

## **NEET SAMPLE PAPER - 4**

Maximum Marks: 720

#### **Topics Covered:**

Physics :Full Syllabus Chemistry :Full Syllabus Biology :Full Syllabus

#### **Important Instruction:**

1. Attempting all the questions are compulsory.

2. Use Blue / Black Ball point pen only.

3. There are three sections of equal weightage in the question paper A, B, C (Physics, Chemistry having 45

#### questionsand Biology having 90 questions.

- 4. For marking scheme, +4 marks for each correct answer and -1 marks for each incorrect answer.
- 5. Use of calculator and other electronic devices is not allowed during the exam.
- 6. No extra sheets will be provided for any kind of work.

Name of the Student :	Class:
Father's Name:	Signature :
Drawah Nama	Constant No
Branch Name :	Contact No :

### PART – A (PHYSICS)

- 1. In which of the following instrument used in the lab there exists an error of random category known as back<br/>lash error; (i) Screw gauge<br/>(ii) Micrometer<br/>(iii) Searle's apparatus<br/>(iv) Vernier calipers<br/>(c) (i) only<br/>(d) All four
- 2. A particle is executing S.H.M between two points P and Q with zero velocity at these two points which are the distances 'a' and 'b' from a fixed point 'O' in the same line OPQ. The velocity of particle midway between the points P and Q is V. The time period of oscillation of the particle is

(a)  $\frac{\pi(a+b)}{V}$  (b)  $\frac{\pi(b-a)}{V}$  (c)  $\frac{\pi(a+b)}{2V}$  (d)  $\frac{\pi(b-a)}{2V}$ 

3. In the figure below, PQRS denotes the path followed by a ray of light as it travels through three media in succession. The absolute refractive indices of the media are  $\mu_1$ ,  $\mu_2$  and  $\mu_3$  respectively. (The line segment RS<sup>1</sup>, in the figure is parallel to PQ). Then



- 4. A boat crossing a river moves with a velocity v relative to still water. The river is flowing with a velocity v/2 with respect to the bank. The angle with respect to the flow direction with which the boat should move to minimize the drift is: (a)  $30^{\circ}$  (b) $60^{\circ}$  (c)  $150^{\circ}$  (d)  $120^{\circ}$
- 5. Following figure show different combinations of identical bulb(s)  $\otimes$  connected to identical battery(ies). Which option is correct regarding the total power dissipated in the circuit?



(a) P < Q < R < S

- 6. Two long conductors separated by a distance d carry currents  $i_1$  and  $i_2$  in the same direction. They exert a force F on each other. Now the current in one of them is increased to two times and its direction is reversed. The distance is also increased to 3d. The new value of the force between them is (a) - 2F/3(b) F/3 (c) - 2F(d) -F/3
- 7. Figure shows seven identical blocks kept equidistant on a frictionless floor. Initially, blocks a and b are moving right ward and block g is moving leftward, each with speed v = 3m/s. The other blocks are stationary. A series of perfectly elastic collisions occur. After the last collision the speed and direction of motion of



- (a) A will be at rest
- (c) F will be at rest

(b) D will be 1.5m/s towards left (d) G will be 3 m/s towards right.

- 8. In photoelectric effect when photons of energy hv fall on a photosensitive surface (work function =  $\phi$ ) electrons are emitted from the metallic surface with a kinetic energy. It is possible to say that (a) All ejected electrons have same kinetic energy equal to  $hv - \phi$ 
  - (b) The ejected electrons have a distribution of kinetic energy from zero to  $hv \phi$
  - (c) The most energetic electrons have kinetic energy equal to  $\phi$
  - (d) All ejected electrons have kinetic energy hv
- 9. A galvanometer (G) is shunted such that only 1/11th of the main current flows through it. If G=150  $\Omega$  the shunt resistance is (c) 10 Ω (b) 20 Ω (d) 25 Ω

(a) 15 Ω	
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10. In the figure two conducting concentric charged spherical shells are shown. If the electric potential at the center is 20V and the electric potential of the outer shell is 5V, then the potential of the inner shell is

- (a) 5V (b) 15 V
- (c) 20 V (d) 25 V
- 11. A wave with a frequency of 30 Hz travels along a string at speed of 36 m/s and reflects off a free end. The distance of the first node from the end of the string (a) 0.2 m (b) 0.3 m (c) 0.4 m (d) 0.6 m
- 12. Three rings, each having equal radius R, are placed mutually perpendicular to each other and each having its center at the origin of coordinate system. If current I is flowing through

each ring, then the magnitude of the magnetic filed at the common center is

(a)  $\sqrt{3} \frac{\mu_0 I}{2R}$ 

(b) Zero

(c)  $\left(\sqrt{2}-1\right)\frac{\mu_0 I}{2R}$ (d)  $\left(\sqrt{3} - \sqrt{2}\right) \frac{\mu_0 I}{2R}$ 



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13. An infinite number of capacitors of capacitances C, 2C, 4C, 8C, 16C, 32C, ..... are connected in series. The equivalent capacitance of arrangement between A and B is



