/k

**48.** A mass m is moving on rough surface as shown. Friction coefficient between block and surface is μ. Maximum compression in spring will be –




(1) $-\frac{\mu mg}{k}+\frac{1}{k}\sqrt{(\mu mg)^2+mkv^2}$

(2) $\frac{\mu mg}{k}+\frac{1}{k}\sqrt{(\mu mg)^2-mkv^2}$

(3) $-\frac{\mu mg}{k}-\frac{1}{k}\sqrt{(\mu mg)^2-mkv^2}$

(4) $\frac{\mu mg}{k}+\frac{1}{k}\sqrt{(\mu mg)^2+mkv^2}$

**49.** Correct relation between joule and ergs is –

(1) 1J = $10^{-5}$ erg (2) 1J = $10^5$ erg

(3) 1J = $10^{-7}$ erg (4) 1J = $10^7$ erg

**50.** A motor of 100 hp is moving a car with a constant velocity of 72 km/hour. The forward force exerted by the engine on the car is -

(1) $3.73 \times 10^3$ N

(2) $3.73 \times 10^2$ N

(3) $3.73 \times 10^1$ N

(4) None of these

# CHEMISTRY

## SECTION - A

**51.** The pH of a buffer solution containing 0.1 mole of acetic acid and 0.15 mole of sodium acetate is ($K_a$ for acetic acid = 1.75 x $10^{-5}$)-

(1) 4.9 (2) 3.0

(3) 4.2 (4) 5.4

**52.** A certain buffer solution contains equal concentration of $X^-$ and HX. The $K_b$ for $X^-$ is 1 x $10^{-10}$. The pH of the buffer is-

(1) 4 (2) 7

(3) 10 (4)14

**53.** 500 ml of 0.2 M acetic acid are added to 500 ml of 0.30 M sodium acetate solution. If the dissociation constant of acetic acid is 1.5 × $10^{-5}$ then $p^H$ of the resulting solution is –

(1) 5.0 (2) 9.0

(3) 3.0 (4) 4.0

**54.** $K_{sp}$ of AgCl is 1 × $10^{-10}$. Its solubility in 0.1 M $KNO_3$ will be –

(1) $10^{-5}$ moles/litre

(2) > $10^{-5}$ moles/litre

(3) < $10^{-5}$ moles/litre

(4) None of these

**55.** At 25°C what will be the solubility of silver carbonate in 0.1 M $Na_2CO_3$ solution. At this temperature $K_{sp}$ of silver carbonate is 4 × $10^{-13}$ –

(1) 2 × $10^{-7}$ (2) 2 × $10^{-6}$

(3) $10^{-6}$ (4) $10^{-7}$

**56.** At 298K, the solubility of $PbCl_2$ is $6.3\times10^{-3}$ moles $L^{-1}$. Its solubility product at this temprature is –

(1) (6.3 × $10^{-3}$) × (6.3 × $10^{-3}$)

(2) (6.3 × $10^{-3}$) × (12.6 × $10^{-3}$)

(3) (6.3 × $10^{-3}$) × (12.6 × $10^{-3}$)$^2$

(4) (12.6 × $10^{-3}$) × (12.6 × $10^{-3}$)

**57.** Which of the following is the ionisation constant of 0.01 M aniline (0.02% ionised)–

(1) 4.0 × $10^{-4}$ (2) 4.0 × $10^{-5}$

(3) 4.0 × $10^{-9}$ (4) 4.0 × $10^{-10}$

**58.** The dissociation constants of monobasic acids A,B,C and D are $6\times10^{-4}$, $5\times10^{-5}$, $3.6\times10^{-6}$ , and $7\times10^{-10}$ respectively. The pH values of their 0.1 molar aqueous solutions are in the order –

(1) A < B < C < D

(2) A > B > C > D

(3) A = B = C = D

(4) A > B < C > D

**59.** What will be the pH of $10^{-3}$ M monobasic weak acid solution if its dissociation constant is $1.8\times10^{-5}$ –

(1) 4 (2) 3.872

(3) 2.52 (4) 2.00

**60.** Equal volumes of 0.005 M and 0.005 N $H_2SO_4$ solutions are mixed together. The pH of resulting solution is –

(1) 5.0 (2) 3.125

(3) 2.10 (4) 2.125

**61.** Solubility of AgCl [$K_{sp}$ = 1 × $10^{-10}$] in 0.2 M $AgNO_3$ and 0.2 M NaCl solution will be respectively –

(1) 5 × $10^{-10}$ M and 2 × $10^{-5}$ M

(2) 5 × $10^{-10}$ M and 5 × $10^{-10}$ M

(3) 2 × $10^{-5}$ M and 2 × $10^{-5}$ M

(4) 5 × $10^{-5}$ M and 5 × $10^{-5}$ M

**62.** Phenoxide ion ($C_6H_5O^-$) is a weak base, with $K_b$ = 7.7 × $10^{-5}$. Calculate the pH of a 0.20 M solution of $C_6H_5O^-$ –

(1) 11.6

(2) 3.9 × $10^{-3}$

(3) 9.2

(4) 8.9

**63.** What is the pH of the solution at half neutralization in the titration of 0.1N $CH_3COOH$ and 0.1N KOH : ($K_a = 1.8 \times 10^{-5}$)–

