

(NOT TO BE OPENED BEFORE TIME OR TILL ASKED TO DO SO)

(BPH-EE-2019)

Code

D

Sr. No. 10160

SET-"Z"

Time : 1¼ Hours (75 minutes) Total Questions : 130 Max. Marks : 100

Candidate's Name : _____ Date of Birth : _____

Father's Name : _____ Mother's Name : _____

Roll No. _____ (in figure) _____ (in words)

Date of Examination : _____

(Signature of the Invigilator)

(Signature of the candidate)

CANDIDATES MUST READ THE FOLLOWING INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER & FOLLOW THEM.

1. All questions under Part-A and Part-B are compulsory. Part-C is optional. The candidates may attempt either Optional Part-C (i) OR Optional Part-C(ii). All questions carry equal marks i.e. one mark each.
2. The candidate MUST return this question book-let and the OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / misbehaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such candidate will not be evaluated.
3. The candidate MUST NOT do any rough work OR writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself.
4. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
5. Question Booklet along-with answer key of all the A,B,C and D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.
6. Use only Blue or Black **BALL POINT PEN** of good quality in the OMR Answer-Sheet.
7. There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE QUESTION BOOK-LETS. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER THE START OF EXAMINATION



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Question No.	Questions
	Part-A (Physics)
1.	Two iron spheres, A (a solid sphere) and B (a hollow sphere), are charged to same potential. Which of the two hold more energy ? (1) A (2) B (3) Both have same (4) Can't be predicted
2.	Two bulbs A and B of 25 watt and 100 watt, respectively, rated at 220 V, are connected in series with a supply of 440 V. Which bulb will fuse ? (1) A (2) B (3) Both will fuse (4) None will fuse
3.	When a charge particle moves through a magnetic field, it may suffer a change in (1) Energy (2) Mass (3) Speed (4) Velocity
4.	Two electrons are moving parallel to each other in free space, then the force between them will be (1) Attractive (2) Repulsive (3) No force (4) Can't say anything
5.	Current used for electrolysis is (1) D.C. (2) A.C. (3) Both of these (4) None of these

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Question No.	Questions
16.	<p>The blue colour of sky is due to</p> <p>(1) Reflection of light (2) Refraction of light</p> <p>(3) Scattering of light (4) Diffraction of light</p>
17.	<p>If two coherent sources of intensity ratio 25:1 interfere, then the ratio of intensity of maxima and minima in the interference pattern will be</p> <p>(1) 3:2 (2) 9:4</p> <p>(3) 5:1 (4) 25:1</p>
18.	<p>Nuclear force between two nucleons depends on their</p> <p>(1) Mass (2) Charge</p> <p>(3) Spin (4) Both (2) and (3)</p>
19.	<p>Charge on a n-type semiconductor is</p> <p>(1) Zero (2) Negative</p> <p>(3) Positive (4) 10^{-6} coulomb</p>
20.	<p>If a zener diode has 9.1 V break down voltage with a maximum power dissipation of 273 mW, then maximum current that can pass through zener diode is</p> <p>(1) 40 mA (2) 30 mA</p> <p>(3) 20 mA (4) 10 mA</p>

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Question No.	Questions
21.	Lenz's law in electromagnetic induction follows law of conservation of (1) Charge (2) Energy (3) Linear momentum (4) Angular momentum
22.	Resistance offered by a Capacitor to D.C. is (1) zero (2) negative (3) positive (4) infinite
23.	Mechanical analogue of inductance is (1) Displacement (2) Velocity (3) Energy (4) Mass
24.	The classification of Electromagnetic spectrum is roughly based upon (1) How the waves are produced (2) How the waves are detected (3) Both (1) and (2) (4) Wavelength of waves
25.	If the atmosphere of earth suddenly disappears then duration of day will (1) Increase by 4 minutes (2) Decrease by 4 minutes (3) No change (4) Can't be predicted