14. Inside a long straight uniform wire of circular cross - section there is a long cylindrical cavity (bore) of radius r whose axis is parallel to the axis of the wire. Axis of cavity is displaced from the axis of wire by a distance 'L' as shown in figure. A direct current J flows through the wire. Then





16. In YDSE, the width of one slit is different from other, so that the amplitude of light from one slit is double that from the other. If  $I_m$  is the maximum intensity, the intensity when they interfere with a phase difference of  $\phi$  is

(a) 
$$\frac{I_m}{9}(4+5\cos\phi)$$
 (b)  $\frac{I_m}{3}(1+2\cos^2\frac{\phi}{2})$  (c)  $\frac{I_m}{5}(1+4\cos^2\frac{\phi}{2})$  (d)  $\frac{I_m}{9}(1+8\cos^2\frac{\phi}{2})$ 

17. If  $I_0$  is the intensity of principal maximum in the single slit diffraction experiment, the intensity of the principal maximum when the slit width is doubled is (a)  $2I_0$  (b)  $4I_0$  (c)  $I_0$  (d)  $I_0/2$ 

18. The maximum work done in rotating a bar magnet of magnetic moment M when placed in a uniform magnetic field B is
(a) MB
(b) – MB
(c) 2MB
(d) Zero

19. Three waves A, B and C of frequencies 1600 kHz, 5 MHz and 60 MHz are to be transmitted from one place to another. Which of the following mode of communication is most appropriate?

(a) A is transmitted via space wave while B and C are transmitted via sky wave

- (b) A is transmitted via ground wave, B is transmitted via sky wave while C is transmitted via space wave
- (c) B and C are transmitted via ground wave, while A is transmitted via sky wave
- (d) B is transmitted via ground wave while A and C are transmitted via space wave

20. Two positive charges  $q_2$  and  $q_3$  are placed along the y-axis as shown. They exert a net force on  $q_1$  in the positive x- direction. If a third positive charge Q is placed on the x-axis at (X, 0) then the net force on  $q_1$ 



- (a) Shall increase in the positive x- direction.
- (b) Shall decrease in the negative x –direction.
- (c) Shall be in the negative y- direction.
- (d) Cannot be predicted

(d) 5/8 D

- 21. A fish looking up through the water sees the outside world contained in a circular horizon. If the refractive index of water is 4/3 and the fish is 12 cm below the surface. The radius of this circle is (a)  $36\sqrt{7}$  cm (b)  $36/\sqrt{7}$  (c)  $36\sqrt{5}$  (d)  $4\sqrt{5}$
- 22. An electro-magnetic wave in vacuum has the electric and magnetic fields as  $\overline{E}$  and  $\overline{B}$ , which are always perpendicular to each other. The direction of polarization is given by  $\overline{X}$  and that of the wave propagation as

(b)  $\overline{X} \perp \overline{E}$  and  $\overline{\mathbf{k}} \perp \overline{E} \times \overline{B}$ (d)  $\overline{X} \perp \overline{E}$  and  $\overline{\mathbf{k}} \perp \overline{B} \times \overline{E}$ 

- $\bar{k}$  . Then
  - (a)  $\overline{X} \perp \overline{B}$  and  $\overline{\mathbf{k}} \perp \overline{B} \times \overline{E}$ (c)  $\overline{X} \perp \overline{B}$  and  $\overline{\mathbf{k}} \perp \overline{E} \times \overline{B}$
- 23. A fully charged capacitor C with initial charge q<sub>0</sub> is connected to a coil of inductance L at time t = 0. The time after which the energy is stored equally between electric and magnetic fields is
  - (a)  $\frac{\pi}{4}\sqrt{LC}$  (b)  $2\pi\sqrt{LC}$  (c)  $\sqrt{LC}$  (d)  $\pi\sqrt{LC}$
- 24. A thin glass lens (refractive index = 1.5) has an optical power of 5D in air. Its optical power in a liquid of refractive index 1.6 is
  - (a) 1 D (b) 1 D (c) -5/8 D
- 25. Truth table of the four NAND gates shown in the figure is



26. The figure shows a part of a complete circuit. The potential difference  $V_B - V_A$  when the current I is 5A and is decreasing at a rate of  $10^3$  As<sup>-1</sup> is given by



27. Two conducting rings P and Q of radii r and 2r rotate uniformly in opposite directions with centre of mass velocities 2v and v respectively on a conducting surface S. There is a uniform magnetic field of magnitude B perpendicular to the plane of the rings. The potential difference between the highest points of the two rings is



- 28. Let  $u_1$  be the frequency of the series limit of the Lyman series,  $u_2$  be the frequency of the first line of the Lyman series, and  $u_3$  be the frequency of the series limit of the Balmer series.
  - (a)  $u_1 u_2 = u_3$  (b)  $u_2 u_1 = u_3$  (c)  $u_3 = \frac{1}{2}(u_2 + u_1)$  (d)  $u_3 = (u_2 + u_1)$
- 29. In a series CR circuit shown in figure, the applied voltage is 10 V and the voltage across capacitor is found to be 8V. Then the voltage across R, and the phase difference between current and the applied voltage will respectively be