(1) 4.75 (2) 1

(3) 13 (4) Zero

**64.** The pH of 1 litre solution containing 0.5M $NH_4OH$ and 0.5 M $NH_4Cl$ ($pK_b = 5$) -

(1) 5 (2) 9

(3) 5 ± 1 (4) 9 ± 1

**65.** The ratio of pH of 0.05 M and 0.005 M $H_2SO_4$ solutions will be –

(1) 2 : 1

(2) 1 : 2

(3) 1 : 1.5

(4) 1.5 : 1

**66.** The hydrolysis constant for $ZnCl_2$ will be

(1) $K_h = \frac{K_w^2}{K_b^2}$ (2) $K_h = \frac{K_w}{K_b}$

(3) $K_h = \frac{K_b}{K_w^2}$ (4) $K_h = \frac{K_w^2}{K_b}$

**67.** The $[H^+]$ of a solution is 0.03 M. The pOH of this solution is –

(1) 12.48 (2) 12.52

(3) 12.54 (4) 12.58

**68.** The pH of a solution is 6.0. In this solution

(1) $[H^+] = 100\ [OH^-]$

(2) $[H^+] = 10\ [OH^-]$

(3) $[H^+] = [OH^-]$

(4) $[H^+] = \frac{1}{10}\ [OH^-]$

**69.** At 298 K, the ratio of number of pure water molecules to number of hydroxyl ions is –

(1) $1.8 \times 10^{-9}$

(2) $5.55 \times 10^{8}$

(3) $10^{7}$

(4) $6.02 \times 10^{23}$

**70.** Which one of the following is NOT a buffer solution ?

(1) 0.8 M $H_2S$ + 0.8 M KHS

(2) 2M $C_6H_5NH_2$ + 2 M $C_6H_5\overset{+}{N}H_3Br^-$

(3) 3 M $H_2CO_3$ + 3 M $KHCO_3$

(4) 0.05 M $KClO_4$ + 0.05 M $HClO_4$

**71.** According to Bronsted-Lowry concept, the relative strengths of the bases $CH_3COO^-$, $OH^-$ and $Cl^-$ are in the order -

(1) $OH^- > CH_3COO^- > Cl^-$

(2) $Cl^- > OH^- > CH_3COO^-$

(3) $CH_3COO^- > OH^- > Cl^-$

(4) $OH^- > Cl^- > CH_3COO^-$

**72.** The units of ionic product of water ($K_w$) are

(1) $mol^{-1}\ L^{-1}$ (2) $mol^{-2}\ L^{-2}$

(3) $mol^{-2}\ L^{-1}$ (4) $mol^{2}\ L^{-2}$

**73.** If the solubility of lithium sodium hexafluoroaluminate, $Li_3Na_3(AlF_6)_2$ is 'a' mole / litre, the solubility product is equal to

(1) $a^8$ (2) $12\ a^3$

(3) $18\ a^3$ (4) $2916\ a^8$

**74.** What is the minimum concentration of $SO_4^{2-}$ required to precipitate $BaSO_4$ in a solution containing $1.0 \times 10^{-4}$ mole of $Ba^{2+}$ ?

$K_{sp}$ for $BaSO_4 = 4 \times 10^{-10}$ :

(1) $4 \times 10^{-10}$ M (2) $2 \times 10^{-7}$ M

(3) $4 \times 10^{-6}$ M (4) $2 \times 10^{-3}$ M

**75.** The solubility product of a salt having general formula $MX_2$, in water is $4 \times 10^{-12}$. The concentration of $M^{2+}$ ions in the aqueous solution of the salt is –

(1) $1.0 \times 10^{-4}$ M

(2) $2.0 \times 10^{-6}$ M

(3) $4.0 \times 10^{-10}$ M

(4) $1.6 \times 10^{-4}$ M

**76.** A buffer solution can be prepared from a mixture of -

(1) Sodium acetate and acetic acid in water

(2) Sodium acetate and hydrochloric acid in water

(3) ammonia and ammonium chloride in water

(4) ammonia and sodium hydroxide in water

**77.** The pH of 0.1 M solution of the following increases in the order

(1) NaCl < $NH_4Cl$ < NaCN < HCl

(2) HCl < $NH_4Cl$ < NaCl < NaCN

(3) NaCN < $NH_4Cl$ < NaCl < HCl

(4) HCl < NaCl < NaCN < $NH_4Cl$

**78.** For sparingly soluble salt $A_pB_q$, the relationship of its solubility product (Ls) with its solubility (S) is -

(1) $Ls = S^{p+q}, p^p.q^q$

(2) $Ls = S^{p+q}, p^q.q^p$

(3) $Ls = S^{pq}, p^p.q^q$

(4) $Ls = S^{pq}. (p.q)^{p+q}$

**79.** $K_1$ and $K_2$ are the rate constants of forward and backward reactions. The equilibrium constant K of the reaction is -

(1) $K_1 \times K_2$

(2) $K_1 - K_2$

(3) $\frac{K_1}{K_2}$

(4) $\frac{K_1+K_2}{K_1-K_2}$

**80.** The reaction $A_{(g)} + B_{(g)} \rightleftharpoons C_{(g)} + D_{(g)}$ proceeds to right hand side upto 99.9%. The equilibrium constant K for the reaction will be -

(1) $10^4$ (2) $10^5$

(3) $10^6$ (4) $10^8$

**81.** For the reaction, $2NO_2\ (g) \rightleftharpoons 2NO\ (g) + O_2(g)$, $K_C = 1.8 \times 10^{-6}$ at 185ºC. At 185ºC, the value of $K_C$ for the reaction -

