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BPH–EE–2013

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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) _____

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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. In case there is any discrepancy in any question(s) in the Question Book-let, the same may be brought to the notice of the Controller of Examinations in writing **within two hours** after the test is over. No such complaint(s) will be entertained thereafter.
5. **Use only blue or black ball point pen of good quality in the OMR Answer-Sheet.**
6. There will be no negative marking. Each correct answer will be awarded one mark. Cutting, erasing, overwriting and more than one answer in the OMR Answer-Sheet will be treated as wrong answer.
7. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT & COMPLETE QUESTION BOOK-LETS. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER THE START OF EXAMINATION.

Part–A (Physics)

Question No.	Questions
1.	The magnitude of electric field strength E such that an electron placed in it would experience an electric force equal to its weight is given by (1) mge (2) $\frac{mg}{e}$ (3) $\frac{e}{mg}$ (4) $\frac{e^2g}{2m}$
2.	The electric potential at the surface of an atomic nucleus (z=50) of radius 9 Fermi is (1) 80 Volt (2) 8×10^6 (3) 9V (4) 9×10^5V
3.	A charge Q is distributed uniformly in a sphere (solid). Then the electric field at any point r where r < R (R is radius of sphere) varies as (1) $r^{½}$ (2) r^{-1} (3) r (4) r^{-2}
4.	At a point on the axis of an electric dipole ; (1) The electric field E is zero (2) The electric potential V is zero (3) Neither E nor V is zero (4) Both E and V are zero
5.	The quantity in electricity analogous to temperature is (1) inductance (2) charge (3) resistance (4) potential

Question No.	Questions
6.	The period of oscillations of a mass 1.6 kg suspended from a spring is 2 seconds. If along with it another mass m kg is also suspended, the period of oscillations increases by one second. The mass m is (1) 1 kg (2) 2 kg (3) 1.6 kg (4) 2.6 kg
7.	Two coherent sources must have the same (1) Amplitude (2) Phase difference only (3) Frequency only (4) Phase difference and frequency
8.	When a source is going away from a stationary observer with a velocity equal to that of sound in air, the frequency heard by observer will be (1) Same (2) Double (3) Half (4) One third
9.	Ultrasonic waves are produced by (1) Piezoelectric effect (2) Pettiro's effect (3) Dopplers effect (4) None of these
10.	Fundamental frequency of a sonometer wire is n. If the length, tension and diameter of the wire are tripled, the new fundamental frequency is (1) $\frac{n}{\sqrt{3}}$ (2) $\frac{n}{3}$ (3) $n\sqrt{3}$ (4) $\frac{n}{3\sqrt{3}}$
11.	A ball is dropped from the top of a tower of height h, it covers a distance h/2 in the last second of its motion. How long the ball remains in air ? Take $g = 10ms^{-2}$ (1) $2 \pm \sqrt{2}$ sec (2) $\sqrt{2}$ sec (3) 2 sec (4) $2\frac{1}{2}$ sec

Question No.	Questions
12.	Two particles are projected simultaneously in the same vertical plane, from the same point, both with different speeds and at different angles with horizontal. The path followed by one, as seen by the other, is (1) a vertical line (2) a parabola (3) a hyperbola (4) a straight making a constant angle ($\neq 90°$) with the horizontal
13.	A bullet fired into a target loses half its velocity after penetrating 25 cm. How much further will it penetrate before coming to rest ? (1) $\sqrt{26}$ cm (2) 25 cm. (3) 8.3 cm. (4) 75 cm.
14.	A small ball describes a horizontal circle on the smooth inner surface of a conical funnel. If the height of the plane of the circle above the vertex be 10 cm; what is the speed of the particle ? (1) 2 m/s (2) 4 m/s (3) 16 m/s (4) 1 m/s
15.	A body is projected vertically upwards from the surface of a planet of radius R with a velocity equal to half the escape velocity of the planet. The maximum height attained by the body is (1) $R/2$ (2) $R/3$ (3) $R/5$ (4) $R/4$