- 30. For a transistor amplifier, the voltage gain
  - (a) Remains constant for all frequencies
  - (b) Is high at high and low frequencies and constant in the mid frequency range
  - (c) Is low at high and low frequencies and constant in the mid frequency range
  - (d) Is highly irregular.
- 31. The rate of decay of a radioactive element at t = 0 instant  $10^3$  disintegrations/s. If the half-life of the elements is 1 s, then the rate of decay after 1 s will be
  - (a) 500 disintegrations / s (b) 1000 disintegrations/ s
  - (c) 250 disintegrations/ s (d) 2000 disintegrations/ s
- 32. In the case of geostationary satellite, the

- (a) Rotation of the earth and the revolution of the satellite need not be about common axis
- (b) Rotation of the earth and revolution of the satellite will be in opposite directions
- (c) Angular velocity of the earth's rotation and angular velocity of revolution of the satellite will be equal and be in the same direction
- (d) Angular velocity of the earth's rotation and angular velocity of revolution of the satellite will not be equal
- 33. A sphere of brass released in a long liquid column attains a terminal speed  $v_0$ . If the terminal speed attained

by the sphere of marble of the same radius and released in the same liquid is  $nv_0$ , then the value of n will be. [Given: The specific gravities of brass, marble and the liquid are 8.5,2.5 and 0.8 respectively.]

, 5	" <u>17</u>	, 11	, " 17
(a) $\frac{17}{17}$	(b) $\frac{1}{77}$	(c) $\frac{1}{31}$	(d) ${5}$

34. The maximum load a wire of length L and cross sectional area A can withstand without breaking is W. The

maximum load that another wire of same material, length  $\frac{L}{2}$  and area of cross section A can withstand without breaking is

- (a) 2W (b)  $\frac{W}{2}$  (c) 4W (d) W
- 35. Two springs of force constant 100 N/m and 150 N/m are in series as shown. The block is pulled by a distance of 2.5 cm to the right from equilibrium position. What is the ratio of work done by the spring at left to the work done by the spring at right?

(a) $\frac{3}{2}$	(b) $\frac{2}{3}$	<b>600</b>	150 N/m 
(c) 0.2	(d) 0.5		

36. A stationary body of mass *m* is slowly lowered onto a massive long platform of mass M(>>m) moving at a speed 4 m/s as shown in the figure. How far the body slides along the platform?

[Take μ	$= 0.2 \text{ and } g = 10m/s^2$ ].	$\mu = 0.2$ $m$ $v_0 = 4 m / s$	
(a) 8 m	(b) 12 m	(c) 6 m	(d) 4 m

37. The potential energy of a particle of mass 5 kg moving in the *x*-*y* plane is given by U = (-7x + 24y)J; *x* and *y* being measured in m. If the particle starts from origin from rest, the magnitude of the conservative force acting on the particle is (a) 25 units (b) 24 units (c) 7 units (d) 84 units

38. In figure particle is shown travelling counterclockwise in circle of radius 10 m. The acceleration vector is indicated at a specific time. The value of 'v' at this time is  $\frac{1}{v}$ 

Byju's Classes 7.5 lakh + likes on f. India's most liked Educational  $a = 50 \text{ m/s}^2$ 

(a)10 m/s	(b) 15 m/s
(c)20 m/s	(d)7 m/s

39. A thin rod of mass M and length l stands along z-axis. Its lower end is *hinged* at the center of a disc of same mass M and radius R. The disc is on XY plane with its center at the origin. The whole arrangement is rotating freely about z-axis with an angular velocity  $\omega_0$ . If the rod falls on disc and rotates with the disc. The angular speed of the arrangement is

(a) 
$$\frac{\omega_0 R^2}{l^2 + R^2}$$
 (b)  $\frac{3\omega_0 R^2}{2l^2 + 3R^2}$  (c)  $\frac{6\omega_0 R^2}{l^2 + 6R^2}$  (d)  $\frac{6\omega_0 R}{l + 6R}$ 

40. A piece of ice is floating in water. The fraction of volume of the piece of ice outside the water is  $[\rho_{im} = 900 kg/m^3]$  and  $\rho_{max} = 1000 kg/m^3$ ]

ісе	0000	water	1		
(a) (	).21		(b) 0.01	(c) 0.1	(d) 0.9

- 41. The water equivalent of a copper colorimeter is 4.5g. If specific heat of copper is 0.09 cal /g/ °C, then 1) Mass of the calorimeter is 0.5kg
  - 2) Thermal capacity of the calorimeter is 4.5 cal/ C
  - 3)The heat required to raise the temperature of the calorimeter by 8°C will be 36 cal.
  - 4) Heat required to melt 15 gm of ice placed in the calorimeter will be 1200 cal
  - Choose the correct option from below
  - (a) 1 is correct (b) 2, 3 only are correct (c) 2, 3, 4 are correct (d) 3, 4 only are correct
- 42. On a T-P diagram, two moles of ideal gas perform process AB and CD. If the work done by the gas in the process AB is two times the work done in the process CD then what is the value of  $T_1/T_2$



