Total No. of Printed Pages: 21

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

BPH-EE-2016(SET-Z)

A		Sr. No11497
Time: 11/4 Hours (75 minutes)	Total Questions: 130	Max. Marks : 100
Candidate's Name	Mother's Na	ame
(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 candidates must return this question booklet 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 a 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 booklet itself.
- 4. In case there is any discrepancy in any question(s) in the Question Booklet, 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 full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Before answering the questions, the candidates should ensure that they have been supplied correct & complete question booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after the start of examination.

PART - A

PHYSICS

1. The dimensions of solar constant which relates to the energy received by the earth

$(1) [ML^2 1^2] \qquad (2) [WL L 1^2] \qquad (7)$	$\mathbb{L}^1 \mathbb{T}^{-2}$]
2. If the speed of light is 3×10^{10} cm sec ⁻¹ , the distance travelled by the year in meters is: (1) 3×10^{12} (2) 9.461×10^{15}	e light in one light
(3) 3×10^{15} (4) 3.126×10^{14}	
3. If a car travels 4 km towards north at an angle of 45° to the east distance of 2 km towards north at an angle of 135° to the east travelled by the car in km is:	and then travels a , the total distance
(1) 6 (2) 8 (3) 5.64 (4) 4	.95
4. If $x = a(\cos\theta + \theta\sin\theta)$ and $y = a(\sin\theta - \theta\cos\theta)$ and θ increases at a the velocity of the particle is:	
(1) $a\omega$ (2) $a^2\theta/\omega$ (3) $a\theta/\omega$ (4) a	
5. If the velocity of a moving particle, $v = x^n$ where x is the displacent	nem, mer.
(1) when $x = 0$, the velocity and acceleration are zero	
(2) for the body in motion, $n > 1/2$	
(3) for the body in motion, $n < 1/2$	
(4) both (1) and (2)	
6. A uniform chain of length l is suspended with lower end just table. Find the pressure on the table, when a length has reached t	ric table.
(1) mgx (2) 2mgx (3) 3mgx (4)	mgx/2
BPH-EE-2016(SET-Z)/(A)	P. T. O.

12.	2. If the momentum of a body remains constant, then the mass-speed graph of the boo is a:			
	(1) circle	(2) straight line		
	(3) rectangular hyperbola	(4) parabola		
13.		speed u has a head-on collision with a body of mass f the body with mass m after the collision will be		
	(1) um/M (2) uM/m	(3) u/2 (4) 2u		
14.	If a body moves through a distance	greater than $2\pi R$ in one full rotation, then :		
	(1) $v_{cm} > R\omega$ (2) $v_{cm} < R\omega$	(3) $v_{cm} \ge R\omega$ (4) $v_{cm} \le R\omega$		
15.	The work done by an external ager earth is:	nt to shift a point mass from infinity to the centre of		
	(1) zero	(2) greater than zero		
	(3) less than zero	$(4) \leq 0$		
16.	The time period of a simple pendul	um at the centre of earth is:		
	(1) zero	(2) infinity		
	(3) less than zero	(4) none of the three before		
17.		e is kept vertical and the water rises upto 3 mm e is tilted at an angle of 60° with the vertical, the		
	(1) 6 mm (2) 4 mm	(3) 3 mm (4) 4.5 mm		
18.	The energy required to increase t assuming surface tension to be 30 d	he radius of a soap bubble from 1 cm to 2 cm, yne cm ⁻¹ , is:		
	(1) 240π ergs	(2) 720π ergs		
	(3) 480π ergs	(4) 120π ergs		
врн-е	E-2016(SET-Z)/(A)	P. T. O.		

 20. A transverse wave with speed 3000 m sec⁻¹ passes along a stretched wire. If tension in the wire increases four times, then the velocity of the wave is: (1) 1500 m sec⁻¹ (2) 3000 m sec⁻¹ (3) 6000 m sec⁻¹ (4) 9000 m sec⁻¹ (2) 3000 m sec⁻¹ (3) 6000 m sec⁻¹ (4) 9000 m sec⁻¹ (5) 40 9000 m sec⁻¹ (8) 9000 m sec⁻¹ (9) 9000 m sec⁻¹ (1) 1000 m (2) 750 m (3) 500 m (4) 250 m 22. The average value of which of the following quantities is zero for the molecule of ideal gas in equilibrium: (1) Kinetic energy (2) Momentum (3) Density (4) Speed 23. If three moles of an ideal gas are compressed to half the initial volume at a const temperature of 300 K, the amount of work done is: (1) -5188 J (2) 5000 J (3) 5188 J (4) -5000 J 24. A telescope consists of two lenses of focal length 10 cm and 1 cm. Calculate the length of the telescope, when an object is kept at a distance of 60 cm from the objective the final image is formed at least distance of distinct vision: (1) 15.05 cm (2) 12.96 cm (3) 13.63 cm (4) 14.44 cm 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C a placed. The resulting potential at the centre of the cube is: (1) 83.11 × 10¹¹ V (4) 1662.77 × 10¹¹ V 		(1) ∞	(2) 0	(3) 1	(4) 2
(1) 1500 m sec ⁻¹ (2) 3000 m sec ⁻¹ (3) 6000 m sec ⁻¹ (4) 9000 m sec ⁻¹ 21. If a stone is dropped into a lake from the top of a tower, the sound of the splas heard by a man on the tower after 11.5 seconds. The height of the tower is: (1) 1000 m (2) 750 m (3) 500 m (4) 250 m 22. The average value of which of the following quantities is zero for the molecule of ideal gas in equilibrium: (1) Kinetic energy (2) Momentum (3) Density (4) Speed 23. If three moles of an ideal gas are compressed to half the initial volume at a const temperature of 300 K, the amount of work done is: (1) -5188 J (2) 5000 J (3) 5188 J (4) -5000 J 24. A telescope consists of two lenses of focal length 10 cm and 1 cm. Calculate the length of the telescope, when an object is kept at a distance of 60 cm from the objective the final image is formed at least distance of distinct vision: (1) 15.05 cm (2) 12.96 cm (3) 13.63 cm (4) 14.44 cm 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C a placed. The resulting potential at the centre of the cube is: (1) 83.11 × 10 ¹¹ V (2) 16.62 × 10 ¹¹ V	20	A transverse w tension in the w	vave with speed ire increases four	3000 m sec ⁻¹ passes times, then the veloci	along a stretched wire. If ty of the wave is:
 21. If a stone is dropped into a lake from the top of a tower, the sound of the splash heard by a man on the tower after 11.5 seconds. The height of the tower is: (1) 1000 m (2) 750 m (3) 500 m (4) 250 m 22. The average value of which of the following quantities is zero for the molecule of ideal gas in equilibrium: (1) Kinetic energy (2) Momentum (3) Density (4) Speed 23. If three moles of an ideal gas are compressed to half the initial volume at a const temperature of 300 K, the amount of work done is: (1) -5188 J (2) 5000 J (3) 5188 J (4) -5000 J 24. A telescope consists of two lenses of focal length 10 cm and 1 cm. Calculate the leng of the telescope, when an object is kept at a distance of 60 cm from the objective the final image is formed at least distance of distinct vision: (1) 15.05 cm (2) 12.96 cm (3) 13.63 cm (4) 14.44 cm 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C a placed. The resulting potential at the centre of the cube is: (1) 83.11 × 10¹¹ V (2) 16.62 × 10¹¹ V 					
(1) 1000 m (2) 750 m (3) 500 m (4) 250 m 22. The average value of which of the following quantities is zero for the molecule of ideal gas in equilibrium: (1) Kinetic energy (2) Momentum (3) Density (4) Speed 23. If three moles of an ideal gas are compressed to half the initial volume at a constitemperature of 300 K, the amount of work done is: (1) -5188 J (2) 5000 J (3) 5188 J (4) -5000 J 24. A telescope consists of two lenses of focal length 10 cm and 1 cm. Calculate the length of the telescope, when an object is kept at a distance of 60 cm from the objective the final image is formed at least distance of distinct vision: (1) 15.05 cm (2) 12.96 cm (3) 13.63 cm (4) 14.44 cm 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C at placed. The resulting potential at the centre of the cube is: (1) 83.11 × 10 ¹¹ V (2) 16.62 × 10 ¹¹ V		(3) 6000 m sec^{-1}		(4) 9000 m sec	2-1
 (1) 1000 m (2) 750 m (3) 500 m (4) 250 m 22. The average value of which of the following quantities is zero for the molecule of ideal gas in equilibrium: (1) Kinetic energy (2) Momentum (3) Density (4) Speed 23. If three moles of an ideal gas are compressed to half the initial volume at a const temperature of 300 K, the amount of work done is: (1) -5188 J (2) 5000 J (3) 5188 J (4) -5000 J 24. A telescope consists of two lenses of focal length 10 cm and 1 cm. Calculate the leng of the telescope, when an object is kept at a distance of 60 cm from the objective the final image is formed at least distance of distinct vision: (1) 15.05 cm (2) 12.96 cm (3) 13.63 cm (4) 14.44 cm 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C a placed. The resulting potential at the centre of the cube is: (1) 83.11 × 10¹¹ V (2) 16.62 × 10¹¹ V 	21.	If a stone is dro heard by a man	pped into a lake on the tower after	from the top of a tow 11.5 seconds. The he	ver, the sound of the splashight of the tower is:
(1) Kinetic energy (2) Momentum (3) Density (4) Speed 23. If three moles of an ideal gas are compressed to half the initial volume at a const temperature of 300 K, the amount of work done is: (1) -5188 J (2) 5000 J (3) 5188 J (4) -5000 J 24. A telescope consists of two lenses of focal length 10 cm and 1 cm. Calculate the leng of the telescope, when an object is kept at a distance of 60 cm from the objective the final image is formed at least distance of distinct vision: (1) 15.05 cm (2) 12.96 cm (3) 13.63 cm (4) 14.44 cm 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C a placed. The resulting potential at the centre of the cube is: (1) 83.11 × 10 ¹¹ V (2) 16.62 × 10 ¹¹ V					the interest of the same of the property of
 (3) Density (4) Speed 23. If three moles of an ideal gas are compressed to half the initial volume at a const temperature of 300 K, the amount of work done is: (1) -5188 J (2) 5000 J (3) 5188 J (4) -5000 J 24. A telescope consists of two lenses of focal length 10 cm and 1 cm. Calculate the leng of the telescope, when an object is kept at a distance of 60 cm from the objective the final image is formed at least distance of distinct vision: (1) 15.05 cm (2) 12.96 cm (3) 13.63 cm (4) 14.44 cm 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C a placed. The resulting potential at the centre of the cube is: (1) 83.11 × 10¹¹ V (2) 16.62 × 10¹¹ V 	22.	The average valued ideal gas in equil	ue of which of the	e following quantities	is zero for the molecule of
 23. If three moles of an ideal gas are compressed to half the initial volume at a const temperature of 300 K, the amount of work done is: -5188 J 5000 J A telescope consists of two lenses of focal length 10 cm and 1 cm. Calculate the length the telescope, when an object is kept at a distance of 60 cm from the objective the final image is formed at least distance of distinct vision: 15.05 cm 12.96 cm 13.63 cm 14.44 cm 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C a placed. The resulting potential at the centre of the cube is: 83.11 × 10¹¹ V 16.62 × 10¹¹ V 		(1) Kinetic energ	ЗУ	(2) Momentur	n
 (1) -5188 J (2) 5000 J (3) 5188 J (4) -5000 J 24. A telescope consists of two lenses of focal length 10 cm and 1 cm. Calculate the leng of the telescope, when an object is kept at a distance of 60 cm from the objective the final image is formed at least distance of distinct vision: (1) 15.05 cm (2) 12.96 cm (3) 13.63 cm (4) 14.44 cm 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C a placed. The resulting potential at the centre of the cube is: (1) 83.11 × 10¹¹ V (2) 16.62 × 10¹¹ V 		(3) Density		(4) Speed	
 24. A telescope consists of two lenses of focal length 10 cm and 1 cm. Calculate the length the telescope, when an object is kept at a distance of 60 cm from the objective the final image is formed at least distance of distinct vision: 15.05 cm 12.96 cm 13.63 cm 14.44 cm 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C a placed. The resulting potential at the centre of the cube is: 83.11 × 10¹¹ V 16.62 × 10¹¹ V 	23.	If three moles of temperature of 30	an ideal gas are 00 K, the amount	compressed to half the	ne initial volume at a consta
the final image is formed at least distance of 60 cm from the objective the final image is formed at least distance of distinct vision: (1) 15.05 cm (2) 12.96 cm (3) 13.63 cm (4) 14.44 cm 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C a placed. The resulting potential at the centre of the cube is: (1) 83.11 × 10 ¹¹ V (2) 16.62 × 10 ¹¹ V		(1) -5188 J	(2) 5000 J	(3) 5188 J	(4) -5000 J
 (1) 15.05 cm (2) 12.96 cm (3) 13.63 cm (4) 14.44 cm 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C a placed. The resulting potential at the centre of the cube is: (1) 83.11 × 10¹¹ V (2) 16.62 × 10¹¹ V 	24.	of the telescope,	when an object is	kept at a distance of	60 cm from the objective the
 25. At the eight corners of a cube of side 10 cm, equal charges each of value 10 C a placed. The resulting potential at the centre of the cube is: (1) 83.11 × 10¹¹ V (2) 16.62 × 10¹¹ V 					
placed. The resulting potential at the centre of the cube is: (1) $83.11 \times 10^{11} \text{ V}$ (2) $16.62 \times 10^{11} \text{ V}$		(3) 13.63 cm		(4) 14.44 cm	
(1) $83.11 \times 10^{11} \text{ V}$ (2) $16.62 \times 10^{11} \text{ V}$	25.	At the eight corn placed. The result	ers of a cube of ing potential at the	side 10 cm, equal cha se centre of the cube is	arges each of value 10 C a
$(3) 1.66 \times 10^{11} \text{ V} \qquad (4) 1662.77 \times 10^{11} \text{ V}$					
		(1) 65.11 × 10 V			