$NO(g) + \frac{1}{2}O_2\ (g) \rightleftharpoons NO_2(g)$ is -

(1) $0.9 \times 10^6$ (2) $7.5 \times 10^2$

(3) $1.95 \times 10^{-3}$ (4) $1.95 \times 10^3$

**82.** If in the reaction $N_2O_{4(g)} \rightleftharpoons 2NO_{2(g)}$, $\alpha$ is the part of $N_2O_4$ which dissociates then the number of moles at equilibrium will be -

(1) 3 (2) 1

(3) $(1-\alpha)^2$ (4) $(1+\alpha)$

**83.** For the reaction $A_{(g)} + B_{(g)} \rightleftharpoons C_{(g)} + D_{(g)}$, the degree of dissociation $\alpha$ would be –

(1) $\frac{\sqrt{K}}{\sqrt{K}+1}$ (2) $\sqrt{K}+1$

(3) $\sqrt{K} \pm 1$ (4) $\sqrt{K} - 1$

**84.** $\frac{K_P}{K_C}$ for the gaseous reaction –

(1) $2\ A + 3\ B \rightleftharpoons 2C$

(2) $2\ A \rightleftharpoons 4B$

(3) $A + B + 2C \rightleftharpoons 4D$

would be respectively -

(1) $(RT)^{-3}$ , $(RT)^2$, $(RT)^o$

(2) $(RT)^{-3}$ , $(RT)^{-2}$, $(RT)^{-1}$

(3) $(RT)^{-3}$ , $(RT)^2$, $(RT)$

(4) None of the above

**85.** $N_2O_4$ dissociates as $N_2O_{4(g)} \rightleftharpoons 2NO_{2(g)}$ at 273 K and 2 atm pressure. The equilibrium mixture has a density of 41. What will be the degree of dissociation -

(1) 14.2%

(2) 16.2%

(3) 12.2%

(4) None

## SECTION - B

**86.** On adding inert gas to the equilibrium $PCI_{5(g)} \rightleftharpoons PCI_{3(g)} + CI_{2(g)}$ at constant pressure. The degree of dissociation will remain –

(1) Unchanged

(2) Decreased

(3) Increased

(4) None of these

**87.** When $H_2$ is added to an equilibrium mixture $2HI_{(g)} \rightleftharpoons H_{2(g)} + I_{2(g)}$, at constant temperature, the -

(1) Value of $K_p$ decreases

(2) Value of $K_p$ increases

(3) The degree of dissociation of HI decreases

(4) Degree of dissociation of HI increases

**88.** During thermal dissociation of gas, the vapour density -

(1) Remains same
(2) Will be increased

(3) Will be decreased

(4) Some times increases some times decreases

**89.** What is wrong about equilibrium state –

(1) $\Delta G_{(equi)} = 0$

(2) The reaction ceases at equilibrium

(3) Equilibrium constant is independent of initial concentrations of reactants

(4) Catalyst has no effect on equilibrium state

**90.** At a given temperature the following reaction is allowed to reach equilibrium in a vessel of volume $V_1$ litre. The degree of dissociation is $\alpha_1$.If by keeping the temperature fixed the volume of the reaction vessel is doubled (assuming the degrees of dissociation to be small ) the new degree of dissociation shall be –

$$PCl_5 \rightleftharpoons PCl_3 + Cl_2$$

(1) $2\alpha_1$ (2) $\sqrt{\frac{\alpha_1}{2}}$

(3) $\sqrt{2\alpha_1}$ (4) $\sqrt{2}.\alpha_1$

**91.** The equilibrium constant for a reaction $N_2$ (g) + $O_2$ (g) $\rightleftharpoons$ 2NO (g) is $4 \times 10^{-4}$ at 2000 K. In the presence of catalyst, the equilibrium is attained 10 times faster. The equilibrium constant in the presence of catalyst, at 2000 K is –

(1) $40 \times 10^{-4}$

(2) $4 \times 10^{-4}$

(3) $4 \times 10^{-2}$

(4) Difficult to compute without more data

**92.** At 250° C, the vapour density of $PCl_5$ is Y (at equilibrium) and molar mass is Q (Initially). Its degree of dissociation is then equal to -

(1) $\frac{Q-Y}{Y}$ (2) $\frac{Y-Q}{Q}$

(3) $\frac{Y-2Q}{2Q}$ (4) $\frac{Q-2Y}{2Y}$

**93.** The oxidation of $SO_2$ to $SO_3$ by oxygen is an exothermic reaction. The yield of $SO_3$ will be maximum if –

(1) Temperature is increased and pressure is kept constant

(2) Temperature is reduced and pressure is increased

(3) Both temperature and pressure are increased

(4) Both temperature and pressure are decreased

**94.** If $K_1 = 4 \times 10^{-3}$ for following two gaseous reactions –

$SO_2(g) + \frac{1}{2} O_2(g) \rightleftharpoons SO_3(g)$; $K_1$

$2SO_3(g) \rightleftharpoons 2SO_2(g) + O_2(g)$ ; $K_2$

then $K_2$ will be –

(1) $8 \times 10^{-3}$

(2) $6.25 \times 10^{4}$

(3) $6.25 \times 10^{8}$

(4) $8 \times 10^{4}$

**95.** For the reaction equilibrium $N_2O_4(g) \rightleftharpoons 2NO_2(g)$ the concentrations of $N_2O_4$ and $NO_2$ at equilibrium are $4.8 \times 10^{-2}$ and $1.2 \times 10^{-2}$ mol $L^{-1}$ respectively. The value of $K_C$ for the reaction is –