- 43. A cubic vessel (with faces horizontal + vertical) contains an ideal gas at NTP. The vessel is being carried by a rocket which is moving at a speed of  $500 \,\mathrm{ms}^{-1}$  in vertical direction. The pressure of the gas inside the vessel as observed by us on the ground
  - (a) Remains the same because 500 m/s is very much smaller than  $\, v_{_{rms}} \,$  of the gas
  - (b) Remains the same because motion of the vessel as a whole does not affect the relative motion of the gas molecules and the walls
  - (c) Will increase by a factor equal to  $\left(v_{\rm rms}^2 + (500)^2\right) / v_{\rm rms}^2$  where  $v_{\rm rms}$  was the original mean

square velocity of the gas

- (d) Will be different on the top wall and bottom wall of the vessel
- 44. A steel tape gives correct measurement at 20°C. A piece of wood is being measured with the steel tape at 0°C. The reading is 25 cm on the tape, the real length of the given piece of wood must be

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(a) 25 cm	(b) < 25 cm		(c) > 25 cm		(d) cannot say	
45. Two equal forces a	ct a point. The square o	of their re	sultant is three	times the	eir product of magnitu	des. The
(a) 30 <sup>0</sup>	s (b) 60 <sup>0</sup>		(c) 90 <sup>0</sup>		(d) 120 <sup>0</sup>	
	ΡΑ	RT – B	(CHEMISTRY	()		
46. At a certain temper	rature, for the reaction	$N_2 + O_2$	$\Rightarrow 2NO$ ; if K =	= 0.09 the	e equilibrium constant	for
NO $\rightleftharpoons \frac{1}{2}N_2 + \frac{1}{2}O_2$ is (a) 0.03	(b) 3.3	(c)81		(d) 27		
47. 20 <i>cm</i> <sup>3</sup> of 0.25 N H	Cl, 20 <i>cm</i> <sup>3</sup> 0.5 N HCl & 9	90 <i>cm</i> <sup>3</sup> o	f 0.1 N <i>HNO</i> 3 w	ere mixe	d and diluted to a litre	. The
(a) 0.8 N	ing solution is. (b) 1.05 N		(c) 0.105 N		(d)0.16 N	
49. The evidation num	har of culphur in C. C. I		spostivoly are			
48. The oxidation num (a) 0, 1, -2	(b) 2, +4 , – 2	- <sub>2,</sub> Η <sub>2</sub> ς re	(c) 0, +1, 2		(d) -2, +1, -2	
49. The electronic conf (a) $1S^22S^2$	iguration of N in HNO <sub>2</sub> (b) 1S <sup>2</sup> 2S <sup>2</sup> 2P	<b>is</b> 3	(c)1S <sup>2</sup> 2S <sup>2</sup> 2P <sup>1</sup>		(d) 1S <sup>2</sup> 2S <sup>2</sup> 2P <sup>5</sup>	
50 . What is formed wh (a) $C_2D_2$	nen calcium carbide rea (b) CaD <sub>2</sub>	cts with I	neavy water? (c)Ca <sub>2</sub> D <sub>2</sub> O		(d) CD <sub>2</sub>	
51. Which of the follov (a) Diffraction	ving property is applical (b) Interference	ble to e <sup>_</sup> (c) E =	whether it is co $mc^2$	nsidered (d) <i>mc</i>	as a wave or as a part $a^2 = hv$	icle.
52. Identify the correct (a) is the smallest a (c) has high electro	t statement regarding so tom in the period negativity	odium?	(b) has low IE (d) has a ge	eneral el	ectronic configuration	of $ns^2np^2$
53. The 3 <sup>rd</sup> IE of an element may be	ment is found to be ver	y high coi	mpared to the fi	irst and t	he second IE. The vale	ency of the
<ul> <li>54. Alums are used as mordant in dyeing because</li> <li>(a) dye is absorbed on AI(OH)<sub>3</sub> which is deposited on fibre in the hydrolysis process</li> <li>(b) dye is adsorbed on KOH formed due to hydrolysis</li> <li>(c) Both (a) &amp; (b)</li> <li>(d) None</li> </ul>						
55. The number of noc (a) 1	lal planes present in a <i>o</i> (b) 2	s*S anti b (c) 0	onding orbital is	(d) 3		



66. The VP of a solution of 5g of non – electrolyte in 100 g of  $H_2O$  at a particular temp is 2985  $Nm^{-2}$ . The VP of





80. Compare the 2 methods shown for the preparation of carboxylic acids

Method 1 :RBr  $\xrightarrow{Mg}$  RMgBr  $\stackrel{(i)CO_2}{\underset{ii)H_3O^+}{\longrightarrow}}$  RCOOH

Method 2 :RBr  $\xrightarrow{NaCN}$  RCN  $\xrightarrow{H_2O, HCl}$  RCOOH

Which one of the following statements correctly describes this conversion?