26.	A circular flexible loop of wire of radiu magnetic field <i>B</i> . If <i>B</i> is doubled, the ten	s r carrying a current I is placed in a uniform sion in the loop:
	(1) is unchanged	(2) is doubled
	(3) is halved	(4) is quadrupled
27.	The magnetic moment of a diamagnetic	atom is:
	(1) zero	(2) ∞
	(3) -∞	(4) 1.08
28.	The sum and difference of the self is respectively. The maximum mutual independent	nductances of two coils are 13 H and 5 H uctances of the two coils is:
	(1) 6 H	(2) 5 H
	(3) √65 H	(4) 18 H
29.	A current $I = 3 + 8 \sin 100t$ is passir effective value of the current is:	ag through a resistor of resistance 10 $Ω$. The
	(1) 5 A	(2) 10 A
	(3) $4\sqrt{2}$ A	(4) $3\sqrt{2} A$
30.	If the work function of a metal is 10 eV of 20 eV, then the frequency of photoele	and is subjected to bombardment by photons ectrons will be:
	(1) = 10/h	(2) > 10/h
	(3) < 10/h	$(4) \ge 10/h$
31.	The ratio of frequencies of the long was of hydrogen is:	velength limits of the Balmer and Lyman series
	(1) 27:5	(2) 5:27
	(3) 4:1	(4) 1:4
BPH-I	EE-2016(SET-Z)/(A)	P. T. O

of a radioactive sample with decay constant λ (2) $\sqrt{0.693}$ (4) $(0.693)^2$ e respectively is: (2) 1.5 eV, 3.0 eV
(4) (0.693) ² e respectively is:
(2) 1.3 eV, 3.0 eV
(4) 0.7 eV, 1.11 eV
0.98, then the value of β will be:
(2) 0.98
(4) 1.96
(2) continuous absorption spectrum
(4) line emission spectrum
Т-В
ISTRY
gram of hydrogen ?
(2) 3.01×10^{23}
(4) 1.5×10^{23}
with mass 1 g and velocity 100 m/s is:
(2) 6.63×10^{-34} m
(4) $6.63 \times 10^{-36} \mathrm{m}$
size?
2) I > I ⁺ > I ⁻
4) I⁻>I>I⁺

39.	IF ₅ has the following hybridization:	and only of the
	(1) sp3d2	(2) sp3d3
	(3) sp ³ d	(4) none of these
40.	Absolute zero is the temperature at wh	ich:
	(1) Rotational motion ceases	(2) Volume become zero
	(3) Mass become zero	(4) None of these
41.	Entropy of vaporization of water 9710 Cal mol ⁻¹ will be:	at 100°C, if molar heat of vaporization is
	(1) 20 Cal mol ⁻¹ K ⁻¹	(2) 26 Cal mol ⁻¹ K ⁻¹
	(3) 24 Cal mol ⁻¹ K ⁻¹	(4) 28 Cal mol ⁻¹ K ⁻¹
42.	1 mole of N_2 and 2 moles of H_2 are all 0.8 mole of NH_3 is formed. The concer	lowed to react in a 1 dm^3 vessel. At equilibrium attration of H_2 in the vessel is :
	(1) 0.6 M	(2) 0.8 M
	(3) 0.2 M	(4) 0.4 M
43.	Which is most powerful reducing age	nt?
1	(1) Molecular hydrogen	(2) Atomic hydrogen
	(3) Nascent hydrogen	(4) All have same reducing power
44	Lithium is the strongest reducing a following factor?	gent among alkali metals due to which of the
	(1) Ionization energy	(2) Electron affinity
	(3) Hydration energy	(4) Lattice energy
45	. Potassium is stored under :	
	(1) Water	(2) Ethyl alcohol
	(3) Liquid ammonia	(4) Kerosene
BPH	I-EE-2016(SET-Z)/(A)	P. T. O.

4	6. Pyrosilicate ion is: 1 to do to the	ence the control of the majority of the majority of the control of
	(1) SiO_2^{2-}	(2) SiO_4^{2-}
	(3) $Si_2O_6^{7-}$	(4) $Si_2O_7^{6-}$
47	7. Ethylene reacts with sulphur monoc	hloride to give :
	(1) Phosgene	(2) Mustard gas
	(3) Ethylene chloride	(4) None of these
48	. Which one of the following regions o	of atmosphere contains Ozone?
	(1) Troposphere	(2) Thermosphere
	(3) Mesosphere	(4) Stratosphere
49.	Azeotropic mixtures are:	
	(1) Constant boiling mixture	(2) Those which boil at different temp.
	(3) Mixture of two solids	(4) None of these
50.	An example of Frenkel as well as Scho	ottky defect is :
	(1) NaBr	(2) TlBr
	(3) AgBr	(4) <i>CuBr</i>
51.	Which of the following substance acts	as superconductor at 4 K?
	(1) Hg	(2) Cu
	(3) Na	(4) Mg
52.	In fireflies the flashes are produced dumoisture. The phenomenon is known a	e to combustion of a protein luciferin in air and s :
	(1) Photochemical change	(2) Photo combustion
	(3) Chemiluminescence	(4) None of these
BPH-EI	E-2016(SET-Z)/(A)	

flocculation value of NaCl is:

	(1) 5 (2) 50	(3)	25	(4) 1	
54.	A first order reaction is found of the reaction is:	d to have a rat	e constant, K =	$5.5 \times 10^{-14} \text{ s}^{-1}$. The	e half-life
	(1) $1.26 \times 10^{13} \mathrm{s}$	(2)	$1.26 \times 10^{-13} \text{ s}$		
	(3) $5.5 \times 10^{13} \text{ s}$	(4)	$5.5 \times 10^{-13} \text{ s}$		
55.	Which of the following is <i>not</i>	a metal refinir	ng process?		
	(1) Baeyer's process	(2)	Mond process	,	
	(3) Van Arkel process	(4)	Liquation pro	cess .	
56.	The get with compet and an of a	aidimaia			
50.	The set with correct order of a				
	(1) <i>HClO</i> < <i>HClO</i> ₂ < <i>HClO</i> ₃ <				
	(2) HClO4 < HClO3 < HClO2 <				
	$(3) HClO < HClO_4 < HClO_3 <$				
	$(4) HClO_4 < HClO_2 < HClO_3 <$: HClO			
57.	The gas obtained when bleach of NH_3 is:	ning powder is	treated with w	varm concentrated	solution
	(1) CI_2 (2) N_2	(3)	NO	(4) H ₂	
58.	When SO ₂ is passed through a	acidified K_2Cr_2	O_7 solution :		
	(1) The solution turns blue	(2)	The solution i	s decolorized	
	(3) The solution turns green	(4)	SO ₂ is reduced	1 272 1 4 0 0 0 1 2 2 2 2 7	
50			3 (10 to 10 to	1.85) 2008: 1	
59.	The complex used as an antica				
	(1) mer – $[Co(NH_3)_3Cl_3]$	(2)	Cis – [PtCl ₂ (N	$H_3)_2$	
	(3) $\operatorname{Cis} - \operatorname{K}_{2}[\operatorname{PtCl}_{2}\operatorname{Br}_{2}]$	(4)	Na ₂ CoCl ₄	ings - secinal	
РН-Е	E-2016(SET-Z)/(A)				P. T. O.

53. For the Coagulation of 100 mL of arsenious sol, 5 mL of 1 M NaCl is required. The

60	0. Which is <i>not</i> an organometallic compo	ound	?	
	$(1) C_3H_7MgI$	(2)	C_2H_5ONa	
	(3) $(C_2H_5)_3Al$	(4)	TEL	
61	1. Phenol $\xrightarrow{1. NaOH \ 2. CO_2/140^{\circ}C} A \xrightarrow{H^+/H_{20}}$	$\xrightarrow{2^O} B$	$\xrightarrow{Ac_2O}$ C	
	In this reaction, the end product is:			
	(1) Salicylaldehyde	(2)	Salicylic acid	
	(3) Phenyl acetate		Aspirin	
62.	2. Malonic acid on heating gives:			
	(1) Formic acid (2) Acetic acid	(3)	Oxalic acid	(4) Acetaldehyde
63.	An organic compound (A) on reduction and alcoholic <i>KOH</i> gives (C). (C) on compound (A) is:	n give cataly	es compound (E tic reduction g	3) on treatment with CHC rives N-methylaniline. Th
	(1) Methylamine (2) Nitromethane	(3)	Aniline	(4) Nitrobenzene
64.	. Keratin, a structural protein is present in	n:		
	(1) Hair (2) Skin	(3)	Wool	(4) All of these
65.	In DNA, the complimentary bases are:			
	(1) Adenine and thymine; guanine and	uraci	1	
	(2) Adenine and thymine; guanine and	cytos	sine	
	(3) Adenine and guanine; thymine and	uraci	ì	
	(4) Adenine and uracil; guanine and cyt	tosine	•	
66.	The vitamin which is neither soluble in v	water	nor in fat is:	
	(1) Phylloquinone	(2) I	Biotin	
	(3) Thiamine	(4) H	Ergocalciferol	
H-F	FE-2016(SET 7)//A)			

P. T. O.

77. The number of terms in the expansion of $(1+\sqrt{2}x)^9+(1-\sqrt{2}x)^9$ is: (1) 10 (2) 9

78. If $a = 1 + x + x^2 + \dots \infty$ and $b = 1 + y + y^2 + \dots \infty$ where x and y are proper fractions, then $1 + xy + x^2y^2 + \dots \infty$ is equal to :

(1) $\frac{ab}{a+b-1}$ (2) $\frac{ab}{a+b}$ (3) $\frac{ab}{a-b}$ (4) $\frac{a+b}{a-b}$

79. A straight line passes through (2, 2) and is perpendicular to the line 3x + y = 3. Its y-intercept is:

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

80. The line x + y = 2 is a normal to the parabola $y^2 = 8x$ at the point :

(1) (2,4)(2) (-2,4)(3) (4, 2)

(4) (3, 2)

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

82. The value of $\lim_{x\to 0} \frac{\sqrt{1-\cos x^2}}{1-\cos x}$ is:

- (1) $\sqrt{2}$
- (2) $\frac{1}{\sqrt{2}}$ (3) $\frac{\pi}{2}$

83. If $x^y = e^{x-y}$, then $\frac{dy}{dx} = \frac{dy}{dx}$

(1) $\frac{1}{(1+\log x)^2}$

 $(3) \quad \frac{1}{1 + \log x}$

84. Mean square deviation of a distribution is least when deviations are taken about :

- (1) mode
- (2) mean
- (3) median
- (4) zero

85. Two players play a game where each of them is asked to select a number from 1 to 25. If the two numbers match, both of them win a prize. The probability that they will not win a prize in a single trial is:

- (1) $\frac{1}{5}$
- (2) $\frac{19}{25}$
- (3) $\frac{1}{25}$

86. If $f: \mathbb{R} \to \mathbb{R}$ is a mapping defined by $f(x) = x^3 + 3$, then $f^{-1}(x)$ is equal to :

(1) $(x+3)^{1/3}$

 $(2) (x-3)^{1/3}$

(3) $(3 - \dot{x})^{1/3}$

 $(4) (x^3 + 3)^{-1}$

87. If $\sin\left(\sin^{-1}\frac{1}{5} + \cos^{-1}x\right) = 1$, then x = -1

- (1) 0 (2) $\frac{4}{5}$ (3) $\frac{3}{5}$

BPH-EE-2016(SET-Z)/(A)

P. T. O.

 $(1) (-\infty, \infty)$

BPH-EE-2016(SET-Z)/(A)

(2) $(-1, \infty)$

 $(3) (1, \infty)$

(4) $[0,\infty)$

$$94. \quad \int \frac{x + \sin x}{1 + \cos x} \, dx =$$

(1)
$$\tan \frac{x}{2} + c$$

$$+c$$
 (2) $x \tan \frac{x}{2} + c$

(3)
$$\cot \frac{x}{2} + c$$

(4)
$$x \cot \frac{x}{2} + c$$

95.
$$\int_{0}^{\log 5} \frac{e^{x} \sqrt{e^{x} - 1}}{e^{x} + 3} dx =$$

(1)
$$2 + \pi$$

(2)
$$3 - \pi$$

(3)
$$4 - \pi$$

(4)
$$3 + 2\pi$$

96. The area of the region lying between the line x - y + 2 = 0 and the curve $x = \sqrt{y}$ is:

97. If
$$f(x) = f'(x)$$
 and $f(1) = 2$, then $f(3) = 1$

(1)
$$2e^2$$

(1)
$$2e^2$$
 (2) $3e^2$ (3) $2e^3$

(4)
$$\frac{e^2}{3}$$

98. If $\vec{a} = \hat{i} + \hat{j} + \hat{k}$, $\vec{b} = 4\hat{i} + 3\hat{j} + 4\hat{k}$ and $\vec{c} = \hat{i} + \alpha\hat{j} + \beta\hat{k}$ are linearly dependent vectors and $|\vec{c}| = \sqrt{3}$, then:

(1)
$$\alpha = 1$$
, $\beta = \pm 1$

(2)
$$\alpha = \pm 1, \beta = 1$$

(3)
$$\alpha = -1, \beta = \pm 1$$

(4)
$$\alpha = \pm 1, \beta = -1$$

99. The line $\frac{x-2}{3} = \frac{y+1}{2} = \frac{z-1}{-1}$ intersects the curve $xy = c^2$, z = 0 then c = -1

(1)
$$\pm \sqrt{5}$$

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

(3)
$$\pm \frac{1}{3}$$

(4)
$$\pm \frac{\sqrt{5}}{2}$$

- 100. A coin is tossed three times, the probability of getting head and tail alternately is:
- (2) $\frac{3}{4}$ (3) $\frac{1}{4}$

OPTIONAL PART – C (ii)

BIOLOGY

4	01	¥ 7 .	oids		
	1.7	V 11	ulus	aic	

- (1) ssRNA not enclosed by protein coat
- (2) ssRNA enclosed by protein coat
- (3) dsRNA enclosed by protein coat
- (4) dsDNA enclosed by protein coat
- **102.** The seedless vascular plants are:
 - (1) Bryophytes

(2) Pteridophytes

(3) Gymnosperms

- (4) Angiosperms
- **103.** The spindle fibers involved in the separation and migration of chromosomes during telophase are made of :
 - (1) Microbodies

(2) Microsomes

(3) Microtubules

- (4) Endoplasmic reticulum
- **104.** A monocarpic plant:
 - (1) Has one carpel
 - (2) Produces only one seed
 - (3) Produces one fruit only
 - (4) Flowers only once in lifetime

105. Zymogen is:

- (1) Enzyme poison
- (2) Enzyme modulator
- (3) Enzyme precursor
- (4) Enzyme inhibitor

06.	A disaccharide made up of two glucose	units is:	
	(1) Sucrose (2) Maltose	(3) Lactose (4)	L) Dextrin
107.	A cell organelle which is bounded b involved in conversion of fat to carbohy	y a single membrane ydrate is :	and contains enzymes
	(1) Spherosomes	(2) Lysosomes	
	(3) Glyoxysomes	(4) Peroxisomes	
108.	Iron is <i>not</i> a component of:		
	(1) Cytochromes	(2) Peroxidases	
	(3) Catalases	(4) Carbonic anhydr	rases
109.	An organism is respiring in a bell jar fi will contain labelled O_2 ?	illed with ¹⁸ O ₂ . Which p	product of the respiration
	(1) CO ₂	(2) H ₂ O	
	(3) Both of them	(4) None of them	
110	insting the convers	ion of phosphoglycola	te to glycolate takes place
	(1) Peroxisome	(2) Glyoxysome	
	(3) Mitochondria	(4) Chloroplast	
111	. Fixation of one molecule of CO ₂ by C	alvin-Benson cycle req	uires:
	(1) 3 ATP and 2 NADPH + H^+		
	(2) 5 ATP and 2 NADPH + H ⁺		
	(3) 12 ATP and 12 NADPH + H ⁺		
	(4) 18 ATP and 12 NADPH + H ⁺		
11	2. Photoperiodic stimulus for flowerin	g is perceived by:	
	(1) Shoot tips (2) Leaves	(3) Flowers	(4) Roots
BP	H-EE-2016(SET-Z)/(A)		P. T. O.

113.	Embryo sac is equivalent to:	
	(1) Megaspore	(2) Integumented megasporangium
	(3) Female gametophyte	(4) Fruit
114.	The condition where flowers do not op	en is known as :
	(1) Chasmogamous	(2) Cleistogamous
	(3) Geitonogamy	(4) Autogamy
115.	The coding sequences in eukaryotic DN	JA are known as :
	(1) Recon (2) Exon	(3) Intron (4) Mucon
116.	The F ₂ generation offsprings in a plant	showing incomplete dominance, exhibit :
	(1) Variable genotypic and phenotypic	ratios
	(2) A phenotypic ratio of 3:1	
	(3) A genotypic ratio of 1:1	
	(4) Similar genotypic and phenotypic	ratio of 1:2:1
117.	Diabetes insipidus is caused by deficien	nt secretion of:
	(1) Insulin (2) Glucagon	(3) Vassopresin (4) Oxytocin
118.	DOTS strategy is used to treat:	
	(1) HIV (2) Malaria	(3) Tuberculosis (4) Hepatitis
119.	Which of the following microbe is used	l as biopesticide ?
	(1) Agrobacterium tumefaciens	
	(2) Bacillus thuringiensis	
	(3) Agrobacterium rhizogenes	
	(4) Bacillus amyloliquefaciens	

-
144
A PAPARA CATAL
-
-
The same of the sa
4-
1
1
1
-
-

120. Organisms called methanogens are mos	t abundant in a :
(1) Hot spring	(2) Sulphur rock
(3) Cattle yard	(4) Polluted stream
121. In coming years, the skin diseases will h	ne more common due to :
	of Mose - grand and a second an
(1) Increase in air pollution	
(2) Increase in CO ₂	
(3) Excess use of detergents	
(4) Depletion of Ozone	
122. Which biogeochemical cycle is <i>not</i> gas	eous?
(1) Carbon cycle	(2) Nitrogen cycle
(3) Phosphorous cycle	(4) Sulfur cycle
(3) Phosphorous eyes	and a plant are 21 chromosomes,
123. If the number of chromosomes in the	endosperm cells of a plant are 21 chromosomes, mes in the gametes?
(2) 11	(3) 7
(1) 21 (2) 14	ahado barnan in bost (8)
124. Ovulation occurs under the influence	of:
(1) LH	(2) FSH
(3) Estrogen	(4) Progesteron
125. Organ of corti occurs in:	(2) Middle ear
(1) External ear	
(3) Cochlea	(4) Retina
126. Bile is released by the action of:	
	(2) Secretin
(1) Gastrin	(4) Insulin
(3) Cholecystokinin	(±) Hibitati
BPH-EE-2016(SET-Z)/(A)	

A

20		
20		
127.	Uricotelic excretion is mainly an	adaptation for:
	(1) Conservation of urea produc	cing enzyme
	(2) Raising osmotic concentration	on of blood
	(3) Conservation of water	
	(4) Storage of waste materials	
128.	DNA sequence is ATG. What wo	ould be the sequence of bases in anticodon of tRNA
	(1) ATG	(2) UAC
	(3) TAC	(4) AUG
129.	Who proposed the 'theory of mu	itation'?
	(1) J. B. de Lamarck	(2) A. Weisman
	(3) Hugo de Vries	(4) A. I. Oparin
130.	Red data book provides data on	Herseltas de coma parte e en entre de esta en esta en La composição de la compo
	(1) Biota of red sea	the appropriate the section of all 1977 cells.
	(2) Effect of red light on photos	synthesis
	(3) Red pigmented plants	e de la la la contraction de l
	(4) Threatened species	

Total No. of Printed Pages: 21

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

BPH-EE-2016(SET-Z)

В	11494
Time : 11/4 Hours (75 minutes) Total Quest	Sr. No
Total Quest	tions: 130 Max. Marks: 100
Candidate's Name	Date of Birth
Father's Name	Mother's Name
Roll No. (in figures) (in words)	
Date of Exam :	
(Signature of the Invigilator)	(Signature of the Candidate)

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

- 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 candidates *must return* this question booklet 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 a 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 booklet itself.
- 4. In case there is any discrepancy in any question(s) in the Question Booklet, 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** full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Before answering the questions, the candidates should ensure that they have been supplied correct & complete question booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after the start of examination.

PART - A

PHYSICS

1.	The ratio of frequencies of the long wavelength limits of the Balmer and Lyman series of hydrogen is:				
	(1) 27:5	(2)	5:27	e kontinue de la continue de la cont	
	(3) 4:1	(4)	1:4		
2.	The ratio of half-life to the mean life of a	a rad	ioactive sample v	with decay constant λ :	
	(1) 0.693	(2)	$\sqrt{0.693}$		
	(3) 1/0.693	(4)	$(0.693)^2$		
3.	The forbidden energy gap of Si and Ge	resp	ectively is :		
	(1) 1 eV, 2 eV	(2)	1.5 eV, 3.0 eV		
	(3) 1.11 eV, 0.7 eV	(4)	0.7 eV, 1.11 eV		
4.	In a CE amplifier if the value of i_c/i_e is ().98,	then the value of	β will be :	
	(1) 98 (2) 0.98	(3)	49	(4) 1.96	
5.	The spectrum of a star is usually:			"我说话。"	
	(1) continuous emission spectrum	(2)	continuous abso	orption spectrum	
	(3) line absorption spectrum	(4)	line emission sp	pectrum	
6.	A circular flexible loop of wire of radi magnetic field <i>B</i> . If <i>B</i> is doubled, the term			nt I is placed in a uniform	
	(1) is unchanged	(2)	is doubled		
	(3) is halved	(4)	is quadrupled	The stranger of the	
7.	The magnetic moment of a diamagnetic	c ato	m is:		
	(1) zero (2) ∞	(3)	· −∞	(4) 1.08	
BPH-	EE-2016(SET-Z)/(B)			THAT I SHOULD P. T. O.	

8.	The sum and difference of the self is respectively. The maximum mutual independent	nductances of two coils are 13 H and 5 H uctances of the two coils is:
	(1) 6 H	(2) 5 H
	(3) √65 H	(4) 18 H
9.	A current $I = 3 + 8 \sin 100t$ is passir effective value of the current is:	ng through a resistor of resistance 10 Ω . The
	(1) 5 A	(2) 10 A
	(3) $4\sqrt{2} \text{ A}$	(4) $3\sqrt{2}$ A
10.	If the work function of a metal is 10 eV of 20 eV, then the frequency of photoele	I and is subjected to bombardment by photon ectrons will be:
	(1) = 10/h	(2) > 10/h
	(3) < 10/h	$(4) \ge 10/h$
11.	If a stone is dropped into a lake from heard by a man on the tower after 11.5	the top of a tower, the sound of the splash i seconds. The height of the tower is:
	(1) 1000 m	(2) 750 m
	(3) 500 m	(4) 250 m
12.	The average value of which of the foll ideal gas in equilibrium:	owing quantities is zero for the molecule of a
	(1) Kinetic energy	(2) Momentum
	(3) Density	(4) Speed
13.	If three moles of an ideal gas are comtemperature of 300 K, the amount of w	pressed to half the initial volume at a constant ork done is:
	(1) -5188 J	(2) 5000 J

(4) -5000 J

BPH-EE-2016(SET-Z)/(B)

(3) 5188 J

14.	A telescope consists of two lenses of focal length 10 cm and 1 cm. Calculate the length of the telescope, when an object is kept at a distance of 60 cm from the objective then the final image is formed at least distance of distinct vision:				
	(1) 15.05 cm	(2) 12.96 cm			
	(3) 13.63 cm	(4) 14.44 cm			
15.	At the eight corners of a cube of side 10 cm, equal charges each of value 10 C are placed. The resulting potential at the centre of the cube is:				
	(1) $83.11 \times 10^{11} \text{ V}$	(2) $16.62 \times 10^{11} \text{ V}$			
	(3) $1.66 \times 10^{11} \text{ V}$	(4) $1662.77 \times 10^{11} \text{ V}$			
16.		change its state of motion, unless there is an nal force of the brakes can bring a car to rest.			
	(1) the brakes stop the vehicle				
	(2) the friction between brake pads and the wheel stops the car				
	(3) the car is stopped by the road				
	(4) the car is stopped by the driver pres	sing the pedal			
17.	If the momentum of a body remains con is a:	nstant, then the mass-speed graph of the body			
	(1) circle	(2) straight line			
	(3) rectangular hyperbola	(4) parabola			
18.	A body of mass M moving with a speed u has a head-on collision with a body of mass m at rest. If M >> m, the speed of the body with mass m after the collision will be nearly:				
	(1) um/M (2) uM/m	(3) u/2 (4) 2u			
19.	If a body moves through a distance grea	ter than $2\pi R$ in one full rotation, then :			
	(1) $v_{cm} > R\omega$ (2) $v_{cm} < R\omega$	(3) $v_{cm} \ge R\omega$ (4) $v_{cm} \le R\omega$			
врн-е	E-2016(SET-Z)/(B)	P. T. O.			

20.	The work do earth is:	ne by an external age	nt to shift a point m	ass from infinity to the centre o
	(1) zero	len in	(2) greater th	an zero
	(3) less than	zero	(4) ≤ 0	end to the
21.		hain of length l is susteepressure on the table		end just touching a horizontal sreached the table:
	(1) mgx	(2) 2mgx	(3) 3mgx	(4) mgx/2
22.	of radius a. If	of a substance are to left the coefficient of state that of the cone will be:	ic friction between	on a horizontally circular plate the particles is k , the maximum
	(1) ak		(2) <i>ak</i> /2	
	(3) a/k	H Hallaga	$(4) ak^2$	
23.	10 m/s. A pl length 1 m. Tl	umb line is suspende he angle made by the	ed from the roof of rod with the track is	
	(1) zero	(2) 30°	(3) 45°	(4) .60°
24.	If a compresso	ed string is dissolved i	in acid :	
	(1) the energy	y of the string increase	es	
	(2) the energy	y of the acid decreases	3	
	(3) the kinetic	c energy and potential	l energy of the acid	molecules increases
	(4) the tempe	erature of the acid incr	eases	
25.		upplied by a force a velocity of the particle		e moving in a straight line is cement as:
	(1) \sqrt{x}		(2) x	
	(3) x^2		(4) $x^{1/3}$	
врн-Е	E-2016(SET-Z)	/(B)		MASSALES OF THE

26.	The dimensions are:	of solar constant wh	nich re	elates to the	energy received by the ear	th
	(1) $[ML^2 T^{-3}]$	(2) $[M^2 L^0 T^{-1}]$	(3)	$[ML^0 T^{-3}]$	(4) $[ML^1 T^{-2}]$	
27.	If the speed of li		⁻¹ , the	distance trav	elled by the light in one lig	ht
	(1) 3×10^{12} (3) 3×10^{15}		(2) (4)	9.461×10^{15} 3.126×10^{14}	entra de la companya	
28.		n towards north at a			o the east and then travels the east, the total distan	
	(1) 6	(2) 8	(3)	5.64	(4) 4.95	
29.	If $x = a(\cos\theta + \theta \sin\theta)$ the velocity of the		θcosθ) and θ incre	ases at a uniform rate ω , the	en
	(1) αω	(2) $a^2\theta/\omega$	(3)	αθ/ω	(4) αθω	
30.	If the velocity of	a moving particle, v =	= x ⁿ w	here x is the	displacement, then:	
	(1) when $x = 0$, t	he velocity and accel	eration	n are zero		
	(2) for the body	in motion, $n > 1/2$				
	(3) for the body	in motion, $n < 1/2$				
	(4) both (1) and	(2)				
31.		of a simple pendulum	at the	e centre of ea	rth is:	
	(1) zero		(2)	infinity		
	(3) less than zero)	(4)	none of the t	hree before	
32.		e. When the tube is			the water rises upto 3 mm of 60° with the vertical, the	
	(1) 6 mm	(2) 4 mm	(3)	3 mm	(4) 4.5 mm	
ВРН-Е	E-2016(SET-Z)/(B)				(8) P. T.	Ο.