(1) $3 \times 10^{-3}$ mol $L^{-1}$

(2) $3 \times 10^{3}$ mol $L^{-1}$

(3) $3.3 \times 10^{2}$ mol $L^{-1}$

(4) $3 \times 10^{-1}$ mol $L^{-1}$

**96.** For the reaction

$2\ NO_{2(g)} \rightleftharpoons 2\ NO_{(g)} + O_{2(g)}$,

($K_c = 1.8 \times 10^{-6}$ at 184ºC)

(R = 0.0831 kJ/(mol.K))

When $K_p$ and $K_c$ are compared at 184ºC it is found that

(1) $K_p$ is less than $K_c$

(2) $K_p$ is greater than $K_c$

(3) Whether $K_p$ is greater than, less than or equal to $K_c$ depends upon the total gas pressure

(4) $K_p = K_c$

**97.** For the reversible reaction, $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ at 500ºC, the value of $K_p$ is $1.44 \times 10^{-5}$ when partial pressure is measured in atmospheres. The corresponding value of $K_c$, with concentration in mole $litre^{-1}$, is -

(1) $1.44 \times 10^{-5} / (0.082 \times 500)^{-2}$

(2) $1.44 \times 10^{-5} / (8.314 \times 773)^{-2}$

(3) $1.44 \times 10^{-5} / (0.082 \times 773)^{2}$

(4) $1.44 \times 10^{-5} / (0.082 \times 773)^{-2}$

**98.** At constant temperature the equilibrium constant $K_p$ for the decomposition reaction $N_2O_4 \rightleftharpoons 2NO_2$ is expressed by $K_p = \frac{4x^2P}{1-x^2}$ where P = Pressure, x = extent of decomposition which of the following statements is true ?

(1) $K_p$ increases with increase of P

(2) $K_p$ increases with increases of x

(3) $K_p$ increases with decrease of x

(4) $K_p$ remains constant with change in P & x

**49.** What is the $K_{sp}$ of $Ag_2CrO_4$ If its molarity is S

(1) $4s^3$

(2) $3s^4$

(3) $2s^2$

(4) s

**50.** What is the ionisation concept of water?

(1) $1 \times 10^{-14}$

(2) 14

(3) $1 \times 10^{-7}$

(4) $1 \times 10^{+14}$

# BIOLOGY

## SECTION - A

**101.** 10 oogonia yield 10 primary oocytes, then how many ova are produced on completion of oogenesis

(1) 5 (2) 10

(3) 20 (4) 40

**102.** In mammals, corpus luteum is found in which organ

(1) Brain (2) Ovary

(3) Liver (4) Eyes

**103.** Which induces the development of corpus luteum

(1) LH (2) Ocstrogen

(3) FSH (4) LTH

**104.** Loss of reproductive capacity in women after age of 45 years is

(1) Mensturation (2) Ageing

(3) Menopause (4) Menarche

**105.** Yellow corpus luteum occurs in a mammals in

(1) Heart to initiate heart beat

(2) Skin to function as pain receptor

(3) Brain and connects cerebral hemispheres

(4) Ovary for secretion of progesterone.

**106.** Seminal vesicles are located in

(1) Caput epidydimis

(2) Uterus

(3) Above Cowper's glands

(4) Glans penis.

**107.** Correct sequence of hormone secretion from beginning of menstruation is

(1) FSH, progesterone, estrogen

(2) Estrogen, FSH, progesterone

(3) FSH, estrogen, progesterone

(4) Esterogen, progesterone, FSH

**108.** Progesterone level falls leading to

(1) Gestation (2) Menopause

(3) Lactation (4) Mensturation

**109.** Testes descent into scrotum in mammals for

(1) Spermatogenesis

(2) Fertilization

(3) Development of sex organs

(4) Development of visceral organs.

**110.** Menstruation is caused by

(1) Increase in FSH level

(2) Fall in oxytocin level

(3) Fall in progesterone level

(4) Increase in oestrogen level

**111.** Nutritive cells of seminiferous tubules are

(1) Leydig cells

(2) Sertoli cells

(3) Atretic follicular cells

(4) Spermatogonial cells

**112.** Seminal plasma in humans is rich in :-

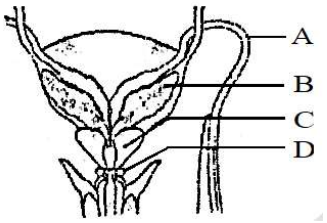
(1) Fructose and certain enzymes but poor in calcium

(2) Fructose, calcium and certain enzymes

(3) Fructose and calcium but has no enzymes

(4) Glucose and certain enzymes but has no calcium

**113.** Given below is a diagramatic sketch of a portion of human male reproductive system. Select the correct set of the names of the parts labelled A, B, C, D:-




| | A | B | C | D |
|---|---|---|---|---|
| (1) | Ureter | Seminal vesicle | Prostate | Bulboure-thral gland |
| (2) | Ureter | Prostate | Seminal vesicle | Bulboure-thral gland |
| (3) | Vas deferens | seminal vesicle | Prostate | Bulboure-thral gland |
| (4) | Vas deferens | seminal vesicle | Bulboure-thral gland | Prostate |

**114.** Which one of the following is the *correct* matching of the events occuring during menstrul cycle ?

(1) Menstruation — Breakdown of myometrium and ovum not fertilised

(2) Ovulation — :LH and FSH attain peak level and sharp fall in the secretion of progesterone.