84. B (mix)  $\xleftarrow{conc.HI}$  (CH<sub>3</sub>)<sub>3</sub>C-O-CH<sub>3</sub> $\xrightarrow{an\,hyd\,HI}$  A (mix) (a) A & B are identical mixture of CH<sub>3</sub>I and (CH<sub>3</sub>)<sub>3</sub>COH (b) A & B are identical mixture of (CH<sub>3</sub>)<sub>3</sub>Cl and CH<sub>3</sub>OH (c) A is a mixture of  $CH_3I$  and  $(CH_3)_3COH$ and B is a mixture of CH<sub>3</sub>OH and (CH<sub>3</sub>)<sub>3</sub>CI (d) Opposite of (c) 85. FeS + HCl $\rightarrow$  A + B(g) Gas B is passed into aq. solution of C to form A select correct statements based on the above. (a) Color of C changes from yellow to very light green (b) gas B turns lead acetate paper black (c) A form deep blue color with  $K_3[Fe(CN)_6]$ (d) All the above are true. 86. In which case number of C atoms is retained (a)  $CH_3CH = CHCH_3 \xrightarrow{O_3/H_2O/Zn}$ KMnO<sub>4</sub>/OH (b) CH<sub>3</sub>CH=CHCH<sub>3</sub>  $(d)CH_3CH_2CH = CH_2$ (c) 87. Cl<sub>2</sub>O, Br<sub>2</sub>O, I<sub>2</sub>O have positive value of  $\Delta$ G indicating that (b) these oxides are unstable and changes to  $X_2 \& O_2$ (a) these oxides are stable (c) these disproportionates into  $X^{\ominus} \& X^{\ominus}$ (d) these oxides can form inter halogen compounds 88. Urotropine is obtained when (b) Urea reacts with ammonia (a) Urea reacts with formalin (c) formaldehyde with ammonia (d) acetone with ammonia 89. Argon possess (a) translational motion only (b) translational + rotational motion (c) translational + vibrational (d) translational + rotational + vibrational 90. Which of the following oxides of chromium is amphoteric in nature. (a) CrO (b)  $Cr_2O_3$ (c)  $CrO_3$ (d) none

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## PART – C (BIOLOGY)

<ul><li>91. Undifferentiated totipotent</li><li>(a) Archaeocytes</li></ul>	cells of sponges are (b) porocytes	(c) myocytes	(d) trophocytes
92. Which one of the following	plasma protein is involv	ed in the coagulation of	blood?
(a) Serum amylase	(b) A globulin	(c) Fibrinogen	(d) An albumin
93. When oxygen supply is inac (a) hypoxia	lequate to the tissue, the (b) asphyxia	e condition is known as (c) pleuracy	(d) anoxia
<ul><li>94. Uricotelic mode of passing (a) Birds and annelids</li><li>(c) insects and amphibians</li></ul>	nitrogenous wastes is fo	und in (b) amphibians and rep (d) reptiles and birds	tiles
95. Kupffer's cells are present i (a) Liver	n (b) Pancreas	(c) small intestine	(d) Oesophagus
96. Which part of the human bi (a) Medulla oblongata	rain is concerned with th (b) cerebellum	e regulation of body ten (c) hypothalamus	nperature? (d)Pons
97. A four chambered heart is r (a) Birds	not found in (b) mammals	(c) snake	(d) Crocodile
98. Ichthyophis belongs to class (a) Amphibia	s (b) Mammalia	(c) Arthropoda	(d) Reptilia
99. Tube feet is locomotory org (a) Star fish	;an in (b) jelly fish	(c) silver fish	(d) Scoliodon
100. Radial symmetry is found i (a) Aurelia	in (b) frog	(c) earthworm	(d) humans
<ul> <li>101. The "lock and key" model</li> <li>(a) May be destroyed and r</li> <li>(b) Interacts with a specific</li> <li>(c) Reacts at identical rates</li> <li>(d) Forms a permanent enz</li> </ul>	of enzyme action illustra esynthesised several tim type of substrate molec under all conditions yme-substrate complex	ates that a particular enz nes ule	zyme molecule
102. The "Repeating Unit" of gl (a) Fructose	ycogen is (b) Mannose	(c) Glucose	(c) Galactose
103. Cholesterol is a/an (a) Saturated fat	(b) unsaturated fat	(c) steroid	(d) essential oil
104. Which of the following hyd (a) Lipase	drolyses internal phosph (b) Ligase	odiester bonds in a poly (c) Exonuclease	nucleotide chain? (d) Endonuclease