Question No.	Questions
16.	The electromagnetic damping experienced by a metal mass moving in a magnetic field is due to (1) Alternating current (2) Eddy current (3) Magnetic field (4) Alternating potential produced in metallic mass
17.	The value of current at resonance in a series LCR circuit is affected by the value of (1) R only (2) C only (3) L only (4) L, C and R
18.	In which of the following regions of electromagnetic spectrum will the vibrational motion of molecules give rise to absorption ? (1) Ultraviolet (2) Microwave (3) Infrared (4) Radio waves
19.	If the refracting angle of a prism is 60° and the minimum deviation 30°, the angle of incidence will be (1) 30° (2) 45° (3) 60° (4) 90°
20.	The impurity concentration in a normal diode is equal to (1) 1 in 10^9 Parts (2) 1 in 10^6 parts (3) 1 in 10^3 parts (4) 1 in 10^2 parts

Question No.	Questions
21.	Four bulbs marked 40 W, 250 V are connected in series with 250 V mains, the total power consumed is (1) 10 W (2) 40 W (3) 320 W (4) 160 W
22.	The resistance of an ideal voltmeter is (1) zero (2) infinite (3) >1kΩ (4) >1Ω
23.	A dip needle in a plane perpendicular to magnetic meridian will be (1) Vertical (2) Horizontal (3) at an angle 45° to the horizontal (4) at an angle of dip to the horizontal
24.	A power line lies along the east west direction and carries a current of 10 ampere. The force per metre due to earth's magnetic field of 10^{-4} T is (1) 10^{-5} N (2) 10^{-4} N (3) 10^{-3} N (4) 10^{-2} N
25.	The maximum energy of a deutron coming out of a cyclotron accelerator is 20 MeV. The maximum energy of protons that can be obtained is (1) 10 MeV (2) 20 MeV (3) 30 MeV (4) 40 MeV

Question No.	Questions
26.	At what temperature is the r.m.s. velocity of a hydrogen molecule equal to that of an oxygen molecule at 47°C ? (1) 80 K (2) –73 K (3) 3 K (4) 20 K
27.	A material has Poisson's ratio 0.5. If a uniform rot of this material suffers a longitudinal strain of 2×10^{-3}, what percentage increase in volume takes place ? (1) 2% (2) 2.5% (3) 5% (4) 0%
28.	A metallic sphere cools from 50°C to 40°C in 300 sec. If the room temperature is 20°C, then its temperature in next 5 minutes will be (1) 38°C (2) 33.3°C (3) 30°C (4) 36°C
29.	PV diagram of a diatomic gas is a straight line passing through origin. The molar heat capacity of the gas in the process will be (1) 4 R (2) 3 R (3) $\frac{4}{3}$ R (4) $\frac{5}{2}$ R
30.	An elastic string has a length l when tension in it is 5N. Its length is h when tension is 4N. On subjecting the string to a tension of 9N, its length will be (1) l+h (2) l–h (3) 5l–4h (4) $\frac{l+h}{h-l}$

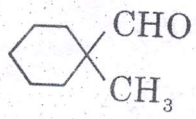
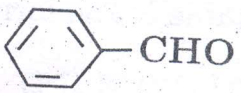
Question No.	Questions
31.	Under the action of a force $F = Cx$, the position of a body changes from 0 to x. The work done is (1) $\frac{1}{2} Cx^2$ (2) Cx^2 (3) Cx (4) $\frac{1}{2} Cx$
32.	The angle turned by a body undergoing circular motion depends on time as $\theta = \theta_0 + \theta_1 t + \theta_2 t^2$. Then the angular acceleration of the body is (1) θ_1 (2) θ_2 (3) $2\theta_1$ (4) $2\theta_2$
33.	A rocket of mass 1000 kg exhaust gases at a rate of 4kg/s with a velocity 3000 m/s. The thrust developed on the rocket is (1) 12000 N (2) 120 N (3) 800 N (4) 200 N
34.	If λ is the wavelength of hydrogen atom from the transition $n = 3$ to $n = 1$, then what is the wavelength of doubly ionized lithium ion for the same transition (1) $\lambda/3$ (2) 3λ (3) $\lambda/9$ (4) 9λ
35.	The dimensions of pressure gradient are (1) $ML^{-2}T^{-2}$ (2) $ML^{-2}T^{-1}$ (3) $ML^{-1}T^{-1}$ (4) $ML^{-1}T^{-2}$