(3) Proliferative phase — :Rapid regeneration of myometrium and maturation of Graafian follicle.

(4) Development of corpus luteum — : Secretory phase and increased secretion of progesterone.

**115.** The correct sequence of spermatogenetic stages leading to the formation of sperms in a mature human testis is

(1) Spermatocyte-spermatogonia-spermatid-sperms

(2) Spermatogonia-spermatocyte-spermatid-sperms

(3) Spermatid-spermatocyte-spermatogonia -sperms

(4) Spermatogonia-spermatid-spermatocyte-sperms

**116.** Which one of the following statements is false in respect of viability of mammalian sperm

(1) Sperm is viable for only up to 24 hours

(2) Survival of sperm depends on the pH of the medium and is more active in alkaline medium

(3) viability of sperm is determined by its motility

(4) Sperms must be concentrated in a thick suspension

**117.** The testes in humans are situated outside the abdominal cavity inside a pouch called scrotum. The purpose served is for

(1) Providing a secondary sexual feature for exhibiting the male sex

(2) Maintaining the scrotal temperature lower than the internal body temperature

(3) Escaping any possible compression by the visceral organs

(4) Providing more space for the growth of epididymis

**118.** Sertoli cells are found in

(1) Pancreas and secrete cholecystokinin

(2) Ovaries and secrete progesterone

(3) Adrenal cortex and secrete and adrenaline

(4) Seminiferous tubules and provide nutrition to germ cells

**119.** If for some reason, the vasa efferentia in the human reproductive system get blocked, the gametes will not be transported from

(1) Vagina to uterus

(2) Testes to epididymis

(3) Epididymis to vas deferens

(4) Ovary to uterus

**120.** Which hormone level reaches peak during luteal phase of menstrual cycle

(1) Luteinizing hormone

(2) Progesterone

(3) Follicle stimulating hormone

(4) Estrogen

**121.** The secretory phase in the human menstrual cycle is also called

(1) Luteal phase and lasts for about 6 days

(2) Follicular phase lasting for about 6 days

(3) Luteal phase and lasts for about 13 days

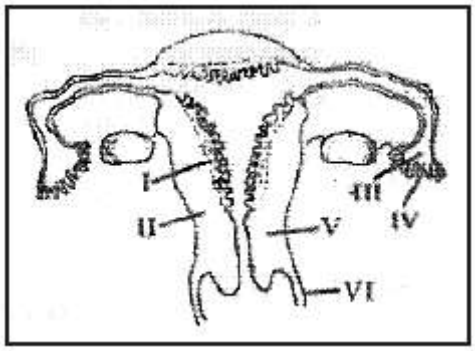
(4) Follicular phase and lasts for about 13 days

**122.** The part of Fallopian tube closest to the ovary is

(1) Ampulla (2) Isthmus

(3) Infundibulum (4) Cervix

**123.** The figure given below depicts a diagrammatic sectional view of the female reproductive system of humans. Which one set of three parts out of I-VI have been correctly identified