105. In Plant biotechnology, PE	G is used in			
(a) Protoplast isolation	(b) cell culture preparat	tion	(c) protoplast fusion	(d) hardening
106. There is a restriction endo	nuclease called Eco.RI. V	Vhat doe	es 'co' part in it stand for	?
(a) Coelom	(b) coenzyme		(c) Coli	(d) Colon
107. The problem of blindness	in poor countries can be	taken ca	are of by using which of t	the following?
(a) Golden rice	(b) Transgenic tomato		(c) Transgenic maize	(d) Bt Brinjal
108. All the terminator codons	begin with the nucleotid	е		
(a) Adenine	(b) Guanine		(c) Uracil	(d) Thymine
109. The one aspect which is no	ot a salient feature of gei	netic coo	le is its being	
(a) Degenerate	(b) Ambiguous		(c) Universal	(d) Specific
110. In the Lac operon system,	β – Galactosidase is code	ed by		
(a) Lac A	(b) Lac B		(c) Lac Z	(d) Lac Y
111. The central dogma of prot	ein synthesis is			
(a) DNA $\rightarrow$ DNA $\rightarrow$ Protein			(b) RNA $\rightarrow$ DNA $\rightarrow$ Prot	tein
(c) Protein $ ightarrow$ RNA $ ightarrow$ DNA			(d) DNA $\rightarrow$ RNA $\rightarrow$ Prot	tein
112. LH and FSH are collectively	y called			
(a) Oxytocin	(b) Somatotropin		(c) Gonadotrophins	(d)Luteotropin
113. Which of the following wa	s absent in the atmosphe	ere at th	e time of origin of life?	(1)
(a) NH <sub>3</sub>	(b) N <sub>2</sub>		(b) $O_2$	(b) H <sub>2</sub>
114 Thorps of Pougainvillas an	d tondrils of Cusurbita a	ro ovam	plac of	
(a) Homologous organs	(b) Applogous organs	re exam	(b) Vostigial organs (	d) Potrograssivo avalution
(a) Holliologous organs	(D) Analogous organs		(b) vestigiai organs (	u) Reli ogi essive evolution
115 Which one of the followin	g in hirds indicates their	rentilian	ancestry?	
(a) Scales on their hind limb		reptillar	(b) Four chambered be	art
(c) Presence of jaw	55		(d) Fgg with a calcareou	us shell
(0)			(4) -88 a calcal col	
116. Which of the following det	fines Hardy – Weinberg I	aw?		
(a) $p^2 + 2pq + q^2 = 1$	(b) $p^2 + 2pq - q^2 = 1$		(c) $p^2 - 2pq + q^2 = 0$	(d) $p^2 + 2pq + q^2 = 0$
117. Carcinoma refers to				
(a) malignant tumour of the	e colon	(b) ben	ign tumour of the conne	ective tissue
(c) malignant tumour of the	e connective tissue	(d) mal	ignant tumour of the ski	n or mucous membrane
118. The interferons are				
(a) Antibacterial drugs		(b) Ant	iviral drugs	
(c) Antibiotic drugs		(d) Imn	nunosuppressive drugs	
119. Connection between axon	and dendrite is	() =		( I) <del>-</del> I - I
(a) Synapse	(D) Synapsis	(c) Des	mosome	(a) Fight junction

120. The sequence of ear ossicl (a) malleus $\rightarrow$ incus $\rightarrow$ stap (c) stapes $\rightarrow$ incus $\rightarrow$ malle	es from outside to inside es us	e is (b) incus → stapes → malleus (d) malleus → stapes → incus	
121. Outer covering of virus ma (a)Capsid	ide up of protein is called (b) Prion	d (c) Virion	(d) Viroid
122. An organism used as a bio (a) Azospirillum	fertilizer for raising soyal (b) Rhizobium	bean crop production is (c) Nostoc	(d) Azotobacter
123. The number of autosomes (a) 46	in human primary sperr (b) 44	natocyte is (c) 43	(d) 42
124. Corpus luteum produces (a) Progesterone	(b) Oestrogen	(c) Leutotropin	(d) Corpotropin
<ul><li>125. Saheli is a</li><li>(a) oral contraceptive for fe</li><li>(c) diaphragm for females</li></ul>	males	(b) surgical sterilization method (d) surgical sterilization method	for females for males
126. The part of the fallopian tu (a) Isthmus	ube closest to the ovary i (b) Ampulla	s (c) Cervix	(d) Infundibulum
127. The Leydig's cells secrete (a) Estrogen	(b) Testosterone	(c) Progesterone	(d) Corticosterone
128. Hormone responsible for u (a) Oxytocin	uterine contraction is (b) Vasopressin	(c) Thyrotropin	(d) Gonadotropin
129. Wall of the alimentary can (a) Striated muscles	al contains (b) Striped muscles	(c) Smooth Muscle	(d) Cardiac muscle
<ul> <li>130. Which stages of cell division</li> <li>a. Late anaphase – Propha</li> <li>b. Prophase – Anaphase</li> <li>c. Metaphase – Telophase</li> <li>d. Telophase – Metaphase</li> </ul>	ase A Fig. A	es A and B represent respectively	/?
131. The transition between Me (a) Interkinesis	eiosis I and Meiosis II is (b) Cytokinesis	(c) Diakinesis	(d) Karyokinesis
<ul> <li>132. Which is not true about pr</li> <li>(a) DNA is complexed with l</li> <li>(c) Mesosome present</li> <li>133. Which one of the following</li> </ul>	okaryotes? histones g has its own DNA?	(b) Well developed nucleus abs (d) Mitochondria absent	ent