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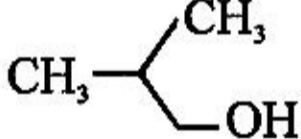
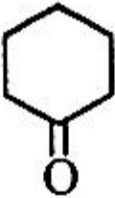
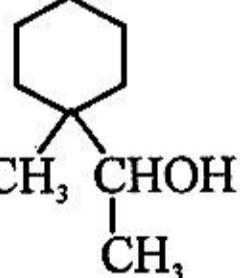
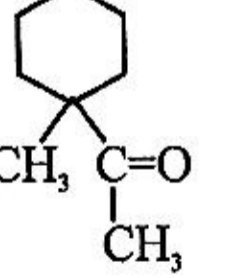
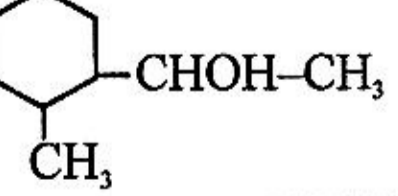
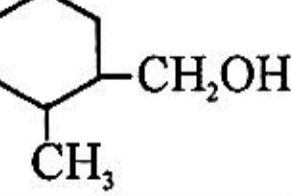
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Question No.	Questions
26.	<p>A thin uniform circular disc rolls down an inclined plane of inclination 30° without slipping. Its linear acceleration along the plane is</p> <p>(1) $g/4$ (2) $g/3$ (3) $g/2$ (4) $2g/3$</p>
27.	<p>A projectile, fired vertically upwards with a speed v escapes from the earth. If it is to be fired at 45° to the horizontal, what should be its speed so that it escapes from the earth ?</p> <p>(1) v (2) $v/\sqrt{2}$ (3) $\sqrt{2}v$ (4) $2v$</p>
28.	<p>Which of the following substances has negligible elastic fatigue ?</p> <p>(1) glass (2) copper (3) quartz (4) silver</p>
29.	<p>The modulus of rigidity of water is</p> <p>(1) zero (2) 1 (3) 81 (4) infinite</p>
30.	<p>The surface tension does not depend upon</p> <p>(1) Nature of liquid (2) Temperature (3) Presence of impurity (4) Atmospheric Pressure</p>

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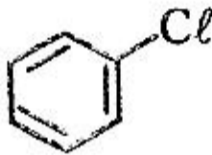

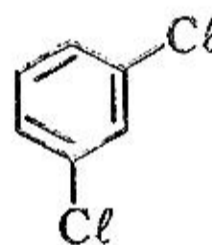
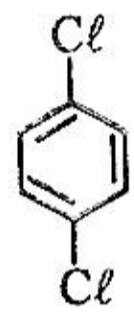
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Question No.	Questions
Part-B (Chemistry)	
36.	<p>The reaction of $\text{CH}_3\text{-CH=CH-}$  -OH with HBr gives :</p> <p>(1) $\text{CH}_3\text{CHBrCH}_2\text{-}$  -OH</p> <p>(2) $\text{CH}_3\text{CH}_2\text{CHBr-}$  -OH</p> <p>(3) $\text{CH}_3\text{CHBrCH}_2\text{-}$  -Br</p> <p>(4) $\text{CH}_3\text{CH}_2\text{CHBr-}$  -Br</p>
37.	<p>Among the following the one that gives positive Iodoform test upon reaction with I_2 and NaOH is :</p> <p>(1) $\text{CH}_3\text{CH}_2\text{CH(OH)CH}_2\text{CH}_3$ (2) $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{OH}$</p> <p>(3)  (4) PhCHOHCH_3</p>
38.	<p>In the following sequence of reaction, identify the final product :</p> <p>$\text{CH}_3\text{-Mg-Br} +$  $\xrightarrow{\text{H}_3\text{O}^+} \text{A} \xrightarrow{\text{HBr}} \text{B} \xrightarrow{\text{Mg. ether}} \text{C} \xrightarrow[\text{H}_3\text{O}^+]{\text{CH}_3\text{CHO}} \text{D}$</p> <p>(1)  (2) </p> <p>(3)  (4) </p>

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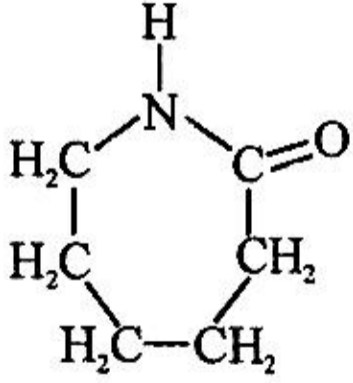
Question No.	Questions
43.	<p>Identify the compound Y in the following reaction :</p> $\text{C}_6\text{H}_5\text{NH}_2 \xrightarrow[273-278\text{ K}]{\text{NaNO}_2 + \text{HCl}} \text{C}_6\text{H}_5\text{N}_2^+\text{Cl}^- \xrightarrow{\text{Cu}_2\text{Cl}_2} \text{Y} + \text{N}_2$ <p>(1)  (2) </p> <p>(3)  (4) </p>
44.	<p>Which reagent will you use for the following reaction ?</p> $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3 \rightarrow \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl} + \text{CH}_3\text{CH}_2\text{CHClCH}_3$ <p>(1) $\text{Cl}_2/\text{UV light}$ (2) $\text{NaCl} + \text{H}_2\text{SO}_4$</p> <p>(3) Cl_2 gas in dark (4) Cl_2 gas in the presence of iron in dark</p>
45.	<p>In the following sequence of reaction :</p> $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow{\text{P} + \text{I}_2} \text{A} \xrightarrow[\text{Ether}]{\text{Mg}} \text{B} \xrightarrow{\text{HCHO}} \text{C} \xrightarrow{\text{H}_2\text{O}} \text{D}$ <p>The compound D is :</p> <p>(1) Butanal (2) n-butyl alcohol</p> <p>(3) n-propyl alcohol (4) Propanal</p>