(1) (I) Perimetrium, (II) Myometrium, (III) Fallopian tube

(2) (II) Endometrium, (III) Infundibulum, (IV) Fimbriae

(3) (III) Infundibulum, (IV) Fimbriae, (V) Cervix

(4) (IV) Oviducal funnel, (V) Uterus, (VI) Cervix

**124.** What is the correct sequence of sperm formation?

(1) Spermatid, Spermatocyte, Spermatogonia, Spermatozoa

(2) Spermatogonia, Spermatocyte, Spermatozoa, Spermatid

(3) Spermatogonia, Spermatozoa, Spermatocyte, Spermatid

(4) Spermatogonia, Spermatocyte, Spermatid, Spermatozoa

**125.** In human females,meiosis-II in not complete until?

(1) fertilization (2) uterine implantation

(3) birth (4) puberty

**126.** Sertoli cells are involved in :-

(1) Respiration

(2) Nutrition of sperms

(3) Excretion

(4) Development of sex organs

**127.** Cryptorchidism is a condition in which :-

(1) Testis does not descend into scrotal sac

(2) Sperm in not found

(3) Male hormones are not reactive

(4) Ovaries are removed

**128.** Orchidectomy is the surgical removal of :-

(1) Liver (2) Kidney

(3) Ovary (4) Testes

**129.** In mammals the female secondary sexual characters are developed mainly by the hormone :-

(1) Relaxin (2) Estrogens

(3) Progesterone (4) Gonadotropins

**130.** Which of the following undergoes spermiogenesis:

(1) Spematids

(2) Spermatogonia

(3) Primary spermatocytes

(4) Secondary spermatocytes

**131.** During oogenis, the small structure separated from egg is :

(1) Polar bodies

(2) Secondary endosperm

(3) Herring bodies (4) Hela cells

**132.** Polar bodies are produced during the fomation of

(1) Sperm (2) Oogonium

(3) Spermatocytes (4) Secondary oocyte

**133.** Acrosome of spermatozoa is formed from:

(1) Lysosomes (2) Golgi bodies

(3) Ribosome (4) Mitochondria

**134.** In a sperm, the mitochondria occur :

(1) In tail (2) In acrosome

(3) In middle piece (4) In head

**135.** Human sperm moves by

(1) Cilia (2) Flagella

(3) Basal body (4) Nucleosome

## SECTION - B

**136.** 1st polar body is formed at which stage of oogenesis

(1) 1st meiosis

(2) 2nd mitosis

(3) 1st mitosis

(4) Differentiation

**137.** In spermatogenesis, reduction division of chromosome occurs during conversion of

(1) Spermatogonia to primary spermatocytes

(2) Primary spermatocytes to secondary spermatocytes

(3) Secondary spermatocytes to spermatids

(4) Spermatids to sperms

**138.** A primary spermatocyte is

(1) Polyploid

(2) Haploid

(3) Diploid

(4) Aneuploid

**139.** How many spermatids are formed from a secondary spermatocyte

(1) 1

(2) 2

(3) 4

(4) 8

**140.** The release of sperms from the seminiferous tubules is called

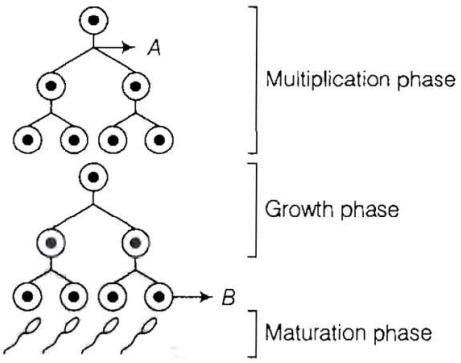
(1) spermiogenesis

(2) spermiation

(3) spermatogenesis

(4) fertilisation

**141.** Which option is correct for the region labelled as A and B in the given figure?



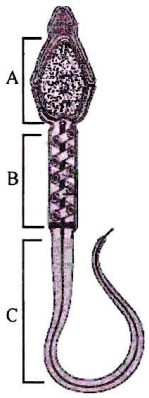

(1) A-Meiosis, B-Secondary spermatocyte

(2) A-Mitosis, B-Primary spermatocyte

(3) A-Mitosis, B-Spermated

(4) A-Meiosis, B-Primary spermatocyte

**142.** Choose the correct option regarding this figure of sperm?




(1) A -Genetic material, acrosome which secrets hormones and enzymes for penetration of egg membranes

(2) B -Has mitochondria and centriole to aid in movement

(3) C -Has centriole and flagella to aid in movement

(4) B -Only has mitochondria to help in propulsion

**143.** To maintain menstrual cycle, hormone are secreted by :-

(1) Pituitary and Ovary

(2) Pituitary and Uterus

(3) Only uterus

(4) Only Ovary

**144.** Vasa-efferentia connect the

(1) Testes with epididymis

(2) Kidneys with cloaca

(3) Testes with urinogenital duct

(4) None

**145.** Mesorchium is peritoneal covering of

(1) Ovary (2) Testis

(3) Kidney (4) Liver

**146.** Glans penis is covered by

(1) Areomembrana (2) Prepuce

(3) Metrium (4) None

**147.** During differentiation the spermatids remain associated with

(1) Leyding's cells (2) Kuffer's cells

(3) Spermatogonia (4) Sertoli cell

**148.** If somatic chromosomes number is 40. What shall be chromosomal number in the cell of seminiferous tubules

(1) 40 (2) 20

(3) 10 (4) 40 and 20

**149.** Puberty occurs in females at the age of

(1) 8 - 10 years (2) 11-14 years

(3) 15-17 years (4) 18-20 years

**150.** Mesovarium is pertioneal covering of

(1) Ovary (2) Testis

(3) Kidney (4) Liver

## SECTION - A

**151.** In the genetic code dictionary, how many codons are used to code for all the 20 essential amino acids

(1) 20 (2) 64

(3) 61 (4) 60

**152.** Similarity in DNA and RNA-

(1) Both are polymer of nucleotides

(2) Both have similar pyrimidine

(3) Both have similar sugar

(4) Both are genetic material

**153.** In three dimensional view the molecule of t-RNA is -

(1) L-shaped (2) S-shaped

(3) Y- shaped (4) E-shaped

**154.** Which of the following is initiation codon:-

(1) UAG (2) AUC

(3) AUG (4) CCU

**155.** Method of DNA replication in which two strands of DNA separates and synthesize new strands:-

(1) Dispersive (2) Conservative

(3) Semiconservative (4) Non conservative

**156.** In which stage of cell cycle, DNA replication occurs:-

(1) G**1** - phase (2) S - phase

(3) G**2** - phase (4) M - phase

**157.** Degeneration of a genetic code is attributed to the

(1) First member of a codon

(2) Second member of a codon

(3) Entire codon

(4) Third member of a codon

**158.** What would happen if in a gene encoding a polypeptide of 50 amino acids, 25$^{th}$ codon (UAU) is mutated to UAA :-

(1) A polypeptide of 24 amino acids will be formed

(2) Two polypeptides of 24 and 25 amino acids will be formed

(3) A polypeptide of 49 amino acids will be formed

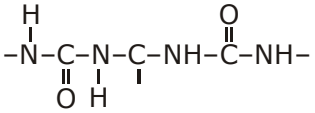
(4) A polypeptide of 25 amino acids will be formed

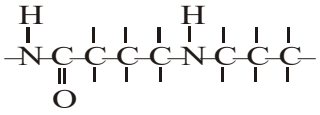
**159.** During transcription, the DNA site at which RNA polymerase binds is called :-