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(a) Mitochondria	(b) Dictyosome	(c) Lysosome	(d) Peroxisome			
134. Which of the following is t (a) Golgi bodies	he site of lipid synthesis (b) Rough ER	? (c) Smooth ER	(d) Ribosome			
135. The epithelial tissue prese (a) Cuboidal	nt on the inner surface o (b) Glandular	f bronchioles (c) Ciliated	(d) squamous			
136. 'Systema Naturae' refers to (a) plant name proposed by Linnaeus (c) a publication by Darwin(b) book name published by Linnaeus (d) a natural system of classification.						
137. Which of the following 'su order?	ffixes' used for units of a	taxonomic category clas	ssification in plants indicates of			
(a) —ales	(b) —aceae	(c) —oideae	(d)— ae			
138. During unfavourable cond (a) exospores	itions certain bacteria pr (b) endospores	oduce (c)heterocyst	(d) conidia			
139. Cyanobacterial cells which (a) homogenes	are specialized for nitro (b) heterocysts	gen fixation are (c) endospores	(d) akinetes			
<ul> <li>140. Which among the followin</li> <li>(a) Pigments of chlorophyll</li> <li>(b) Pigments chlorophyll a a</li> <li>(c) Pigments chlorophyll a a</li> <li>esters.</li> <li>(d) Pigments chlorophyll a a</li> </ul>	g is applicable to the me a and b; stored food sta and c; stored food mann and d, stored food floride and c; stored food floride	embers of Phaeophyceae rch, cell wall of cellulose itol and laminarin, cell w ean starch, cell wall of ce ean starch, cell wall of ce	? and pectin. all of cellulose and algin. Ilulose, pectin and polysulphate Ilulose and chitin.			
141. Water is not required for f	ertilization in (b) bryophytes	(c) algae	(d) gymnosperms			
<ul><li>142. Which among the followin</li><li>1. Ovary, style and stigma</li><li>3. Triploid endosperm</li><li>(a) 1 and 2.</li></ul>	g are found in gymnospe 2. Hapl 4. Doul (b) 2, 4 and 5.	erms? oid endosperm ole fertilization. (c) 2 and 5.	5. Anemophily. (d) 1, 3 and 5.			
<ul> <li>143. Select the correct statements:</li> <li>(A) From the region of elongation, some of the epidermal cells form root hair.</li> <li>(B) Pneumatophores are seen in Rhizophora.</li> <li>(C) Adventitious roots are seen in banyan tree.</li> <li>(D) Maize and sugarcane have prop roots.</li> <li>(a) A, B and D</li> <li>(b) A, C and D</li> <li>(c) B and C</li> <li>(d) A and D</li> </ul>						
144. Tetradyanamous conditior (a) Cruciferae	ns occur in – (b) Malvaceae	(c) Solanaceae	(d) Lilliaceae			
145. Photosynthetic or assimila (a) Banyan	tory roots are observed (b) Cuscuta	in (c) Tinospora	(d) Vanda			

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<ul><li>146. Ground tissues includes</li><li>(a) all tissues except epider</li><li>(c)all tissues internal to end</li></ul>	<ul><li>(b) epidermis and cortex</li><li>(d) all tissues external to endodermis</li></ul>						
147. Vascular tissues in floweri (a) phellogen	ng plants develop from (b) plerome	(c) periblem	(d) dermatogen				
148. Which one of the followin (a) Intrafascicular cambium (c) Phellogen	g is not a lateral meriste I	n? (b) Interfascicular cambium (d)Intercalary meristem					
<ul> <li>149. Which one of the statements regarding asexual reproduction is false</li> <li>(a) offspring are similar to their parents</li> <li>(b) reduction division takes place during asexual reproduction</li> <li>(c) offspring do not show variation</li> <li>(d) zygote formation does not take place</li> </ul>							
150. In majority of sexually reproducing organisms, the gametes produced are of two morphologically distinct types. These gametes are called							
(a) Heterogametes	(b) Isogametes	(c)Homogamet	es (d) Antherozoids				
151. When the pollen tube ent (a) Porogamy	ers through the funiculu (b) Chalazogamy	s or the integum (c) Mesogamy	ent it is called (d) Isogamy				
<ul><li>152. Which of the following is a</li><li>(a) transfer of pollen grain</li><li>(c) formation of flower</li></ul>	a post fertilisation event	in flowering plants? (b) endosperm development (d) formation of pollen grains					
153. A recessive trait in Garder (a) Tall stem	pea is (b) Colored flower	(c) Wrinkled se	ed (d) Inflated pod				
<ul> <li>154. A woman with two genes, one for haemophilia and one for colour blindness on one of its X-chromosomes marries a normal man. The progeny will be</li> <li>(a) All sons haemophilic and colour blind</li> <li>(b) 50% haemophilic and colour blind sons and 50% normal sons</li> <li>(c) All daughters haemophilic and colour blind</li> <li>(d) 50% haemophilic daughters and 50% colour blind daughters</li> </ul>							
155. Female heterogamety is p (a) Birds (b) Hui	resent in man beings	(c) Insects	(d) Cockroach				
<ul><li>156. Which of the following is not a result of nondisjund</li><li>(a) Down's syndrome</li><li>(c) Klinefelter syndrome</li></ul>		tion of the sex chromosomes? (b) Turner syndrome (d) none of these					
157. A local variation of climate is called (a) Niche (b) Microclimate		(c) Habitat	(d) Microhabitat				
(a) Pattern (b) Stra	tical layers in a forest is atification	(c) Zonation	(c) Ecotone				