Part–B (Chemistry)

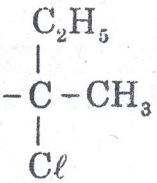
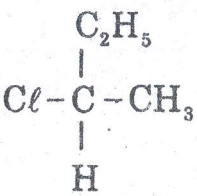
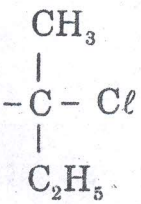
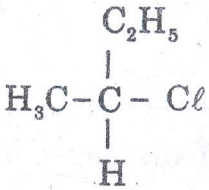
Question No.	Questions
36.	The colloidal solution of gelatin is known as (1) Solvent loving (2) Reversible (3) Hydrophilic (4) All of the above
37.	Flux used in the metallurgy of iron is (1) SiO_2 (2) $CaCO_3$ (3) Felspar (4) Flit
38.	Which of the following acids forms three series of Salts ? (1) H_3PO_2 (2) H_3BO_3 (3) H_3PO_4 (4) H_3PO_3
39.	Oxygen molecules shows : (1) Diamagnetism (2) Paramagnetism (3) Ferromagnetism (4) Ferrimagnetism
40.	Identify the molecular formula of tear gas : (1) $COCl_2$ (2) CCl_3NO_2 (3) CCl_3CHO (4) None of above
41.	Which of the following gases is not a green house gas ? (1) CO (2) O_3 (3) CH_4 (4) H_2O vapour

Question No.	Questions
42.	The edge length of face centred unit cubic cell is 508 pm. The radius of the atom will be (1) 179.6 pm (2) 288 pm (3) 618 pm (4) 398 pm
43.	The freezing point of 1 molal NaCl solution assuming NaCl to be 100% dissociated in water is : (Kf = 1.86 K Molality^{-1}) (1) – 1.86 °C (2) – 3.72 °C (3) + 1.86 °C (4) + 3.72 °C
44.	While charging the lead storage battery (1) Pb SO_4 anode is reduced to Pb (2) Pb SO_4 cathode is reduced to Pb (3) Pb SO_4 cathode is oxidized to PbO_2 (4) Pb SO_4 anode is oxidized to PbO_2
45.	Which of the following is a unit of zero order reaction ? (1) mol $L^{-1} S^{-1}$ (2) L $mol^{-1} S^{-1}$ (3) $L^{-1} mol^{-1} S^{-1}$ (4) L mol. S
46.	A gas occupies 2 litres at STP. It is provided 300 J heat so that its volume becomes 2.5 litres at 1 atm. Calculate change in its internal energy (1) 300 J (2) 249.35 J (3) 498.70 J (4) 600 J

Question No.	Questions
47.	What should be the solubility product of $A\ell_2 (SO_4)_3$ (1) $27\ S^4$ (2) $72\ S^5$ (3) $108\ S^4$ (4) $108\ S^5$
48.	Which of the following arrangements represent increasing oxidation number of the central atom ? (1) ClO_3^-, CrO_4^{2-}, MnO_4^-, CrO_2^- (2) CrO_2^-, ClO_3^-, MnO_4^-, CrO_4^{2-} (3) CrO_4^{2-}, MnO_4^-, CrO_2^-, ClO_3^- (4) CrO_2^-, ClO_3^-, CrO_4^{2-}, MnO_4^-
49.	In solid ice, oxygen atom is surrounded : (1) tetrahedrally by 4 hydrogen atoms (2) octahedrally by 2 oxygen and 4 hydrogen atoms (3) tetrahedrally by 2 hydrogen and 2 oxygen atoms (4) octahedrally by 6 hydrogen atoms
50.	The paramagnetic species is : (1) KO_2 (2) SiO_2 (3) TiO_2 (4) BaO_2

Question No.	Questions
51.	Cannizaro's reaction is not given by : (1)  (2)  (3) HCHO (4) CH_3CHO
52.	Picric acid is (1) Trinitroaniline (2) Trinitrotoluene (3) Volatile liquid (4) 2, 4, 6 – trinitrophenol
53.	Which of the following acid is a Vitamin ? (1) Aspartic acid (2) Ascorbic acid (3) Adipic acid (4) Saccharic acid
54.	The commercial name of polyacrylonitrile is (1) Dacron (2) Orlon (3) PVC (4) Bakelite
55.	Equanil is : (1) artificial sweetener (2) tranquilizer (3) anti histamine (4) antifertility drug
56.	XeF_6 on complete hydrolysis gives : (1) Xe (2) XeO_2 (3) XeO_3 (4) XeO_4