33.	The energy required to assuming surface tension			bble from 1 cm to 2 cm,
	(1) 240π ergs	rles	720π ergs	
	(3) 480π ergs		120π ergs	
34.	The bulk modulus for an	incompressible liq	uid is:	
	(1) ∞ (2) 0	(3)	1	(4) 2
35.	A transverse wave with tension in the wire increase			; a stretched wire. If the the wave is :
	(1) 1500 m sec ⁻¹	(2)	3000 m sec ⁻¹	
	(3) 6000 m sec ⁻¹	(4)	9000 m sec ⁻¹	
		PART -	3	
		CHEMIST	RY	
36.	The vitamin which is neitl	ner soluble in wate	er nor in fat is :	
	(1) Phylloquinone	(2)	Biotin	
	(3) Thiamine	(4)	Ergocalciferol	
37.	Violet colour is obtain wh The test is known as:	en dilute <i>CuSO</i> ₄ is	added in an all	kaline solution of protein.
	(1) Biuret test	(2)	Xanthoproteic to	est
	(3) Million's test	(4)	Ninhydrin test	
38.	The hormone that helps in	conversion of glu	cose in glycogen	is:
	(1) Cortisone	(2)	Calcitonin	
	(3) Adrenaline	(4)	Insulin	
врн-е	E-2016(SET-Z)/(B)			. John Laboropes in

39.	Which of the following is used as "a m	orning after pill"?	ga, Haradani marana
	(1) Norethindrone	(2) Ethynylestrad	liol
	(3) Mifepristone	(4) Bithional	
40.	Barbituric acid and its derivatives are	well known as :	
	(1) Tranquilizers	(2) Antiseptics	
	(3) Analgesics	(4) Antipyretics	
41.	Phenol $\xrightarrow{1. \text{NaOH } 2. \text{CO}_2/140^{\circ}\text{C}} A \xrightarrow{H^+/H_{2}}$	$\xrightarrow{O} B \xrightarrow{Ac_2O} C$	
	In this reaction, the end product is:		
	(1) Salicylaldehyde	(2) Salicylic acid	
	(3) Phenyl acetate	(4) Aspirin	
42.	Malonic acid on heating gives:		
	(1) Formic acid (2) Acetic acid	(3) Oxalic acid	(4) Acetaldehyde
43.	An organic compound (A) on reduction and alcoholic <i>KOH</i> gives (C). (C) on compound (A) is:	n gives compound (E atalytic reduction g	β) on treatment with $CHCl_3$ ives N-methylaniline. The
	(1) Methylamine (2) Nitromethane	(3) Aniline	(4) Nitrobenzene
44.	Keratin, a structural protein is present in	n:	
	(1) Hair (2) Skin	(3) Wool	(4) All of these
45.	In DNA, the complimentary bases are:		
	(1) Adenine and thymine; guanine and	uracil	
,	(2) Adenine and thymine; guanine and	cytosine	
	(3) Adenine and guanine; thymine and	uracil	
	(4) Adenine and uracil; guanine and cy	tosine	
BPH-E	E-2016(SET-Z)/(B)		

46.	The set with correct order of acidit	y is:
*	(1) HClO < HClO ₂ < HClO ₃ < HClO	O_4
	(2) HClO ₄ < HClO ₃ < HClO ₂ < HCl	0
	(3) $HClO < HClO_4 < HClO_3 < HClO_3$	D_2
	$(4) HClO_4 < HClO_2 < HClO_3 < HClo$	0
47.	The gas obtained when bleaching I of NH_3 is:	powder is treated with warm concentrated solution
	(1) Cl_2 (2) N_2	(3) NO (4) H ₂
48.	When SO_2 is passed through acidif	ied $K_2Cr_2O_7$ solution :
	(1) The solution turns blue	(2) The solution is decolorized
	(3) The solution turns green	(4) SO ₂ is reduced
49.	The complex used as an anticancer	agent is:
	(1) mer – $[Co(NH_3)_3Cl_3]$	(2) $Cis - [PtCl_2(NH_3)_2]$
	(3) $\operatorname{Cis} - \operatorname{K}_{2}[\operatorname{PtCl}_{2}\operatorname{Br}_{2}]$	(4) Na ₂ CoCl ₄
50.	Which is <i>not</i> an organometallic cor	npound?
	$(1) C_3H_7MgI$	(2) C_2H_5ONa
	(3) $(C_2 H_5)_3 Al$	(4) TEL
51.	Pyrosilicate ion is:	
	(1) SiO_2^{2-}	(2) SiO_4^{2-}
	(3) $Si_2O_6^{7-}$	(4) $Si_2O_7^{6-}$
52.	Ethylene reacts with sulphur mono	chloride to give :
	(1) Phosgene	(2) Mustard gas
	(3) Ethylene chloride	(4) None of these

53. Which one of the following regions of atmosphere contains Ozone?			
	(1) Troposphere	(2) Thermosphere>	
	(3) Mesosphere	(4) Stratosphere	
54	. Azeotropic mixtures are :		
	(1) Constant boiling mixture	(2) Those which boil at different temp.	
	(3) Mixture of two solids	(4) None of these man	
55.			
	(1) NaBr	(2) <i>TlBr</i>	
	(3) AgBr	(4) CuBr	
56.	at 100°C, if molar heat of vaporization is		
	(1) $20 \text{ Cal mol}^{-1} \text{ K}^{-1}$	(2) 26 Cal mol ⁻¹ K ⁻¹	
	(3) $24 \text{ Cal mol}^{-1} \text{ K}^{-1}$	(4) 28 Cal mol ⁻¹ K ⁻¹	
57.	1 mole of N_2 and 2 moles of H_2 are allowed to react in a 1 dm ³ vessel. At equilibrium 0.8 mole of NH_3 is formed. The concentration of H_2 in the vessel is :		
	(1) 0.6 M	(2) 0.8 M	
	(3) 0.2 M	(4) 0.4 M	
58.	Which is most powerful reducing agen	t?	
	(1) Molecular hydrogen	(2) Atomic hydrogen	
	(3) Nascent hydrogen	(4) All have same reducing power	
59.	Lithium is the strongest reducing age following factor?	ent among alkali metals due to which of the	
	(1) Ionization energy	(2) Electron affinity	
	(3) Hydration energy	(4) Lattice energy	
BPH-EI	E-2016(SET-Z)/(B)	Р. Т. О.	

60	Potassium is stored under:		an in
	(1) Water	(2) Ethyl alcohol	
	(3) Liquid ammonia	(4) Kerosene	
61	. How many molecules are present in o	one gram of hydrogen ?	
	(1) 6.02×10^{23}	(2) 3.01×10^{23}	
	(3) 2.5×10^{23}	(4) 1.5×10^{23}	
62. The de-Broglie wavelength of a particle with mass 1 g and velocity 100 r			n/s is
	(1) $6.63 \times 10^{-33} \text{ m}$	(2) $6.63 \times 10^{-34} \mathrm{m}$	
	(3) $6.63 \times 10^{-35} \mathrm{m}$	(4) $6.63 \times 10^{-36} \mathrm{m}$	
63. Which of the following is correct order of size?			
	(1) I > I ⁻ > I ⁺	(2) I > I ⁺ > I ⁻	
	(3) $I^+ > I^- > I$	(4) I ⁻ > I > I ⁺	
64.	${\rm IF}_5$ has the following hybridization :		
	(1) sp^3d^2	(2) sp^3d^3	
	(3) sp3d	(4) none of these	
65.	Absolute zero is the temperature at wh	ich:	
	(1) Rotational motion ceases	(2) Volume become zero	
	(3) Mass become zero	(4) None of these	
66. Which of the following substance acts as superconductor at 4 K?			
	(1) Hg	(2) Cu	
	(3) Na	(4) Mg	
РН-Е	E-2016(SET-Z)/(B)		

				1
67.	In fireflies the flashes are promoisture. The phenomenon	oduced due to combustion is known as :	n of a protein luciferin in a	iir and
	(1) Photochemical change(3) Chemiluminescence	(2) Photo co. (4) None of		
68.	For the Coagulation of 100 mL of arsenious sol, 5 mL of 1 M NaCl is required. The flocculation value of <i>NaCl</i> is :			
	(1) 5 (2) 50	(3) 25	(4) 1	

69. A first order reaction is found to have a rate constant, $K = 5.5 \times 10^{-14} \text{ s}^{-1}$. The half-life of the reaction is:

(1) 1.26×10^{13} s

(2) 1.26×10^{-13} s

(3) $5.5 \times 10^{13} \text{ s}$

(4) $5.5 \times 10^{-13} \text{ s}$

70. Which of the following is *not* a metal refining process?

(1) Baeyer's process

(2) Mond process

(3) Van Arkel process

(4) Liquation process

OPTIONAL

PART - C (i)

MATHEMATICS

71. The area of the region lying between the line x - y + 2 = 0 and the curve $x = \sqrt{y}$ is:

(1) 4/3

(2) 5/4

(3) 9/2

(4) 10/3

72. If f(x) = f'(x) and f(1) = 2, then f(3) = 1

(1) $2e^2$

(2) $3e^2$

(3) $2e^3$

73. If $\vec{a} = \hat{i} + \hat{j} + \hat{k}$, $\vec{b} = 4\hat{i} + 3\hat{j} + 4\hat{k}$ and $\vec{c} = \hat{i} + \alpha\hat{j} + \beta\hat{k}$ are linearly dependent vectors and $|\vec{c}| = \sqrt{3}$, then:

(1) $\alpha = 1, \beta = \pm 1$

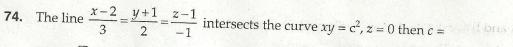
(2) $\alpha = \pm 1, \beta = 1$

(3) $\alpha = -1, \beta = \pm 1$

(4) $\alpha = \pm 1, \beta = -1$

BPH-EE-2016(SET-Z)/(B)

P. T. O.



(1) $\pm \sqrt{5}$

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

(3) $\pm \frac{1}{3}$

(4) $\pm \frac{\sqrt{5}}{2}$

75. A coin is tossed three times, the probability of getting head and tail alternately is:

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

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

(3) $\frac{1}{4}$

(4) $\frac{1}{8}$

76. If the tangent to the curve $x = a (\theta + \sin \theta)$, $y = a (1 + \cos \theta)$ at $\theta = \pi/3$ makes an angle α with the *x*-axis, then $\alpha =$

(1) $\pi/6$

(2) $\pi/2$

(3) $5\pi/6$

 $(4) 2\pi/3$

77. The value of K for which the function $f(x) = K \sin x + \frac{1}{3} \sin 3x$ has an extremum at $x = \pi/3$ is:

(1) 0

(2) 1

(3) 2/3

(4) 2

78. The function $f(x) = x + \cot^{-1} x$ increases in the interval :

(1) $(-\infty, \infty)$

(2) (-1,∞)

 $(3) (1, \infty)$

 $(4) [0, \infty)$

 $79. \quad \int \frac{x + \sin x}{1 + \cos x} \, dx =$

(1) $\tan \frac{x}{2} + c$

(2) $x \tan \frac{x}{2} + c$

(3) $\cot \frac{x}{2} + c$

(4) $x \cot \frac{x}{2} + c$

80. $\int_{0}^{\log 5} \frac{e^{x} \sqrt{e^{x} - 1}}{e^{x} + 3} dx =$

(1) $2 + \pi$

(2) $3 - \pi$

(3) $4 - \pi$

 $(4) 3 + 2\pi$

81.	If A and B are two non-empty sets, then $A \cap (B \cup A)' =$			
	(1) 	(2)	A	
	(3) B	(4)	Not defined	
82.	If $f(x) = 3^x$, then $f(0)$, $f(1)$, $f(2)$ are in	ι:		
	(1) AP	(2)	GP	

The value of $\frac{1-\tan^2 15^\circ}{1+\tan^2 15^\circ}$ is:

(3) HP

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

(4) AG series

- **84.** Which of the following statements is incorrect?
 - (1) $\cos \theta = \frac{2}{5}$ $(2) \sin \theta = -\frac{1}{3}$
 - (3) $\sec \theta = \frac{1}{2}$ (4) $\tan \theta = 6$
- **85.** For any complex number z, the minimum value of |z|+|z-1| is:
 - (2) $\frac{1}{2}$ (3) 1 (1) 0
- **86.** If the x-coordinate of a point P on the join of A(2, 2, 1) and B(5, 1, -2) is 4, then its y-coordinate is:
 - (1) 2 (2) $\frac{3}{2}$ (3) $\frac{4}{3}$ (4) .-2
- 87. The value of $\lim_{x\to 0} \frac{\sqrt{1-\cos x^2}}{1-\cos x}$ is:
- (1) $\sqrt{2}$ (2) $\frac{1}{\sqrt{2}}$ (3) $\frac{\pi}{2}$ (4) $\frac{1}{2}$

88. If
$$x^y = e^{x-y}$$
, then $\frac{dy}{dx} =$

(1) $\frac{1}{(1+\log x)^2}$

 $(2) \quad \frac{\log x}{(1+\log x)^2}$

 $(3) \quad \frac{1}{1 + \log x}$

Mean square deviation of a distribution is least when deviations are taken about: 89.