- 159. Gause's principle of competitive exclusion is, essentially,
  - (a) the more abundant species will exclude the less abundant species through competition
  - (b) competition for the same resources excludes species having different life styles
  - (c) no two species can occupy the same niche indefinitely when resources are limited
  - (d) larger organisms exclude smaller ones through competition as in the case of large trees controlling underbrush

160. An inverted pyramid of biomass can be found in which ecosystem?

(a) Forest (b) Marine

(c) Grass land

(d) Tundra

161. The following graph depicts changes in two populations (A and B) of herbivores in a grassy field. A possible reason for these changes is that:



- a. Population A consumed the members of population B
- b. Both plant populations in this habitat decreased
- c. Population B competed more successfully for food than population A
- d. Population A produced more offspring than population B

162. The sequence of communities of primary succession in water is:

- (a) phytoplankton, sedges, free-floating hydrophytes, rootedhydrophytes, grasses and trees.
- (b) phytoplankton, free-floating hydrophytes, rooted hydrophytes, sedges, grasses and trees.
- (c) free-floating hydrophytes, sedges, phytoplankton, rootedhydrophytes, grasses and trees.
- (d) phytoplankton, rooted submerged hydrophytes, floating hydrophytes, reed swamp, meadow and trees.
- 163. The key criteria for determining a hot spot are
  - (a) Biological augmentation
  - (c) Number of endemic species and degree of threat
- (b) Disruption of interaction networks
- (d) Habitat destruction

164. Which one of the following	g is not in-situ method of conser	vation of flora?				
(a) Biosphere Reserve	(b) Botanical Garden	(c) National Park	(d) Wildlife Sanctuary			
165. Western Ghats have a grea does it represent?	ater number of amphibian specie	es than the Eastern Ghat	s. What kind of diversity			
(a) Species diversity	(b) Genetic diversity	(c) Ecological diversity	(d)None			
166. Fluoride pollution initially affects						
(a) kidneys	(b) teeth	(c) heart	(d) brain			
167. In the breakdown of the ozone layer, ozone directly reacts with						
(a) ultraviolet light	(b)chlorine atoms	(c) oxygen atoms	(d) CFC molecules			
<ul><li>168. Which air pollutant could cause rains to be acidic?</li><li>(a) Dust particles from cement factories</li><li>(c) Smoke from wood fires</li></ul>		(b) Insecticides from crop sprays (d) $SO_2$ from coal-fired power stations				

169. Guttation is due to	(b) Diffusion	(c) Imbibition	(d) Osmosis			
(a) NOUL PLESSURE	(b) Diffusion		(u) Osmosis			
(a) Discuss de sus sta	(h) deare a server		(-1)			
(a) Plasmodesmata	(b) desmosomes	(c) mesosomes	(d) pits			
<ul><li>171. Light is required for the light dependent reactions because</li><li>(a) It is the source for electrons</li><li>(c) it energizes electrons in the reaction centre</li></ul>		(b) it splits ATP molecules (d) all of the above				
172. In sugarcane, CO2 is fixed i (a) RuBP carboxylase	in malic acid with the help of en	yme (b) PEP carboxylase (d) Eructose phosphatase				
		(u) muetose phosphutu				
173. Which of the following is n	not essential for plant growth					
(a) zinc	(b) iodine	(c) potassium	(d) iron			
174. Dark reaction of photosynt	thesis occurs in					
(a) Outer membrane	(b) Inner membrane	(c) periplastidal space	(d) Stroma			
1/5. The water potential of pur	e water is					
(a) Zero	(b) Less than one	(c) More than one	(d) 10			
<ul><li>176. Spraying plant surface with</li><li>(a) Increased photosynthesis</li><li>(c) Decreased transpiration</li></ul>	h phenyl mercuric acetate will re is	sult in (b) Increased transpirat (d) Exosmosis	ion			
177 Endosmosis takes place w	hen plant cell is immersed in					
(a) Isotonic solution	(b) Hypotonic solution	(c) Hypertonic solution	(d) Sugar solution			
178. Granal and Agranal chloro	plast are found in					
(a) C3 plants	(b) C4 plants	(c) CAM plants	(d) Bacteria			
1/9. Phototropic curvature is th	ne result of uneven distribution (	)† 				
(a) Gibberellin	(b) phytochrome	(c) cytokinins	(d) auxins			
190 Photoporiodism was first characterized in						
(a) Tobacco	(b) tomato	(c) notato	(d) cotton			