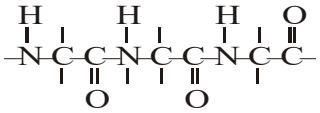
(1) Promoter (2) Regulator

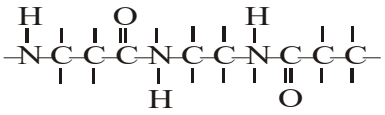
(3) Receptor (4) Enhancer

**160.** Which of the following structures represents the peptide chain ?

(1) 

(2) 

(3) 

(4) 

**161.** During transcription, if the nucleotide sequence of the DNA strand that is being coded is ATACG, then the nucleotide sequence in the mRNA would be

(1) TATGC

(2) TCTGG

(3) UAUGC

(4) UATGC

**162.** Which form of RNA has a structure resembling clover leaf ?

(1) rRNA (2) hnRNA

(3) mRNA (4) tRNA

**163.** A sequence of how many nucleotides in messenger RNA makes a codon for an amino acid ?

(1) Three (2) Four

(3) One (4) Two

**164.** Which one of the following makes use of RNA as a template to synthesize DNA –

(1) DNA dependant RNA polymerase

(2) DNA polymerase

(3) Reverse transcriptase

(4) RNA polymerase

**165.** Amino acid sequence, in protein synthesis is decided by the sequence of

(1) tRNA (2) mRNA

(3) cDNA (4) rRNA

**166.** One gene-one enzyme hypothesis was postulated by

(1) R. Franklin

(2) Hershey and Chase

(3) A.Garrod

(4) Beadle and Tatum

**167.** One turn of the helix in a B-form DNA is approximately

(1) 20 nm (2) 0.34 nm

(3) 3.4 nm (4) 2 nm

**168.** Antiparallel strands of a DNA molecule means that

(1) one strand turns anti-clockwise

(2) the phosphate groups of two DNA strands, at their ends, share the same position

(3) the phosphate groups at the start of two DNA strands are in opposite position (pole)

(4) one strand turns clockwise

**169.** Thymine is –

(1) 5-–Methyl uracil

(2) 4–Methyl uracil

(3) 3–Methyl uracil

(4) 1–Methyl uracil

**170.** The Okazaki fragments in DNA chain growth

(1) Result in transcription

(2) Polymerize in the 3'-to-5' direction and forms replication fork

(3) Prove semi-conservative nature of DNA replication

(4) Polymerize in the 5'-to-3' direction and explain 3'-to-5' DNA replication

**171.** The two polynucleotide chains in DNA are :

(1) Parallel

(2) Discontinuous

(3) Antiparallel

(4) Semiconservative

**172.** What is not true for genetic code :-

(1) It is unambiguous

(2) A codon in mRNA is read in a non-contiguous fashion

(3) It is nearly universal

(4) It is degenerate

**173.** Removal of introns and joining the exons in a defined order in a transcription unit is called :-

(1) Capping

(2) Splicing

(3) Tailing

(4) Transformation

**174.** Which one of the following is a wrong statement regarding mutations ?

(1) Change in a single base pair of DNA does not cause mutation

(2) Deletion and insertion of base pairs cause frame-sheft mutations

(3) Cancer cells commonly show chromosomal aberrations

(4) UV and Gamma rays are mutagens

**175.** Central dogma was given by

(1) Griffith

(2) Robert brown

(3) Robert Hook

(4) Francis crick

**176.** Select the correct option:

| | Direction of RNA synthesis | Direction of reading of the template DNA strand |
|---|---|---|
| (1) | 3′ – 5′ | 5′ – 3′ |
| (2) | 5′ – 3′ | 5′ – 3′ |
| (3) | 3′ – 5′ | 3′ – 5′ |
| (4) | 5′ – 3′ | 3′ – 5′ |

**177.** Which one of the following is wrongly matched ?

(1) Translation – Using information in m-RNA to make protein.

(2) Repressor protein-Binds to operator to stop enzyme synthesis.

(3) Operon – Structural genes, operator and promoter.