- (1) mode
- (2) mean
- (3) median
- (4) zero

Two players play a game where each of them is asked to select a number from 1 to 25. If the two numbers match, both of them win a prize. The probability that they will not win a prize in a single trial is:

- (1) $\frac{1}{5}$
- (2) $\frac{19}{25}$ (3) $\frac{1}{25}$

91. If ${}^{n}P_{r} = 120 {}^{n}C_{r}$, then the value of r is:

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

The number of terms in the expansion of $(1+\sqrt{2}x)^9+(1-\sqrt{2}x)^9$ is:

- (1) 10
- (2) 9
- (3) 8

93. If $a = 1 + x + x^2 + \dots \infty$ and $b = 1 + y + y^2 + \dots \infty$ where x and y are proper fractions, then $1 + xy + x^2y^2 + \dots \infty$ is equal to :

- (1) $\frac{ab}{a+b-1}$ (2) $\frac{ab}{a+b}$ (3) $\frac{ab}{a-b}$ (4) $\frac{a+b}{a-b}$

94. A straight line passes through (2, 2) and is perpendicular to the line 3x + y = 3. Its y-intercept is:

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

- **95.** The line x + y = 2 is a normal to the parabola $y^2 = 8x$ at the point :
 - (1) (2,4)
- (2) (-2,4)
- (3) (4,2)
- (4) (3,2)
- **96.** If $f: \mathbb{R} \to \mathbb{R}$ is a mapping defined by $f(x) = x^3 + 3$, then $f^{-1}(x)$ is equal to :
 - (1) $(x+3)^{1/3}$

 $(2) (x-3)^{1/3}$

(3) $(3-x)^{1/3}$

- $(4) (x^3 + 3)^{-1}$
- **97.** If $\sin\left(\sin^{-1}\frac{1}{5} + \cos^{-1}x\right) = 1$, then x = 1
 - (1) 0
- (2) $\frac{4}{5}$
- (3) $\frac{3}{5}$
- (4) $\frac{1}{5}$
- **98.** If A and B are symmetric matrices of the same order then AB BA is:
 - (1) Unit matrix

- (2) Symmetric matrix
- (3) Skew-symmetric matrix
- (4) Null matrix
- 99. The value of the determinant

$$\begin{vmatrix} \cos \alpha & -\sin \alpha & 1 \\ \sin \alpha & \cos \alpha & 1 \\ \cos(\alpha + \beta) & -\sin(\alpha + \beta) & 1 \end{vmatrix}$$
 is:

(1) Independent of β

- (2) Independent of α
- (3) Independent of α and β
- (4) Zero
- **100.** If $y = x + e^x$, then $\frac{d^2x}{dy^2} =$
 - $(1) \frac{-e^x}{(1+e^x)^3}$

 $(2) \ \frac{-e^x}{(1+e^x)^2}$

(3) $\frac{1}{(1+e^x)^2}$

 $(4) \quad \frac{e^x}{1+e^x}$

OPTIONAL

PART - C (ii)

BIOLOGY

Bile is released by the action of:	and the second of the second o
(1) Gastrin	(2) Secretin
(3) Cholecystokinin	(4) Insulin
Uricotelic excretion is mainly an adapta	ation for:
(1) Conservation of urea producing en	zyme
(2) Raising osmotic concentration of bl	ood
(3) Conservation of water	gangkaran digirang kang kalawas di sa begira disa Sa
(4) Storage of waste materials	
DNA sequence is ATG. What would be	the sequence of bases in anticodon of tRNA?
(1) ATG	(2) UAC
(3) TAC	(4) AUG
Who proposed the 'theory of mutation'	?
(1) J. B. de Lamarck	(2) A. Weisman
(3) Hugo de Vries	(4) A. I. Oparin
Red data book provides data on :	
(1) Biota of red sea	
(2) Effect of red light on photosynthes	is
(3) Red pigmented plants	
	 (1) Gastrin (3) Cholecystokinin Uricotelic excretion is mainly an adapta (1) Conservation of urea producing en (2) Raising osmotic concentration of bl (3) Conservation of water (4) Storage of waste materials DNA sequence is ATG. What would be (1) ATG (3) TAC Who proposed the 'theory of mutation' (1) J. B. de Lamarck (3) Hugo de Vries Red data book provides data on: (1) Biota of red sea (2) Effect of red light on photosynthes

BPH-EE-2016(SET-Z)/(B)

(4) Threatened species

106.	In coming years, the skin diseases will l	be m	nore common du	e to :	
	(1) Increase in air pollution				
	(2) Increase in CO ₂				
	(3) Excess use of detergents				
	(4) Depletion of Ozone				
107.	Which biogeochemical cycle is <i>not</i> gase	ous	?	en en de la companya	
	(1) Carbon cycle	(2)	Nitrogen cycle		
	(3) Phosphorous cycle	(4)	Sulfur cycle		
108.	If the number of chromosomes in the en what will be the number of chromosom			plant are 21 chromo	osomes,
	(1) 21 (2) 14	(3)	7	(4) 44	
109.	Ovulation occurs under the influence of				
	(1) LH	(2)	FSH		
	(3) Estrogen	(4)	Progesteron		
110.	Organ of corti occurs in:				
	(1) External ear	(2)	Middle ear		
	(3) Cochlea	(4)	Retina		
111.	Viroids are:				
	(1) ssRNA not enclosed by protein coat				
	(2) ssRNA enclosed by protein coat	•			
	(3) dsRNA enclosed by protein coat				
	(4) dsDNA enclosed by protein coat				
врн-е	E-2016(SET-Z)/(B)				P. T. O.

1 1 800 1	The securess vascular plants are.	
	(1) Bryophytes	(2) Pteridophytes
	(3) Gymnosperms	(4) Angiosperms
113.	The spindle fibers involved in the separatelophase are made of:	aration and migration of chromosomes during
	(1) Microbodies	(2) Microsomes
	(3) Microtubules	(4) Endoplasmic reticulum
114.	A monocarpic plant :	
	(1) Has one carpel	
	(2) Produces only one seed	
	(3) Produces one fruit only	
•	(4) Flowers only once in lifetime	
115.	Zymogen is:	
	(1) Enzyme poison	(2) Enzyme modulator
	(3) Enzyme precursor	(4) Enzyme inhibitor
116.	Fixation of one molecule of CO ₂ by Cal	vin-Benson cycle requires :
	(1) 3 ATP and 2 NADPH + H ⁺	
	(2) 5 ATP and 2 NADPH + H ⁺	
	(3) 12 ATP and 12 NADPH + H ⁺	
	(4) 18 ATP and 12 NADPH + H ⁺	
117.	Photoperiodic stimulus for flowering is	perceived by:
	(1) Shoot tips	(2) Leaves
	(3) Flowers	(4) Roots
врн-е	E-2016(SET-Z)/(B)	

118	Embryo sac is equivalent to:	sa ilia de la caración de la companya en el francese en el frances
	(1) Megaspore	(2) Integumented megasporangium
	(3) Female gametophyte	(4) Fruit
119	The condition where flowers do not o	open is known as :
	(1) Chasmogamous	(2) Cleistogamous
	(3) Geitonogamy	(4) Autogamy
120.	The coding sequences in eukaryotic I	DNA are known as :
	(1) Recon (2) Exon	(3) Intron (4) Mucon
121.	A disaccharide made up of two gluco	se units is :
	(1) Sucrose (2) Maltose	(3) Lactose (4) Dextrin
122.	A cell organelle which is bounded involved in conversion of fat to carbol	by a single membrane and contains enzymes hydrate is:
	(1) Spherosomes (2) Lysosomes	(3) Glyoxysomes (4) Peroxisomes
123.	Iron is <i>not</i> a component of:	
	(1) Cytochromes	(2) Peroxidases
	(3) Catalases	(4) Carbonic anhydrases
124.	An organism is respiring in a bell jar fi will contain labelled O_2 ?	lled with ¹⁸ O ₂ . Which product of the respiration
	(1) CO ₂	(2) H ₂ O
	(3) Both of them	(4) None of them
125.	During photorespiration, the conversion in which cell organelle?	on of phosphoglycolate to glycolate takes place
	(1) Peroxisome	(2) Glyoxysome
	(3) Mitochondria	(4) Chloroplast
BPH-EI	E-2016(SET-Z)/(B)	P. T. O.

	(2) A phenotypic ratio of 3:1
	(3) A genotypic ratio of 1:1
	(4) Similar genotypic and phenotypic ratio of 1:2:1
127.	Diabetes insipidus is caused by deficient secretion of :
	(1) Insulin (2) Glucagon (3) Vassopresin (4) Oxytocin
128.	DOTS strategy is used to treat:
	(1) HIV (2) Malaria (3) Tuberculosis (4) Hepatitis
129.	Which of the following microbe is used as biopesticide?
	(1) Agrobacterium tumefaciens
	(2) Bacillus thuringiensis
	(3) Agrobacterium rhizogenes
	(4) Bacillus amyloliquefaciens
130.	Organisms called methanogens are most abundant in a:
	(1) Hot spring (2) Sulphur rock
	(3) Cattle yard (4) Polluted stream

The F_2 generation offsprings in a plant showing incomplete dominance, exhibit :

(1) Variable genotypic and phenotypic ratios

Total No. of Printed Pages: 21

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

BPH-EE-2016(SET-Z)

C			Sr. No.	11491
Time: 11/4 Hours (75 minutes)	Total Questi	ons : 130		Max. Marks: 100
Candidate's Name			Date of Birth_	
Father's Name		Mother's Na	me	
Roll No. (in figures)	(in words) _			
Date of Exam :				
(Signature of the Invigilator)			(Signature o	f the Candidate)

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

- 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 candidates *must return* this question booklet 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 a 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 booklet itself.
- 4. In case there is any discrepancy in any question(s) in the Question Booklet, 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** full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- **7.** Before answering the questions, the candidates should ensure that they have been supplied correct & complete question booklet. Complaints, if any, regarding misprinting etc. will not be entertained **30** minutes after the start of examination.

P. T. O.

PART – A

PHYSICS

1. A circular flexible loop of wire of rad magnetic field <i>B</i> . If <i>B</i> is doubled, the to	ius r carrying a current I is placed in a uniform ension in the loop:
(1) is unchanged	(2) is doubled
(3) is halved	(4) is quadrupled
2. The magnetic moment of a diamagne	tic atom is:
(1) zero	(2) ∞
(3) −∞	(4) 1.08
3. The sum and difference of the serespectively. The maximum mutual	If inductances of two coils are 13 H and 5 H inductances of the two coils is :
(1) 6H	(2) 5 H
(3) $\sqrt{65}$ H	(4) 18 H
그 그는 그는 그는 그는 그 그는 그는 것 같아 되는 사람들이 얼마나 되었다면 하는 것이 되었다. 그는	assing through a resistor of resistance 10 Ω . The
(1) 5 A	(2) 10 A
$(3) 4\sqrt{2} A$	(4) $3\sqrt{2} A$
5. If the work function of a metal is 1 of 20 eV, then the frequency of pho	0 eV and is subjected to bombardment by photons stoelectrons will be:
(1) = 10/h	(2) > 10/h
(3) <10/h	$(4) \geq 10/h$
6. If a stone is dropped into a lake	from the top of a tower, the sound of the splash is 11.5 seconds. The height of the tower is:
(1) 1000 m (2) 750 m	(3) 500 m (4) 250 m

(1) 1000 m

7	The average value of which of the ideal gas in equilibrium:	following quantities is zero for the molecule of a
	(1) Kinetic energy	(2) Momentum
	(3) Density	(4) Speed
8.	If three moles of an ideal gas are contemperature of 300 K, the amount of	ompressed to half the initial volume at a constant work done is:
	(1) -5188 J (2) 5000 J	(3) 5188 J (4) -5000 J
9.	A telescope consists of two lenses of of the telescope, when an object is k the final image is formed at least dis-	focal length 10 cm and 1 cm. Calculate the length ept at a distance of 60 cm from the objective then tance of distinct vision:
	(1) 15.05 cm (2) 12.96 cm	(3) 13.63 cm (4) 14.44 cm
10.	At the eight corners of a cube of si placed. The resulting potential at the	de 10 cm, equal charges each of value 10 C are centre of the cube is:
	(1) $83.11 \times 10^{11} \text{ V}$	(2) $16.62 \times 10^{11} \text{ V}$
	(3) $1.66 \times 10^{11} \text{ V}$	(4) $1662.77 \times 10^{11} \text{ V}$
11.	The time period of a simple pendulur	m at the centre of earth is:
	(1) zero	(2) infinity
	(3) less than zero	(4) none of the three before
12.	In an experiment, a capillary tube is height in the tube. When the tube is height of the water will be:	s kept vertical and the water rises upto 3 mm s tilted at an angle of 60° with the vertical, the
	(1) 6 mm (2) 4 mm	(3) 3 mm (4) 4.5 mm
13.	The energy required to increase the assuming surface tension to be 30 dyn	radius of a soap bubble from 1 cm to 2 cm, e cm ⁻¹ , is:
	(1) $240\pi \text{ ergs}$ (2) $720\pi \text{ ergs}$	(3) 480π ergs (4) 120π ergs
BPH-EI	E-2016(SET-Z)/(C)	