Question No.	Questions
46.	<p>The term that accounts for intramolecular force in van der Waal's equation for non-ideal gas is</p> <p>(1) RT (2) $V - b$</p> <p>(3) $P + \frac{a}{V^2}$ (4) $(RT)^{-1}$</p>
47.	<p>Which one of the following is not applicable to the phenomena of absorption</p> <p>(1) $\Delta H > 0$ (2) $\Delta G < 0$</p> <p>(3) $\Delta S < 0$ (4) $\Delta H < 0$</p>
48.	<p>Which one of the following is a positively charged sol</p> <p>(1) Gold sol (2) As_2S_3 sol</p> <p>(3) Methylene blue sol (4) Gelatin</p>
49.	<p>What is the normality of 1 M H_3PO_2 solution ?</p> <p>(1) 0.5 N (2) 1.0 N</p> <p>(3) 2.0 N (4) 3.0 N</p>
50.	<p>A cricket ball 0.5 Kg is moving with a velocity of 100 ms^{-1}. The wavelength associated with its motion is :</p> <p>(1) $1/100 \text{ cm}$ (2) $6.6 \times 10^{-34} \text{ m}$</p> <p>(3) $1.32 \times 10^{-35} \text{ m}$ (4) $6.6 \times 10^{-28} \text{ m}$</p>

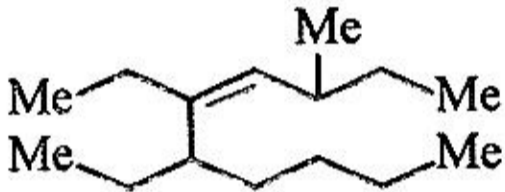
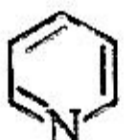
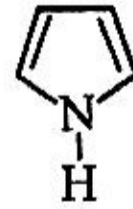
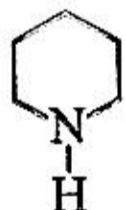
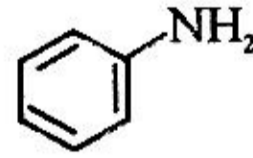
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Question No.	Questions
51.	Which of the following is not a target molecule for drug function in body ? (1) Carbohydrates (2) Lipids (3) Vitamins (4) Proteins
52.	The pollutants released by jet aeroplane in the atmosphere as fluorocarbons are called (1) Photochemical oxidants (2) Photochemical reductants (3) Aerosols (4) Physical pollutants
53.	Which of the following pairs has the same size ? (1) Zn^{2+} , Hf^{4+} (2) Fe^{2+} , Ni^{2+} (3) Zr^{4+} , Ti^{4+} (4) Zr^{4+} , Hf^{4+}
54.	The coordination number and oxidation state number of Cr in $K_3Cr(C_2O_4)_3$ are respectively (1) 3 and + 3 (2) 3 and 0 (3) 6 and + 3 (4) 4 and + 2
55.	Ionic solids, with Schottky defects, contain in their structure (1) Cation vacancies only (2) Cation vacancies and interstitial cations (3) Equal number of cation and anion vacancies (4) Anion vacancies and interstitial anions

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Question No.	Questions
56.	Electrolytic reduction of nitrobenzene in weakly acidic medium gives : (1) Aniline (2) Nitrosobenzene (3) N-phenylhydroxylamine (4) p-hydroxyaniline
57.	The efficiency of fuel cell is given by (1) $\frac{\Delta G}{\Delta S}$ (2) $\frac{\Delta G}{\Delta H}$ (3) $\frac{\Delta S}{\Delta G}$ (4) $\frac{\Delta H}{\Delta G}$
58.	Thymine is : (1) 5-methyluracil (2) 4-methyluracil (3) 3-methyluracil (4) 1-methyluracil
59.	If the rate of the reaction is equal to the rate constant, the order of the reaction is (1) 0 (2) 1 (3) 2 (4) 3
60.	Which of the following polymer can be formed by using the following monomer unit ? <div style="text-align: center;">  </div> (1) Nylon 6, 6 (2) Nylon 2-nylon 6 (3) Melamine polymer (4) Nylon-6