Question No.	Questions
57.	When one mol $CrCl_3.6\ H_2O$ is treated with excess of $AgNO_3$, 3 mol o AgCl are obtained. The formula of the complex is : (1) $[CrCl_3\ (H_2O)_3].\ 3\ H_2O$ (2) $[Cr\ (H_2O)_6]\ Cl_3$ (3) $[CrCl_2\ (H_2O)_4]\ Cl.\ 2\ H_2O$ (4) $[CrCl\ (H_2O)_5]\ Cl_2.H_2O$
58.	Electronic configuration of a transition element X in + 3 oxidation state is [Ar] $3\ d^5$, what is its atomic number ? (1) 25 (2) 26 (3) 27 (4) 24
59.	Ethylidene chloride is a / an (1) vic-dihalide (2) gem-dihalide (3) allylic halide (4) vinylic halide
60.	Phenol is less acidic than (1) ethanol (2) o-nitrophenol (3) o-methyl phenol (4) o-methoxyphenol
61.	A solid compound 'X' on heating gives CO_2 gas and a residue. The residue mixed with water forms 'Y'. On passing an excess of CO_2 through 'Y' in water, a clear solution 'Z' is obtained. On boiling 'Z' compound 'X' is reformed. The compound 'X' is (1) $Ca\ (HCO_3)_2$ (2) $Ca\ CO_3$ (3) $Na_2\ CO_3$ (4) $K_2\ CO_3$

Question No.	Questions
62.	The wrong statement about fullerene is (1) It has 5-membered Carbon ring (2) It has 6-membered Carbon ring (3) It has sp^2 hybridization (4) It has 5-membered rings more than 6-membered rings
63.	The chemical composition of cryolite mineral is (1) $A\ell_2O_3$ (2) $A\ell_2O_3.12\,H_2O$ (3) $KA\ell\,Si_3O_8$ (4) $Na_3\,A\ell F_6$
64.	$CH_3-CHC\ell-CH_2-CH_3$ has a chiral centre, which one of the following represents its R configuration ? (1)  (2)  (3)  (4) 
65.	Wurtz reaction is best used for making : (1) Unbranched alkanes (2) Symmetrical alkanes (3) Unsymmetrical alkanes (4) n-alkanes with odd number of carbons

Question No.	Questions
66.	The total numbers of protons in 10.0 g of $CaCO_3$ is (1) 1.5057×10^{24} (2) 2.0478×10^{24} (3) 3.0115×10^{24} (4) 4.0956×10^{24}
67.	Which of the following sets of quantum numbers are correct ? (1) $n = 1, \ell = 1, m = +2$ (2) $n = 2, \ell = 2, m = +1$ (3) $n = 3, \ell = 2, m = -2$ (4) $n = 3, \ell = 4, m = -2$
68.	Among halogens the correct order of electron gain enthalpy is : (1) $F > Cl > Br > I$ (2) $F < Cl < Br < I$ (3) $F < Cl < Br > I$ (4) $F < Cl > Br > I$
69.	The hybrid states of central atom in diborane, diamond and graphite a respectively : (1) sp^2, sp^3, sp^2 (2) sp^3, sp^3, sp^2 (3) sp^3, sp^3, sp^3 (4) sp, sp^2, sp^3
70.	Which pair of the gaseous diffuse through a small jet with same rate diffusion at same P and T ? (1) NO, CO (2) NO, CO_2 (3) NH_3, PH_3 (4) NO, C_2H_6

Part–C Option (i) (Mathematics)