$ML^2 T^{-3}$] as speed of light in meters is: 5×10^{12} as 10^{15} ar travels 4 knames of 2 km the car	solar constant w (2) $[M^2 L^0 T^{-1}]$ is 3×10^{10} cm second towards north owards north at in km is: (2) 8	(3) [MI e ⁻¹ , the dista (2) 9.46 (4) 3.12 at an angle	s to the energy to the energy to the energy that L^0 T ⁻³] ance travelles 61×10^{15} 26×10^{14} of 45° to the following to the energy transfer of th	(4) [ML ¹ T ⁻²] ed by the light in the east and then be east, the total	one ligh
dimensions of $ML^2 T^{-3}$] e speed of lightin meters is: 3×10^{12} 3×10^{15} car travels 4 known of 2 km to the lied by the car	(2) $[M^2 L^0 T^{-1}]$ is 3×10^{10} cm second towards north owards north at in km is:	(3) [MI (3) [MI (2) 9.46 (4) 3.12 at an angle an angle o	s to the energy to the energy to the energy that L^0 T ⁻³] ance travelles 61×10^{15} 26×10^{14} of 45° to the following to the energy transfer of th	(4) [ML ¹ T ⁻²] ed by the light in the east and then be east, the total	one ligh
$ML^2 T^{-3}$] as speed of light in meters is: 5×10^{12} as 10^{15} ar travels 4 knames of 2 km the car	(2) $[M^2 L^0 T^{-1}]$ is 3×10^{10} cm second towards north owards north at in km is:	(3) [MI e ⁻¹ , the dista (2) 9.46 (4) 3.12 at an angle an angle o	L^0 T^{-3}] ance travelle 51×10^{15} 26×10^{14} of 45° to the final state of 45° to the state of 45° to 45°	(4) [ML ¹ T ⁻²] ed by the light in the east and then be east, the total	one ligh
e speed of light in meters is: 3×10^{12} 5×10^{15} car travels 4 km, since of 2 km the lied by the car	t is 3×10^{10} cm second towards north owards north at in km is:	(2) 9.46 (4) 3.12 at an angle an angle o	ance travelles 1×10^{15} 26×10^{14} of 45° to the following to the second secon	ed by the light in ne east and then ne east, the total	travels a
In meters is: 3×10^{12} 3×10^{15} car travels 4 km nce of 2 km the car	n towards north owards north at in km is :	(2) 9.46 (4) 3.12 at an angle an angle o	51×10^{15} 26×10^{14} of 45° to the f 135° to the	ne east and then ne east, the total	travels a
ear travels 4 ki nce of 2 km t lled by the car	owards north at in km is:	(4) 3.12 at an angle an angle o	26×10^{14} of 45° to the f 135° to the	ne east, the total	
car travels 4 kince of 2 km to alled by the car	owards north at in km is:	at an angle an angle o	of 45° to the	ne east, the total	
nce of 2 km t lled by the car	owards north at in km is:	an angle o	f 135° to th	ne east, the total	
	(2) 8	(3) 5.64		(4) 4.05	
				(4) 4.95	
$a(\cos\theta + \theta\sin\theta)$ elocity of the p	and $y = a(\sin\theta - \sin\theta)$) article is:	$-\theta\cos\theta$) and	lθincreases	s at a uniform ra	te ω, then
ω	(2) $a^2\theta/\omega$	(3) aθ/c	ω	(4) αθω	
velocity of a n	noving particle, v	= x ⁿ where	x is the disp	placement, then :	
or the body in	motion, $n > 1/2$				
or the body in :	motion, $n < 1/2$				
. 11 (1) 1 (2)					
0	r the body in a	or the body in motion, $n > 1/2$ or the body in motion, $n < 1/2$	or the body in motion, $n > 1/2$	r the body in motion, $n < 1/2$	or the body in motion, $n > 1/2$ or the body in motion, $n < 1/2$

26.	The ratio of frequencies of the long woof hydrogen is:	ravelength limits of the Balmer and Lyman series
	(1) 27:5	(2) 5:27
	(3) 4:1	(4) 1:4
27.	The ratio of half-life to the mean life	of a radioactive sample with decay constant λ :
	(1) 0.693	(2) $\sqrt{0.693}$
	(3) 1/0.693	$(4) (0.693)^2$
28.	The forbidden energy gap of Si and C	Ge respectively is :
	(1) 1 eV, 2 eV	(2) 1.5 eV, 3.0 eV
	(3) 1.11 eV, 0.7 eV	(4) 0.7 eV, 1.11 eV
29.	In a CE amplifier if the value of i_c/i_e	is 0.98, then the value of β will be :
	(1) 98	(2) 0.98
	(3) 49	(4) 1.96
30.	The spectrum of a star is usually:	
	(1) continuous emission spectrum	(2) continuous absorption spectrum
	(3) line absorption spectrum	(4) line emission spectrum
31.	The centre of mass of a system car external force acting on it. Yet the in them:	anot change its state of motion, unless there is an internal force of the brakes can bring a car to rest.
	(1) the brakes stop the vehicle	dom ni
	(2) the friction between brake pads	and the wheel stops the car
	(3) the car is stopped by the road	
	(4) the car is stopped by the driver	pressing the pedal
врн-	EE-2016(SET-Z)/(C)	P. T. O.

39.	Keratin, a struc	ctural protein is pres	ent in :		
	(1) Hair	(2) Skin	(3) Wool	(4) All of these	
40.	In DNA, the co	omplimentary bases	are:		
	(1) Adenine a	nd thymine; guanine	and uracil		
	(2) Adenine a	and thymine; guanine	and cytosine		
	(3) Adenine a	and guanine; thymine	and uracil		
	(4) Adenine a	and uracil; guanine a	nd cytosine		
41.	The set with c	orrect order of acidit	y is:		
		$ICIO_2 < HCIO_3 < HCIO_3$			
		$HClO_3 < HClO_2 < HCl$			
		$IClO_4 < HClO_3 < HClo$			
	$(4) HClO_4 < I$	$HClO_2 < HClO_3 < HC$	10		
42.	The gas obtain	ned when bleaching	powder is treated wi	th warm concentrated	solution
	of NH_3 is:				
	(1) Cl ₂	(2) N ₂	(3) NO	$(4) H_2$	
43.	When SO_2 is	passed through acidi	fied $K_2Cr_2O_7$ solution		
	(1) The solut	tion turns blue	(2) The soluti	on is decolorized	
	(3) The solut	tion turns green	(4) SO_2 is red	uced	
44.	The complex	used as an anticance	er agent is:		
	(1) mer – [Co	$o(NH_3)_3Cl_3$	(2) Cis – [PtC	$l_2(NH_3)_2$	
	(3) Cis – K ₂ [PtCl ₂ Br ₂]	(4) Na ₂ CoCl ₄		
45	. Which is <i>not</i>	an organometallic co	ompound?		
	$(1) C_3H_7Mg1$	Ι,	(2) C_2H_5ONa		
	(3) $(C_2H_5)_3A$	I	(4) TEL		
DDIT	-EE-2016(SET-Z	7)/(C)			P. T. O
DIH	-EE-2010(3E1-2				

53.	Which is most powerful reducing agent	?	the transfer survival and the survival a	
	(1) Molecular hydrogen	(2)	Atomic hydrogen	
	(3) Nascent hydrogen	(4)	All have same reducing power	
54.	Lithium is the strongest reducing age following factor?	nt a	mong alkali metals due to which	of the
	(1) Ionization energy	(2)	Electron affinity	
	(3) Hydration energy	(4)	Lattice energy	
55.	Potassium is stored under:			
	(1) Water	(2)	Ethyl alcohol	
	(3) Liquid ammonia	(4)	Kerosene	
56.	How many molecules are present in on	e gr	am of hydrogen ?	
	(1) 6.02×10^{23}	(2)	3.01×10^{23}	
	(3) 2.5×10^{23}	(4)	1.5×10^{23}	
57.	The de-Broglie wavelength of a particle	e wit	h mass 1 g and velocity 100 m/s is:	
	(1) $6.63 \times 10^{-33} \text{ m}$	(2)	$6.63 \times 10^{-34} \text{ m}$	
	(3) $6.63 \times 10^{-35} \text{ m}$	(4)	$6.63 \times 10^{-36} \mathrm{m}$	
58.	Which of the following is correct order	ofs	ize?	
	$(1) I>I^->I^+$) I > I ⁺ > I ⁻	
	(3) $I^+ > I^- > I$	(4) I ⁻ >I>I ⁺	
59.	${ m IF}_5$ has the following hybridization :		and an individual state of the	
00.	(1) sp3d2	(2) sp^3d^3	
	(3) sp3d	(4	none of these	
BPH-	EE-2016(SET-Z)/(C)			P. T. O

60.	Absolute zero is the temperature at w	vhich:
	(1) Rotational motion ceases	(2) Volume become zero
	(3) Mass become zero	(4) None of these
61.	The vitamin which is neither soluble i	n water nor in fat is :
	(1) Phylloquinone	(2) Biotin
	(3) Thiamine	(4) Ergocalciferol
62.	Violet colour is obtain when dilute Ci	dSO_4 is added in an alkaline solution of protein
	The test is known as:	4 - added in an anximite solution of protein
	(1) Biuret test	(2) Xanthoproteic test
	(3) Million's test	(4) Ninhydrin test
63.	The hormone that helps in conversion	of glucose in glycogen is :
	1) Cortisone	(2) Calcitonin
(3) Adrenaline	(4) Insulin
64. <i>V</i>	Which of the following is used as "a mo	orning after pill" ?
	1) Norethindrone	(2) Ethynylestradiol
(3	3) Mifepristone	(4) Bithional
65. B	arbituric acid and its derivatives are w	rell known as :
) Tranquilizers	(2) Antiseptics
(3) Analgesics	(4) Antipyretics
66. Py	rosilicate ion is :	
(1	SiO_2^{2-}	(2) SiO_4^{2-}
(3)	$Si_2O_6^{7-}$	(4) $Si_2O_7^{6-}$
BPH-EE-2	016(SET-Z)/(C)	The state of the s

	(1) Phosgene	(2) Mustard gas
	(3) Ethylene chloride	(4) None of these
68.	Which one of the following regions of a	
	(1) Troposphere	(2) Thermosphere
	(3) Mesosphere	(4) Stratosphere
69.	Azeotropic mixtures are:	
	(1) Constant boiling mixture	(2) Those which boil at different temp.
	(3) Mixture of two solids	(4) None of these
70.	An example of Frenkel as well as Schot	tky defect is:
	(1) NaBr	(2) TlBr
	(3) $AgBr$	(4) CuBr
	OPT	IONAL
	PAR	r – C (i)
	MATH	EMATICS
71.	If the tangent to the curve $x = a (\theta + \sin \alpha)$ with the <i>x</i> -axis, then $\alpha = a (\theta + \sin \alpha)$	n θ), $y = a (1 + \cos \theta)$ at $\theta = \pi/3$ makes an angle
	(1) $\pi/6$	(2) π/2
	(3) $5\pi/6$	(4) $2\pi/3$
72	The value of <i>K</i> for which the function	$\inf f(x) = K \sin x + \frac{1}{3} \sin 3x \text{ has an extremum at}$
	$x = \pi/3$ is:	
	(1) 0	(2) 1
	(3) 2/3	(4) 2
врн	I-EE-2016(SET-Z)/(C)	P. T. C

67. Ethylene reacts with sulphur monochloride to give:

73. The function $f(x) = x + \cot^{-1} x$ increases in the interval :

$$(1) (-\infty, \infty)$$

(2)
$$(-1, \infty)$$

$$(3) (1, \infty)$$

$$(4) [0, \infty)$$

$$74. \quad \int \frac{x + \sin x}{1 + \cos x} \, dx =$$

(1)
$$\tan \frac{x}{2} +$$

(2)
$$x \tan \frac{x}{2} + c$$

(3)
$$\cot \frac{x}{2} + a$$

(1)
$$\tan \frac{x}{2} + c$$
 (2) $x \tan \frac{x}{2} + c$ (3) $\cot \frac{x}{2} + c$ (4) $x \cot \frac{x}{2} + c$

75.
$$\int_{0}^{\log 5} \frac{e^x \sqrt{e^x - 1}}{e^x + 3} \, dx =$$

(1)
$$2 + \pi$$
 (2) $3 - \pi$ (3) $4 - \pi$

(2)
$$3 - \pi$$

$$(3) 4 - \tau$$

$$(4) 3 + 2\pi$$

76. If $f: \mathbb{R} \to \mathbb{R}$ is a mapping defined by $f(x) = x^3 + 3$, then $f^{-1}(x)$ is equal to :

(1)
$$(x+3)^{1/3}$$

$$(2) (x-3)^{1/3}$$

(3)
$$(3-x)^{1/3}$$

$$(4) (x^3 + 3)^{-1}$$

77. If $\sin\left(\sin^{-1}\frac{1}{5} + \cos^{-1}x\right) = 1$, then x = 1

(2)
$$\frac{4}{5}$$
 (3) $\frac{3}{5}$

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

(4)
$$\frac{1}{5}$$

78. If A and B are symmetric matrices of the same order then AB – BA is:

(1) Unit matrix

- (2) Symmetric matrix
- (3) Skew-symmetric matrix
- (4) Null matrix

79. The value of the determinant

$$\begin{vmatrix} \cos \alpha & -\sin \alpha & 1 \\ \sin \alpha & \cos \alpha & 1 \\ \cos(\alpha + \beta) & -\sin(\alpha + \beta) & 1 \end{vmatrix}$$
 is:

- (1) Independent of β
- (2) Independent of α
- (3) Independent of α and β
- (4) Zero

87.	If $f(x) = 3^x$, then $f(0)$, $f(1)$, $f(2)$ are in	ι:	*
	(1) AP	(2)	GP
	(3) HP	(4)	AG series
88.	The value of $\frac{1-\tan^2 15^\circ}{1+\tan^2 15^\circ}$ is:		
	(1) 2 (2) $\sqrt{3}$	(3)	$\frac{1}{2}$

89. Which of the following statements is incorrect?

(1)
$$\cos \theta = \frac{2}{5}$$
 (2) $\sin \theta = -\frac{1}{3}$

(3)
$$\sec \theta = \frac{1}{2}$$
 (4) $\tan \theta = 6$

90. For any complex number z, the minimum value of |z| + |z-1| is:

(1) 0 (2)
$$\frac{1}{2}$$
 (3) 1 (4) $\frac{2}{3}$

91. The area of the region lying between the line x - y + 2 = 0 and the curve $x = \sqrt{y}$ is:

92. If
$$f(x) = f'(x)$$
 and $f(1) = 2$, then $f(3) =$

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

93. If $\vec{a} = \hat{i} + \hat{j} + \hat{k}$, $\vec{b} = 4\hat{i} + 3\hat{j} + 4\hat{k}$ and $\vec{c} = \hat{i} + \alpha\hat{j} + \beta\hat{k}$ are linearly dependent vectors and $|\vec{c}| = \sqrt{3}$, then:

(1)
$$\alpha = 1, \beta = \pm 1$$

 (2) $\alpha = \pm 1, \beta = 1$
 (3) $\alpha = -1, \beta = \pm 1$
 (4) $\alpha = \pm 1, \beta = -1$

C

- (1) $\pm \sqrt{5}$ (2) $\pm \sqrt{3}$ (3) $\pm \frac{1}{3}$
- (4) $\pm \frac{\sqrt{5}}{2}$

95. A coin is tossed three times, the probability of getting head and tail alternately is:

- (1) $\frac{1}{2}$
- (2) $\frac{3}{4}$ (3) $\frac{1}{4}$ (4) $\frac{1}{8}$

If the x-coordinate of a point P on the join of A(2, 2, 1) and B(5, 1, -2) is 4, then its v-coordinate is: (3) $\frac{4}{2}$ (4) -2

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

97. The value of $\lim_{x\to 0} \frac{\sqrt{1-\cos x^2}}{1-\cos x}$ is:

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

98. If $x^y = e^{x-y}$, then $\frac{dy}{dx} = \frac{dy}{dx}$

(1) $\frac{1}{(1+\log x)^2}$

 $(2) \quad \frac{\log x}{(1+\log x)^2}$

 $(3) \quad \frac{1}{1 + \log x}$

 $(4) \quad \frac{\log x}{1 + \log x}$

99. Mean square deviation of a distribution is least when deviations are taken about:

- (1) mode
- (2) mean
- (3) median
- (4) zero

100. Two players play a game where each of them is asked to select a number from 1 to 25. If the two numbers match, both of them win a prize. The probability that they will not win a prize in a single trial is:

- (3) $\frac{1}{25}$
- (4) $\frac{24}{25}$

BPH-EE-2016(SET-Z)/(C)

P. T. O.

114.	An organism is respiring in a bell jar filled with $^{18}\text{O}_2$. Which product of the respiration will contain labelled O_2 ?			
	(1) CO ₂	(2) H ₂ O		
	(3) Both of them	(4) None of them		
115.	During photorespiration, the conversion in which cell organelle?	on of phosphoglycolate to glycolate takes place		
	(1) Peroxisome	(2) Glyoxysome		
	(3) Mitochondria	(4) Chloroplast		
116.	Viroids are:			
	(1) ssRNA not enclosed by protein coa	t		
	(2) ssRNA enclosed by protein coat			
	(3) dsRNA enclosed by protein coat			
	(4) dsDNA enclosed by protein coat			
117.	The seedless vascular plants are:			
	(1) Bryophytes	(2) Pteridophytes		
	(3) Gymnosperms	(4) Angiosperms		
118.	The spindle fibers involved in the separe telophase are made of:	aration and migration of chromosomes during		
	(1) Microbodies	(2) Microsomes		
	(3) Microtubules	(4) Endoplasmic reticulum		
119.	A monocarpic plant:			
	(1) Has one carpel			
	(2) Produces only one seed			
	(3) Produces one fruit only			
	(4) Flowers only once in lifetime			

120.	Zymogen is:		SALES BEING AND THE REAL PROPERTY OF THE PROPE
	(1) Enzyme poison	(2)	Enzyme modulator
,	(3) Enzyme precursor	(4)	Enzyme inhibitor
121.	Bile is released by the action of:		
1211	(1) Gastrin	(2)	Secretin
	(3) Cholecystokinin		Insulin
			C
122.	Uricotelic excretion is mainly an adapta		
	(1) Conservation of urea producing en	zym	e .
	(2) Raising osmotic concentration of bl	lood	
	(3) Conservation of water		
	(4) Storage of waste materials		
123.	DNA sequence is ATG. What would be	e the	sequence of bases in anticodon of tRNA?
	(1) ATG	(2) UAC
	(3) TAC	(4) AUG
124.	Who proposed the 'theory of mutation	'?	
	(1) J. B. de Lamarck	(2) A. Weisman
	(3) Hugo de Vries	(4	A. I. Oparin
125	. Red data book provides data on :		
	(1) Biota of red sea		
	(2) Effect of red light on photosynthe	sis	
	(3) Red pigmented plants		
	(4) Threatened species		
			P. T. O.

126.	Fixation of one molecule of CO ₂ by Calvin-Benson cycle requires:						
	(1) 3 ATP and 2 NADPH + H ⁺						
	(2) 5 ATP and 2 NADPH + H ⁺						
	(3) 12 ATP and 12 NADPH + H ⁺						
	(4) 18 ATP and 12 NADPH + H ⁺						
127.	Photoperiodic stimulus for flowering is	perceived by:					
	(1) Shoot tips (2) Leaves	(3) Flowers (4) Roots					
128.	Embryo sac is equivalent to:						
	(1) Megaspore	(2) Integumented megasporangium					
	(3) Female gametophyte	(4) Fruit					
129.	The condition where flowers do not op	en is known as :					
	(1) Chasmogamous	(2) Cleistogamous					
	(3) Geitonogamy	(4) Autogamy					
130.	The coding sequences in eukaryotic DN	NA are known as :					
	(1) Recon (2) Exon	(3) Intron (4) Mucon					

Total No. of Printed Pages: 21

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

BPH-EE-2016(SET-Z)

D		Sr. No.	11492
Time : 11/4 Hours (75 minutes) Candidate's Name	Total Questi		Max. Marks : 100
Father's Name		me	
Roll No. (in figures) Date of Exam :	(in words)	Benjaria ven	THE STATE CONTRACT
(Signature of the Invigilator)		(Signature	of the Candidate)

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

- 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 candidates *must return* this question booklet 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 a 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 booklet itself.
- 4. In case there is any discrepancy in any question(s) in the Question Booklet, 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 full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Before answering the questions, the candidates should ensure that they have been supplied correct & complete question booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after the start of examination.

di Sastias de PART – A del via long e discusso de

PHYSICS PHYSICS

1.	If a stone is droppe heard by a man on t	d into a lake fro he tower after 11	m the top of a to .5 seconds. The h	wer, the sound of the splash is eight of the tower is:
	(1) 1000 m	(2) 750 m	(3) 500 m	(4) 250 m
2.	The average value of ideal gas in equilibr		ollowing quantitie	es is zero for the molecule of an
	(1) Kinetic energy		(2) Momento	
	(3) Density		(4) Speed	ing educations of the Sec.
3.	If three moles of artemperature of 300	ideal gas are co K, the amount of	ompressed to half work done is:	the initial volume at a constant
	(1) -5188 J	(2) 5000 J	(3) 5188 J	(4) -5000 J
4.	A telescope consists of the telescope, wh the final image is for	nen an object is l	cept at a distance	m and 1 cm. Calculate the length of 60 cm from the objective then vision:
	(1) 15.05 cm	0090 100 642 14	(2) 12.96 cm	o sansana aur pora rapar.
	(3) 13.63 cm		(4) 14.44 cm	er (1) year (1) .
5.	At the eight corner placed. The resulting	rs of a cube of s ng potential at th	e centre of the cul	charges each of value 10 C are be is:
	(1) 83.11×10^{11} V		(2) 16.62×1	0 ¹¹ V
	(3) $1.66 \times 10^{11} \text{ V}$	A	(4) 1662.77	× 10 ¹¹ V
6.	The time period of			
	(1) zero	dis back is i	(2) infinity	than the most and a dramp of the
	(3) less than zero		(4) none of	the three before
BPH-	EE-2016(SET-Z)/(D)			(G)((X-T-7g))(105- P. T. O.

7.	In an experiment, a capillary tube is kept vertical and the water rises upto 3 mm height in the tube. When the tube is tilted at an angle of 60° with the vertical, the height of the water will be:					
	(1) 6 mm	(2) 4 mm	(3)	3 mm	(4) 4.5 mm	
8.	The energy requir assuming surface to				abble from 1 cm to 2 cm,	
	(1) 240π ergs		(2)	720π ergs		
	(3) 480π ergs		(4)	120π ergs	en e	
9.	The bulk modulus	for an incompressi	ble liq	uid is:		
ir.	(1) ∞	(2) 0	(3)	1	(4) 2	
10.		e with speed 3000 increases four time			ng a stretched wire. If the f the wave is:	
	(1) 1500 m sec^{-1}		(2)	3000 m sec ⁻¹		
	(3) 6000 m sec^{-1}		(4)	9000 m sec ⁻¹		
11.		of length l is suspensive on the table, v			just touching a horizontal ched the table:	
	(1) mgx	(2) 2mgx	(3)	3mgx	(4) mgx/2	
12.		coefficient of static			a horizontally circular plate particles is k , the maximum	
	(1) ak	(2) <i>ak</i> /2	(3)	a/k	$(4) ak^2$	
13.	A car is moving in a circular horizontal track of radius 10 m with a constant speed of 10 m/s. A plumb line is suspended from the roof of the car by a light rigid rod of length 1 m. The angle made by the rod with the track is:					
	(1) zero	(2) 30°	(3)	45°	(4) 60°	
BPH-	BPH-EE-2016(SET-Z)/(D)					

D

2	20. The spectrum of a star is usually:	
	(1) continuous emission spectrum	(2) continuous absorption spectrum
	(3) line absorption spectrum	(4) line emission spectrum
2	1. A circular flexible loop of wire of ra magnetic field <i>B</i> . If <i>B</i> is doubled, the	dius r carrying a current I is placed in a uniform tension in the loop:
	(1) is unchanged	(2) is doubled
	(3) is halved	(4) is quadrupled
22	. The magnetic moment of a diamagne	tic atom is :
	(1) zero	(2) ∞
	(3) -∞ atilog noving the state of the state	(4) 1.08
23.	The sum and difference of the self respectively. The maximum mutual in (1) 6H (3) $\sqrt{65} \text{H}$	(2) 5 H
	(0) 10011	(4) 18 H
24.	A current $I = 3 + 8 \sin 100t$ is passing effective value of the current is:	ng through a resistor of resistance 10 Ω . The
1	(1) 5 A	(2) 10 A
	(3) $4\sqrt{2}$ A	(4) $3\sqrt{2} A$
25.	If the work function of a metal is 10 eV of 20 eV, then the frequency of photoele	and is subjected to bombardment by photons ctrons will be:
	(1) = 10/h	(2) > 10/h
	(3) < 10/h	$(4) \ge 10/h$
BPH-EF	E-2016(SET-Z)/(D)	A PROPERTY OF THE PROPERTY OF

26.	The centre of mass of a system cannot change its state of motion, unless there is an external force acting on it. Yet the internal force of the brakes can bring a car to rest. Then:					
	(1) the brakes stop the vehicle					
	(2) the friction between brake pads and	the wheel stops the car				
	(3) the car is stopped by the road	a de la companya de l				
	(4) the car is stopped by the driver pres	ssing the pedal				
27.	If the momentum of a body remains coasis a:	nstant, then the mass-speed graph of the body				
	(1) circle	(2) straight line				
	(3) rectangular hyperbola	(4) parabola				
28.		l u has a head-on collision with a body of mass body with mass m after the collision will be				
	(1) um/M (2) uM/m	(3) u/2 (4) 2u				
29.	If a body moves through a distance great	ater than $2\pi R$ in one full rotation, then :				
	$(1) v_{cm} > R\omega \qquad (2) v_{cm} < R\omega$	(3) $v_{cm} \ge R\omega$ (4) $v_{cm} \le R\omega$				
30.	The work done by an external agent to earth is:	shift a point mass from infinity to the centre of				
	(1) zero	(2) greater than zero				
	(3) less than zero	$(4) \leq 0$				
31.	The dimensions of solar constant which are:	ch relates to the energy received by the earth				
	(1) $[ML^2 T^{-3}]$ (2) $[M^2 L^0 T^{-1}]$	(3) $[ML^0 T^{-3}]$ (4) $[ML^1 T^{-2}]$				
врн-н	EE-2016(SET-Z)/(D)	(Crazers and P. T. O.				