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Question No.	Questions
61.	Ortho and para hydrogen differ in (1) atomic number (2) mass number (3) electron spin in two atoms (4) nuclear spin in two atoms
62.	Which of the following carbonates is least stable (1) $MgCO_3$ (2) Na_2CO_3 (3) K_2CO_3 (4) Rb_2CO_3
63.	The IUPAC name of the  Structure is : (1) 2,4,5-triethyl-3-nonene (2) 5,6-diethyl-3-methyl-4-decene (3) 2,4,6-triethyl-3-octene (4) 3-ethyl-5-methyl-3-heptene
64.	The strongest base among the following is : (1)  (2)  (3)  (4) 
65.	The number of σ - and Π -bonds present in pent-4-ene-1-yne is : (1) 10, 3 (2) 4, 9 (3) 3, 10 (4) 9, 4

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Question No.	Questions
	Part-C {Opt. (i)} (Mathematics)
71.	The one which is the measure of central tendency is : (1) co-efficient of correlation (2) standard deviation (3) mean deviation (4) mode
72.	If S be a finite set containing n elements. The the total number of binary operations on S is : (1) n^n (2) 2^{n^2} (3) n^2 (4) n^{n^2}
73.	The solution of the equation $\tan^{-1}(1+x) + \tan^{-1}(1-x) = \frac{\pi}{2}$ is : (1) $x = 1$ (2) $x = -1$ (3) $x = 0$ (4) $x = \pi$
74.	If $A = \begin{bmatrix} a & b \end{bmatrix}$, $B = \begin{bmatrix} -b & -a \end{bmatrix}$ and $C = \begin{bmatrix} a \\ -a \end{bmatrix}$, then the correct statement is : (1) $A = -B$ (2) $A + B = A - B$ (3) $AC = BC$ (4) $CA = CB$
75.	The value of λ and μ for which the system of equations $x + y + z = 6$, $x + 2y + 3z = 10$ and $x + 2y + \lambda z = \mu$ have unique solution are : (1) $\lambda \neq 3, \mu \in \mathbb{R}$ (2) $\lambda = 3, \mu = 10$ (3) $\lambda \neq 3, \mu = 10$ (4) $\lambda \neq 3, \mu \neq 10$

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Question No.	Questions
86.	Area of the triangle formed by 3 complex numbers $1 + i$, $i - 1$, $2i$ in the Argand plane is (1) $\frac{1}{2}$ (2) 1 (3) $\sqrt{2}$ (4) 2
87.	If the equations $2x^2 + kx - 5 = 0$ and $x^2 - 3x - 4 = 0$ have one root in common, then the value of k is : (1) 3 (2) -3 (3) 4 (4) None of these
88.	The solution of the equation $1 + x - 1 \geq 0$ is : (1) $(-\infty, 0)$ (2) $(-2, 0)$ (3) $(0, \infty)$ (4) $(0, 2)$
89.	12 persons are to be arranged to a round table. If two particular persons among them are not to be side by side, the total number of arrangements is : (1) $9(10!)$ (2) $2(10!)$ (3) $2(11!)$ (4) $10!$
90.	The positive integer just greater than $(1 + 0.0001)^{10000}$ is (1) 3 (2) 4 (3) 5 (4) None of these

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Question No.	Questions
91.	If A and B are any two sets, then $A - B \neq$ (1) $B \cap A'$ (2) $A \cap B'$ (3) $(A' \cup B)'$ (4) None of these
92.	Let R be the relation of the set R of all real numbers defined by aRb iff $ a - b \leq 1$. Then R is (1) reflexive and symmetric (2) symmetric only (3) transitive only (4) anti-symmetric only
93.	If $f(x) = \frac{x-1}{x+1}$, then $f\left(\frac{1}{f(x)}\right)$ equals : (1) 0 (2) 1 (3) x (4) $\frac{1}{x}$
94.	Which of the following is correct ? (1) $\sin 1^\circ > \sin 1$ (2) $\sin 1^\circ < \sin 1$ (3) $\sin 1^\circ = \sin 1$ (4) $\sin 1^\circ = \frac{\pi}{180} \sin 1$.
95.	The cube roots of unity lie on a circle : (1) $ z - 1 = 1$ (2) $ z + 1 = 1$ (3) $ z = 1$ (4) None of these