Question No.	Questions
71.	If $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x + \text{------} \infty}}}$ then $\frac{dy}{dx} =$ (1) $\frac{2y-1}{\cos x}$ (2) $\frac{\cos x}{2x-1}$ (3) $\frac{\cos x}{2y-1}$ (4) $\frac{2x-1}{\cos x}$
72.	If the numbers between 1 to 65 and divisible by 4 are written in reverse order then which of the following numbers will be at 10th place ? (1) 24 (2) 28 (3) 32 (4) 36
73.	Each observation of a raw data whose variance is σ^2 is multiplied by K, then the variance of the new data is (1) σ^2 (2) $K\sigma^2$ (3) $K^2\sigma^2$ (4) $K+\sigma^2$
74.	Three identical dice are rolled. The probability that the same number will appear on each of them is (1) $\frac{1}{36}$ (2) $\frac{1}{18}$ (3) $\frac{1}{12}$ (4) $\frac{1}{6}$
75.	A speaks truth in 70% cases and B speaks truth in 80% cases. The probability that they say the same thing while describing single event is (1) 0.58 (2) 0.62 (3) 0.64 (4) 0.76

Question No.	Questions
76.	If $\frac{1}{b+c}, \frac{1}{c+a}, \frac{1}{a+b}$ are in A.P., then (1) a^2, b^2, c^2 are in A.P. (2) a, b, c are in A.P. (3) $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$ are in A.P. (4) a, b, c are in G.P.
77.	The nearest point on the line $3x - 4y = 25$ from the origin is (1) $(3, -4)$ (2) $(4, -3)$ (3) $(3, 4)$ (4) $(4, 3)$
78.	The area of the circle centred at (1, 2) and passing through point (4, 6) is (1) 16π (2) 25π (3) 36π (4) 49π
79.	The ratio in which xy-plane divides the join of (1, 2, 3) and (4, 2, 1) is (1) 2:1 internally (2) 1:2 externally (3) 1:3 internally (4) 3:1 externally
80.	$\lim_{x \to -\infty} \left(2x + \sqrt{4x^2 - x}\right) =$ (1) 2 (2) 4 (3) $\frac{1}{2}$ (4) $\frac{1}{4}$

Question No.	Questions
81.	The value of $\int_1^6 e^{\sqrt{x}}\, dx$ is (1) $4e^3$ (2) $6e^3$ (3) $2e^3$ (4) $3e^3$
82.	The area of the figure bounded by $y = \sin x$, $y = \cos x$ in the first quadrant is (1) $2\left(\sqrt{2}+1\right)$ (2) $2\left(\sqrt{2}-1\right)$ (3) $2\left(\sqrt{3}-1\right)$ (4) $\sqrt{2}-1$
83.	The solution of the differential equation $y\frac{dy}{dx} = x-1$ satisfying $y(1) = 1$ is (1) $y^2 = x^2 - 2x + 2$ (2) $y^2 = x^2 - 2x + 1$ (3) $y = x^2 - 2x + 2$ (4) $y^2 = x^2 + 2x + 2$
84.	If $\vec{a}$ and $\vec{b}$ are two unit vectors inclined at an angle θ such that $\vec{a}+\vec{b}$ is a unit vector, then θ is equal to (1) $\frac{\pi}{3}$ (2) $\frac{3\pi}{2}$ (3) $\frac{2\pi}{3}$ (4) $\frac{\pi}{4}$
85.	If α, β, γ are the angles which a directed line makes with the positive directions of the coordinate areas, then $\sin^2\alpha + \sin^2\beta + \sin^2\gamma =$ (1) 0 (2) 2 (3) 1 (4) 3

Question No.	Questions
86.	If $\|z\|^2 + 1 = \|z^2 - 1\|$, then z lies on (1) circle (2) ellipse (3) parabola (4) none of these
87.	The inequalities $3x - y \geq 3$, $4x - y > 4$ have (1) solution for all x (2) solution for all y (3) solution for positive x and y (4) no solution for positive x and y
88.	Three dice are rolled. The number of possible outcomes in which at lea one die shows 3 is (1) 36 (2) 42 (3) 81 (4) 91
89.	If ${}^nP_r = 120\ {}^nC_r$, then the value of r is (1) 3 (2) 4 (3) 5 (4) 6
90.	In the expansion of $\left(x^3 - \frac{1}{x^2}\right)^{15}$, the constant term is (1) ${}^{15}C_9$ (2) ${}^{-15}C_9$ (3) 0 (4) $\frac{3}{2}$