(4) Transcription – Writing information from DNA to t-RNA

**178.** Which of the following is required as inducer(s) for the expression of Lac operon?

(1) glucose

(2) galactose

(3) lactose

(4) lactose and galactose

**179.** If genetic code is tetraplet then what is the possible number of codons wich code 20 types of amino acids :-

(1) 261

(2) 64

(3) 256

(4) 43

**180.** Circular and double stranded DNA occurs in -

(1) Golgibody (2) Mitochondria

(3) Nucleus (4) Cytoplasm

**181.** If there are 10,000 base pairs in DNA, then its length-

(1) 340 nm (2) 3400 nm

(3) 34000 nm (4) 340000 nm

**182.** Mitochondrial DNA is-

(1) Naked (2) Circular

(3) Double stranded (4) All the above

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

(1) 500 (2) 10,000

(3) 20,000 (4) 40,000

**184.** The process of m RNA synthesis on a DNA is known as-

(1) Translation (2) Transcription

(3) Transduction (4) Transformation

**185.** Double helix model of DNA is proposed by-

(1). Watson and Crick

(2) Schleiden schwann

(3) Singer and Nicholson

(4) Kornberg and Khurana

**186.** Which may be attached with Adenine base in RNA -

(1) Guanine (2) Cytosine

(3) Uracil (4) Thymine

**187.** DNA differs from RNA in-

(1) Only Sugar

(2) Nitrogen base only

(3) Nitrogen base and sugar

(4) None

**188.** A codon in m-RNA has :-

(1) 3-bases (2) 2-bases

(3) 1-base

(4) Number of bases vary

**189.** Prokaryotic genetic system contains -

(1) DNA & histones

(2) RNA & histones

(3) Either DNA or histones

(4) DNA but no histones

**190.** Purine bases of DNA are -

(1) U & G (2) A & G

(3) A & C (4) None

**191.** The purine & pyrimidine pairs of complementry strands of DNA are held together by –

(1) H - bonds (2) O - bonds

(3) C - bonds (4) N - bonds

**192.** Watson & crick proposed the model of DNA structures in -

(1) 1953 (2) 1943

(3) 1955 (4) 1963

**193.** DNA polymerase is needed for -

(1) Replication of DNA

(2) Synthesis of DNA

(3) Elongation of DNA

(4) All of above

**194.** RNA synthesis is controlled by -

(1) Rho- factor

(3) Sigma factor

(2) Endo nuclease

(4) RNA - polymerase

**195.** A bacterium with completely radioactive DNA was allowed to replicate in a non- radioactive medium for two generation what % of the bacteria should contain radioactive DNA :-

(1) 100 % (2) 50 %

(3) 25 % (4) 12.5 %

**196.** Genetic code was discovered by-

(1) Nirenberg & Mathei

(2) Kornberg & Crick

(3) Khorana & Kornberg

(4) Gamow

**197.** 64 Codons constitute genetic code because-

(1) There was 64 types of amino acid

(2) 64 types of t-RNA

(3) Genetic code is triplet

(4) There are 64 enzymes

**198.** Which codon gives signal for the start of polypeptide (protein) chain synthesis-

(1) AUG (2) UGA

(3) GUA (4) UAG

**199.** The function of non-sense codons is-

(1) To release polypeptide chain from t-RNA

(2) To form an unspecified amino acid

(3) To terminate the message of a gene controlled protein synthesis-

(4) To convert a sense DNA into non sense DNA

**200.** m - RNA is attached with -

(1) E.R. (2) Ribosome

(3) Nucleus (4) Lysosome

# NUCLEUM CAREER INSTITUTE

The core of knowledge

# परिणाम ही प्रमाण है

CITY RANK 2

**PARIKSHIT KUMAR LIKHI**

AIIMS, BILASPUR (H.P.)

OUR TOPPER 2022

665/720

**SATYAM KAURAV**

MGMMC, INDORE

OUR TOPPER 2021

617/720

## Highest Score out of all Indore Based Institutes

## Highest Selection Ratio in Central India

# ADMISSION OPEN

# CALL US : 70248-60313

## OUR STARS

| 612/720 | 602/720 | 597/720 | 581/720 | 573/720 | 572/720 | 554/720 |
|---|---|---|---|---|---|---|
| Kunal Bhura | Ankit Soni | Rohit Lakhani | Vedant Garg | Mohd Rajodwala | Piyush Pandey | Iffat Nasir |
|  |  |  |  |  |  |  |
| GMC, BHOPAL | GMC (T.N.) | NSCB, JABALPUR | SSMC, REWA | GMC, Ratlam | ABVGMC, VIDISHA | GMC, KHANDWA |

| Tanvi Satish | Navin Uikey | Divyanshi Waskle | Harshwardhan Jat | Aryan Patidar | Misbah Ansari | Mahi Vyas |
|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |
| BMGMC, SHAHDOL | NSCB, JABALPUR | SSMC, REWA | SAIMS, INDORE | RD GMC, UJJAIN | PCMS, BHOPAL | AIMS, DEWAS |

2nd Floor, Victory Chamber, 4A Ratlam Kothi, Geeta Bhawan Square , Indore

Website : www.nucleum.in 70248-60313 nucleum_career_institute

# NUCLEUM
## CAREER INSTITUTE
The core of knowledge

**Er. Amith Mishrra Sir**
DIRECTOR, HOD PHYSICS
B. TECH
CSE, Roorkee
(12+ Years Teaching Experience)

**Dr. Nikhil Mishra Sir**
DIRECTOR, HOD CHEMISTRY
MBBS
MGM Medical College, Indore
(8+ Years Teaching Experience)

**Dr. Anas Qureshi Sir**
DIRECTOR, HOD BIOLOGY
MBBS (Gold Medalist)
MGM Medical College, Indore
(8+ Years Teaching Experience)

# Why Nucleum?

- Highest Selection Ratio in Central India.
- Mentoring by only Doctors & Engineers.
- Limited Batch size.
- Separate batches for Hindi & English medium.
- Directors के द्वारा व्यक्तिगत Doubt session.
- हिन्दी माध्यम के छात्रों के लिए विशेष अध्ययन सामग्री
- Weekly NEET Targeted & Full syllabus Test Series.
- Daily Practice session.
- 8 am to 8 pm Library Facility.
- NCERT based Separate Lectures.
- Micro analysis of each test.

EARLY BIRD
Upto 30% Scholarship
OFFER

2nd Floor, Victory Chamber, 4A Ratlam Kothi, Geeta Bhawan Square , Indore
70248-60313,88712-97323, 79990-18964, 82248-71115

Website : www.nucleum.in 70248-60313 nucleum_career_institute