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Question No.	Questions
	Part-C {Opt. (ii)} (Biology)
101.	GIFT (Gamete intrafallopian transfer) mixes egg and sperm in the _____ (1) Fallopian tube (2) Uterus (3) Vagina (4) Culture medium
102.	An example of merocrine gland is _____ (1) Sebaceous gland (2) Pineal gland (3) Salivary gland (4) Mammary gland
103.	ATPase enzyme needed for muscle contraction is located in _____ (1) Actinin (2) Troponin (3) Myosin (4) Actin
104.	Casparian strips are present in the _____ of the root. (1) Pericycle (2) Cortex (3) Epiblema (4) Endodermis
105.	The inner, darker and harder portion of secondary xylem that cannot conduct water, in an older dicot stem, is called (1) Bast (2) Alburnum (3) Duramen (4) Wood

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Question No.	Questions
106.	<p>The tendency of population to remain in genetic equilibrium may be disturbed by</p> <p>(1) Random mating (2) Lack of migration</p> <p>(3) Lack of mutation (4) Lack of random mating</p>
107.	<p>If two pea plants having red (Dominant) colored flowers with unknown genotypes are crossed, 75% of the flowers are red and 25% are white. The genotypic constitution of the parents having red colored flowers will be</p> <p>(1) Both heterozygous</p> <p>(2) One homozygous and other heterozygous</p> <p>(3) Both homozygous</p> <p>(4) Both hemizygous</p>
108.	<p>The deposition of lipids on the wall lining the lumen of large and medium sized arteries is referred to as</p> <p>(1) Osteoarthritis (2) Osteoporosis</p> <p>(3) Stokes-Adams Syndrome (4) Atherosclerosis</p>
109.	<p>Which of the following matches correctly ?</p> <p>(1) Pulmonary artery – Carries deoxygenated blood to the lungs</p> <p>(2) Superior vena cava – Receives deoxygenated blood from the lower body and organs</p> <p>(3) Inferior vena cava – Receives deoxygenated blood from the head and body</p> <p>(4) Hepatic artery – carries deoxygenated blood to the gut</p>

Question No.	Questions
110.	<p>The function of leghemoglobin in the root nodules of legumes is</p> <ol style="list-style-type: none"> (1) Oxygen removal (2) Inhibition of nitrogenase activity (3) Expression of nif gene (4) Nodule differentiation
111.	<p>An action potential in the nerve fiber is produced when positive and negative charges on outside and the inside of the axon membrane are reversed because</p> <ol style="list-style-type: none"> (1) All potassium ions leave the axon (2) More potassium ions enter the axon as compared to sodium ions leaving it (3) More sodium ions enter the axon as compared to potassium ions leaving it (4) All sodium ions enter the axon
112.	<p>Sequence of taxonomic categories is</p> <ol style="list-style-type: none"> (1) Division – Class – Order – Family – Tribe – Genus – Species (2) Class – Phylum – Tribe – Order – Family – Genus – Species (3) Phylum – Order – Class – Tribe – Family – Genus – Species (4) Division – Class – Family – Tribe – Order – Genus – Species

Question No.	Questions
122.	<p>Some people who have suffered from a disease may not be affected again during their life time ; such immunity is called</p> <p>(1) Natural immunity (2) Acquired immunity (3) Innate immunity (4) Passive immunity</p>
123.	<p>Raw cheese is known as</p> <p>(1) Blue cheese (2) Cottage cheese (3) Swiss cheese (4) None of these</p>
124.	<p>Cell division cannot be stopped in which phase of the cell cycle ?</p> <p>(1) G₁-Phase (2) G₂-Phase (3) S-Phase (4) Prophase</p>
125.	<p>What type of plant is formed when colchicine is used in the process of development of Raphanobrassica ?</p> <p>(1) Autotetraploid (2) Haploid (3) Triploid (4) Allotetraploid</p>
126.	<p>Seed coat is not thin, membranous in</p> <p>(1) Groundnut (2) Coconut (3) Maize (4) Gram</p>

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Question No.	Questions
127.	Lenticels are involved in (1) Transportation (2) Gaseous exchange (3) Food transport (4) Photosynthesis
128.	Insect mouthparts are adapted for different functions in different species. Mouthparts of houseflies are used for (1) Siphoning (2) Piercing and sucking (3) Sponging and lapping (4) Biting and chewing
129.	The first enzyme to be purified and crystalized was (1) Urease (2) Diastase (3) Insulin (4) Zymase
130.	Many enzymes are secreted in inactive form to protect (1) Cell membrane (2) Mitochondria (3) Cell proteins (4) Cell DNA

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