Question No.	Questions
91.	If $X = \{1, 2, 3,\}$, $Y = \{3, 4\}$, $Z = \{4, 5, 6\}$ then $X \cup (Y \cap Z)$ is (1) $\{4, 5\}$ (2) $\{1, 2, 5, 6\}$ (3) $\{1, 2, 3, 4\}$ (4) $\{1, 3, 6\}$
92.	Let $A = \{(a, b) : a^2 + b^2 = 1, a, b \in R\}$. Then A is (1) symmetric (2) antisymmetric (3) reflexive (4) transitive
93.	If $f(x) = 2x^n + K$, $f(2) = 26$ and $f(4) = 138$, then $f(3) =$ (1) 86 (2) 32 (3) 56 (4) 64
94.	If $\sin\theta + \cos\theta = \sqrt{2}\cos\theta$, then $\cos\theta - \sin\theta =$ (1) $-\sqrt{2}\cos\theta$ (2) $\sqrt{2}(\cos\theta + \sin\theta)$ (3) $-\sqrt{2}\sin\theta$ (4) $\sqrt{2}\sin\theta$
95.	If $\frac{\sin(x+y)}{\sin(x-y)} = \frac{a+b}{a-b}$, then $\frac{\tan x}{\tan y} =$ (1) $\frac{b}{a}$ (2) $\frac{a}{b}$ (3) $\frac{a-b}{a+b}$ (4) ab

Question No.	Questions
96.	$\cos^{-1}\frac{1}{2}+3\sin^{-1}\frac{1}{2}=$ (1) $\frac{\pi}{6}$ (2) $\frac{4\pi}{3}$ (3) $\frac{3\pi}{4}$ (4) $\frac{5\pi}{6}$
97.	If w is one of the cube roots of unity, then $\begin{vmatrix} 1 & w & w^2 \\ w & 1 & w^2 \\ w^2 & w & 1 \end{vmatrix} =$ (1) w^2 (2) w (3) 0 (4) 1
98.	If $A=\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ x & y & -1 \end{bmatrix}$, then $A^2=$ (1) I_3 (2) A (3) $-A$ (4) I_2
99.	If $f(x)=\begin{cases} mx+1, & x\le \pi/2 \\ \sin x+n, & x>\pi/2 \end{cases}$ and f (x) is continuous at $x=\pi/2$, then (1) $m=\frac{n\pi}{2}+1$ (2) $m=n=\frac{\pi}{2}$ (3) $n=m\frac{\pi}{2}$ (4) $m=1, n=0$
100.	The maximum value of xy subject to $x+y=12$ is (1) 16 (2) 18 (3) 24 (4) 36

Question No.	Questions
101.	Patients suffering from AIDS have following immune abnormalities : (1) T-cell deficiency (2) Enlargement of spleen (3) Neutrophil excess (4) W. B. C. excess
102.	Which of the following is essential for blood clotting ? (1) Lymph (2) Blood platelets (3) R. B. C. (4) W. B. C.
103.	The saliva helps in the digestion of : (1) Starch (2) Proteins (3) Fibres (4) Fats
104.	Goitre is caused by. (1) Over eating (2) Deficiency of Iron (3) Deficiency of Iodine (4) Deficiency of Vitamins
105.	Testosterone is secreted by : (1) Histocyte (2) Sertoli cells (3) Leydig cells (4) Primary spermatocyte
106.	Down syndrome is usually the result of an extra chromosome : (1) 15 (2) 17 (3) 19 (4) 21

Question No.	Questions
107.	The two strands of DNA are joined by : (1) Covalent Bond (2) Ionic Bond (3) Hydrogen Bond (4) Phosphodiester Bond
108.	Which is the most primitive group of algae ? (1) Green algae (2) Blue green algae (3) Red algae (4) Brown algae
109.	During cell cycle DNA synthesis takes place in : (1) Prophase (2) S phase (3) G1 phase (4) G2 phase
110.	Photosynthetic pigments are located in the : (1) Thylakoid membrane (2) Inner membrane (3) Outer membrane (4) Thylakoid lumen
111.	Vinegar is obtained from mollasses with the help of : (1) *Aspergillus* (2) *Rhizopus* (3) *Acetobacter* (4) *Penicillium*
112.	The amount of ATP required for the synthesis of one glucose molecule in C_4 pathway is : (1) 18 ATP (2) 20 ATP (3) 28 ATP (4) 30 ATP

Question No.	Questions
113.	What are the natural reservoir of phosphorus ? (1) Rock (2) Animal bones (3) Sea water (4) Plants
114.	The tropical forests in India are located in : (1) Haryana (2) Himachal Pradesh (3) Jammu & Kashmir (4) Andamans
115.	Which of the following is an eye disease ? (1) Measles (2) Bronchitis (3) Glaucoma (4) Diabetes
116.	Gene therapy is : (1) Method to determine blood group (2) Method to replace a defective gene with a healthy gene (3) Method to determine evolution (4) All of the above
117.	Hardy-Weinberg law in a population represents (1) Allele frequency (2) Heterozygote frequency (3) Genotype frequency (4) Homozygote frequency
118.	A mother of blood group O has a group O child, the father could be of blood type. (1) A or B or O (2) A or B (3) O only (4) A B only

Question No.	Questions
119.	Interspecific hybrids proved very useful for : (1) Gene function (2) Gene mapping (3) Gene structure (4) Genetic manipulation
120.	Systematics deals with : (1) Classification of organisms (2) Identification of organisms (3) The kind and diversity of all organisms and existing relationships among themselves (4) None of the above
121.	Hydroponics is : (1) Soil less culture (2) Water less culture (3) Air less culture (4) Nutrient less culture
122.	Bt crop grown by the farmers in India is : (1) Maize (2) Wheat (3) Cotton (4) Tomato
123.	Age of tree can be estimated by : (1) Height and girth (2) Biomass (3) Cork (4) Number of Annual rings
124.	In DNA, adenine normally pair with (1) Guanine (2) Cytosine (3) Thymine (4) Uracil

Question No.	Questions
125.	The genotypic ratio of monohybrid cross is : (1) 3 : 1 (2) 9 : 3 : 3 : 1 (3) 1 : 1 (4) 1 : 2 : 1
126.	The protective covering of brain is : (1) Pleura (2) Meninges (3) Pericardium (4) Peritonium
127.	Fertilization of ova in human takes place in : (1) Uterus (2) Vagina (3) Fallopian tube (4) Ovary
128.	Carbon monoxide poisoning is due to the formation of : (1) Methane (2) Carbonic acid (3) Carboxy haemoglobin (4) Oxy-haemoglobin
129.	Abnormal secondary growth is found in : (1) Cucurbita (2) Dracaena (3) Triticum (4) Sugarcane
130.	Which is the causative organism of Typhoid ? (1) *Salmonella typhi* (2) *Mycobacterium typhi* (3) *Plasmodium falciparum* (4) All of the above

SET CODE : D BPH-EE-2013 24/06/2013

1 - 2	11 - 1	21 - 1	31 - 1	41 - 1	51 - 4	61 - 2
2 - 2	12 - 4	22 - 2	32 - 4	42 - 1	52 - 4	62 - 4
3 - 3	13 - 4	23 - 1	33 - 1	43 - 2	53 - 2	63 - 4
4 - 3	14 - 4	24 - 3	34 - 3	44 - 1	54 - 2	64 - 2
5 - 4	15 - 2	25 - 4	35 - 1	45 - 1	55 - 2	65 - 2
6 - 2	16 - 2	26 - 4	36 - 4	46 - 2	56 - 3	66 - 3
7 - 4	17 - 1	27 - 4	37 - 2	47 - 4	57 - 2	67 - 3
8 - 3	18 - 2	28 - 2	38 - 3	48 - 4	58 - 2	68 - 4
9 - 1	19 - 2	29 - 2	39 - 2	49 - 1	59 - 2	69 - 2
10 - 4	20 - 2	30 - 3	40 - 2	50 - 1	60 - 2	70 - 4

SET CODE : D BPH-EE-2013 (BIOLOGY) 24/06/2013

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SET CODE : D BPH-EE-2013 (MATHEMATICS) 24/06/2013

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3 - 3	13 - 1	23 - 4	33 -	43 -	53 -	63 -	73 -	83 -	93 -
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9 - 4	19 - 3	29 - 3	39 -	49 -	59 -	69 -	79 -	89 -	99 -
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