02	we speed of lig	ght is 3×10^{10} cm se	ec ⁻¹ , the distance	travelled by the ligh	ıt in one light
	,				ar one ngm
	(1) 3×10^{12}		(2) 9.461×1	0^{15}	
	(3) 3×10^{15}		(4) 3.126×1	014	
33.	If a car travels 4 distance of 2 km travelled by the car	towards morni at	at an angle of 4t an angle of 135	5° to the east and the to the east, the to	nen travels a otal distance
	(1) 6	(2) 8	(3) 5.64	(4) 4.95	
34.		$n\theta$) and $y = a(\sin\theta - 1)$	$-\theta\cos\theta$) and θ inc	creases at a uniform	rate ω , then
	(1) aω	(2) $a^2\theta/\omega$	(3) aθ/ω	(4) αθω	
	 (1) when x = 0, the (2) for the body in (3) for the body in (4) both (1) and (2) 	motion, $n > 1/2$ motion, $n < 1/2$	eration are zero	e displacement, the	1.
		PAI	RT – B		
		CHE	MISTRY		
	The set with correct (1) $HCIO < HCIO_2 <$ (2) $HCIO_4 < HCIO_3 <$ (3) $HCIO < HCIO_4 <$ (4) $HCIO_4 < HCIO_2 <$	$HClO_3 < HClO_4$ $HClO_2 < HClO$ $HClO_3 < HClO_2$			
37. 7	The gas obtained whof NH_3 is :	en bleaching powo	der is treated with	n warm concentrated	d solution
(1) Cl ₂ (2) N ₂	(3) NO	$(4) H_2$	
BPH-EE-	2016(SET-Z)/(D)			(±). 112	

	(1) The solution turns blue	(2) The solution is decolorized	
	(3) The solution turns green	(4) SO_2 is reduced	
39.	The complex used as an anticancer age	ent is:	
	(1) mer – $[Co(NH_3)_3Cl_3]$	(2) $Cis - [PtCl_2(NH_3)_2]$	
	(3) $\operatorname{Cis} - K_2[\operatorname{PtCl}_2\operatorname{Br}_2]$	(4) Na ₂ CoCl ₄	
40.	Which is <i>not</i> an organometallic compo	ound?	
	$(1) C_3H_7MgI$	$(2) C_2H_5ONa$	
	(3) $(C_2 H_5)_3 Al$	(4) TEL	
41.	Which of the following substance acts	as superconductor at 4 K ?	
	(1) Hg	(2) <i>Ciu</i>	
	(3) Na	(4) Mg	
42.	In fireflies the flashes are produced due moisture. The phenomenon is known a	e to combustion of a protein luciferin in air as:	and
	(1) Photochemical change	(2) Photo combustion	
	(3) Chemiluminescence	(4) None of these	
43.	For the Coagulation of 100 mL of arse flocculation value of <i>NaCl</i> is :	nious sol, 5 mL of 1 M <i>NaCl</i> is required.	Γhe
	(1) 5 (2) 50	(3) 25 (4) 1	
44.	A first order reaction is found to have a of the reaction is:	a rate constant, $K = 5.5 \times 10^{-14} \text{ s}^{-1}$. The half-l	life
	(1) $1.26 \times 10^{13} \mathrm{s}$	(2) $1.26 \times 10^{-13} \mathrm{s}$	
	(3) $5.5 \times 10^{13} \mathrm{s}$	(4) $5.5 \times 10^{-13} \text{ s}$	
BPH-E	E-2016(SET-Z)/(D)	P. T	`. O.

38. When SO_2 is passed through acidified $K_2Cr_2O_7$ solution :

BP

45. Which of the following is <i>not</i> a me	etal refining process?
(1) Baeyer's process	(2) Mond process
(3) Van Arkel process	(4) Liquation process
46. Entropy of vaporization of wat 9710 Cal mol ⁻¹ will be:	er at 100°C, if molar heat of vaporization is
(1) 20 Cal mol ⁻¹ K ⁻¹	(2) 26 Cal mol ⁻¹ K ⁻¹
(3) 24 Cal mol ⁻¹ K ⁻¹	(4) 28 Cal mol ⁻¹ K ⁻¹
47. 1 mole of N_2 and 2 moles of H_2 are 0.8 mole of NH_3 is formed. The cond	allowed to react in a 1 dm 3 vessel. At equilibrium centration of H_2 in the vessel is:
(1) 0.6 M	(2) 0.8 M
(3) 0.2 M	(4) 0.4 M
48. Which is most powerful reducing ag	gent ?
(1) Molecular hydrogen	(2) Atomic hydrogen
(3) Nascent hydrogen	(4) All have same reducing power
49. Lithium is the strongest reducing a following factor?	agent among alkali metals due to which of the
(1) Ionization energy	(2) Electron affinity
(3) Hydration energy	(4) Lattice energy
50. Potassium is stored under:	
(1) Water	(2) Ethyl alcohol
(3) Liquid ammonia	(4) Kerosene
51. The vitamin which is neither soluble i	n water nor in fat is
(1) Phylloquinone	(2) Biotin
(3) Thiamine	(4) Ergocalciferol
H-EE-2016(SET-Z)/(D)	

52.	Violet colour is obtain when dilute <i>CuS</i> The test is known as:	O ₄ i	s added in an alkaline solution of protein.
	(1) Biuret test	(2)	Xanthoproteic test
	(3) Million's test	(4)	Ninhydrin test
53.	The hormone that helps in conversion o	f glı	icose in glycogen is:
	(1) Cortisone	(2)	Calcitonin
	(3) Adrenaline	(4)	Insulin
54.	Which of the following is used as "a mo	rnin	g after pill" ?
	(1) Norethindrone	(2)	Ethynylestradiol
	(3) Mifepristone	(4)	Bithional
55.	Barbituric acid and its derivatives are w	ell l	known as:
	(1) Tranquilizers		Antiseptics
	(3) Analgesics	(4)	Antipyretics
56.	Phenol $\xrightarrow{1.\text{NaOH 2.CO}_2/140^{\circ}\text{C}} A \xrightarrow{H^+/H_2\text{C}}$	$\xrightarrow{\mathcal{D}} E$	$3 \xrightarrow{Ac_2O} C$
	In this reaction, the end product is:		
	(1) Salicylaldehyde	(2)	Salicylic acid
	(3) Phenyl acetate	(4)	Aspirin
57.	Malonic acid on heating gives:		en en grand de la company de la company La company de la company d
	(1) Formic acid (2) Acetic acid	(3)	Oxalic acid (4) Acetaldehyde
58.	An organic compound (A) on reduction and alcoholic <i>KOH</i> gives (C). (C) on compound (A) is:	n giv catal	ves compound (B) on treatment with CHCl ₃ lytic reduction gives N-methylaniline. The
	(1) Methylamine (2) Nitromethane	(3)) Aniline (4) Nitrobenzene
BPH-	EE-2016(SET-Z)/(D)		P. T. O.

59	. Keratin, a struc	tural protein is pre	sent in:	de la companya de la
	(1) Hair	(2) Skin	(3) Wool	(4) All of these
60	. In DNA, the co	mplimentary bases	are:	. Autoria
	(1) Adenine ar	d thymine; guanin	e and uracil	
	(2) Adenine ar	d thymine; guanin	e and cytosine	
	(3) Adenine ar	d guanine; thymin	e and uracil	
	(4) Adenine an	d uracil; guanine a	nd cytosine	
61.	Pyrosilicate ion	is:		
	(1) SiO_2^{2-}		(2) SiO_4^{2-}	
	(3) $Si_2O_6^{7-}$		(4) $Si_2O_7^{6-}$	
62.	Ethylene reacts	with sulphur mond	ochloride to give :	
	(1) Phosgene		(2) Mustard gas	
	(3) Ethylene ch	oride	(4) None of these	
63.	Which one of the	e following regions	of atmosphere contains (Ozone?
	(1) Troposphere	9	(2) Thermosphere	
	(3) Mesosphere		(4) Stratosphere	
64.	Azeotropic mixt	ures are :		
	(1) Constant box	ling mixture	(2) Those which boi	il at different temp.
	(3) Mixture of to	vo solids	(4) None of these	
65.	An example of F	renkel as well as Sc	hottky defect is :	
	(1) NaBr		(2) TlBr	
	(3) AgBr		(4) CuBr	

D

66.	How many molecules are	e present in o	ne gram of hydroger	n ?
	$(1) \ 6.02 \times 10^{23} \qquad (2)$	3.01×10^{23}	(3) 2.5×10^{23}	(4) 1.5×10^{23}
67.	The de-Broglie waveleng	gth of a partic	le with mass 1 g and	velocity 100 m/s is:
	(1) 6.63×10^{-33} m		(2) 6.63×10^{-34} m	

68. Which of the following is correct order of size?

(3) 6.63×10^{-35} m

- (1) $I > I^- > I^+$ (2) $I > I^+ > I^-$
- (3) $I^+ > I^- > I$ (4) $I^- > I > I^+$
- **69.** IF₅ has the following hybridization: $(1) ext{ sp}^3 d^2 ext{ (2) } ext{sp}^3 d^3$
 - (3) sp^3d (4) none of these
- **70.** Absolute zero is the temperature at which:
 - (1) Rotational motion ceases (2) Volume become zero
 - (3) Mass become zero (4) None of these

OPTIONAL

PART - C (i)

MATHEMATICS

71. If $f: \mathbb{R} \to \mathbb{R}$ is a mapping defined by $f(x) = x^3 + 3$, then $f^{-1}(x)$ is equal to:

- $(1) (x+3)^{1/3}$
- (2) $(x-3)^{1/3}$

(4) 6.63×10^{-36} m

(3) $(3-x)^{1/3}$

 $(4) (x^3 + 3)^{-1}$

72. If $\sin\left(\sin^{-1}\frac{1}{5} + \cos^{-1}x\right) = 1$, then x = 1

- (1) 0
- (2) $\frac{4}{5}$
- (3) $\frac{3}{5}$
- (4) $\frac{1}{5}$

BPH-EE-2016(SET-Z)/(D)

P. T. O.

73. If A and B are symmetric matrices of the same order then AB – BA is:

(1) Unit matrix

- (2) Symmetric matrix
- (3) Skew-symmetric matrix
- (4) Null matrix

74. The value of the determinant

$$\begin{vmatrix} \cos \alpha & -\sin \alpha & 1 \\ \sin \alpha & \cos \alpha & 1 \\ \cos(\alpha + \beta) & -\sin(\alpha + \beta) & 1 \end{vmatrix}$$
 is:

(1) Independent of β

- (2) Independent of α
- (3) Independent of α and β
- (4) Zero

75. If $y = x + e^x$, then $\frac{d^2x}{dy^2} =$

(1) $\frac{-e^x}{(1+e^x)^3}$

(2) $\frac{-e^x}{(1+e^x)^2}$

(3) $\frac{1}{(1+e^x)^2}$

 $(4) \quad \frac{e^x}{1+e^x}$

76. If the x-coordinate of a point P on the join of A(2, 2, 1) and B(5, 1, -2) is 4, then its y-coordinate is:

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

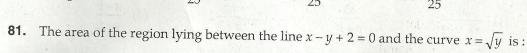
77. The value of $\lim_{x\to 0} \frac{\sqrt{1-\cos x^2}}{1-\cos x}$ is:

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

78. If $x^y = e^{x-y}$, then $\frac{dy}{dx} =$

- (1) $\frac{1}{(1+\log x)^2}$ (2) $\frac{\log x}{(1+\log x)^2}$ (3) $\frac{1}{1+\log x}$

					13
79.	Mean square d	eviation of a distribu	tion is least when deviatio	ns are taken about :	- 8 ¥
	(1) mode	(2) mean	(3) median (4) zero	
80.	Two players pl If the two num win a prize in a	bers match, both of the	h of them is asked to selec nem win a prize. The prob	t a number from 1 to 2 ability that they will no	5. ot
	(1) $\frac{1}{5}$	(2) $\frac{19}{25}$	(3) $\frac{1}{25}$	4) <u>24</u>	



- (1) 4/3 (2) 5/4 (3) 9/2 (4) 10/
- **82.** If f(x) = f'(x) and f(1) = 2, then f(3) = 4
- (1) $2e^2$ (2) $3e^2$ (3) $2e^3$ (4) $\frac{e^2}{3}$
- **83.** If $\vec{a} = \hat{i} + \hat{j} + \hat{k}$, $\vec{b} = 4\hat{i} + 3\hat{j} + 4\hat{k}$ and $\vec{c} = \hat{i} + \alpha\hat{j} + \beta\hat{k}$ are linearly dependent vectors and $|\vec{c}| = \sqrt{3}$, then:
 - (1) $\alpha = 1, \beta = \pm 1$ (2) $\alpha = \pm 1, \beta = 1$
 - (3) $\alpha = -1, \beta = \pm 1$ (4) $\alpha = \pm 1, \beta = -1$
- **84.** The line $\frac{x-2}{3} = \frac{y+1}{2} = \frac{z-1}{-1}$ intersects the curve $xy = c^2$, z = 0 then $c = (1) \pm \sqrt{5}$
 - (3) $\pm \frac{1}{3}$ (4) $\pm \frac{\sqrt{5}}{2}$
- **85.** A coin is tossed three times, the probability of getting head and tail alternately is:
 - (1) $\frac{1}{2}$ (2) $\frac{3}{4}$ (3) $\frac{1}{4}$ (4) $\frac{1}{8}$

BPH-EE-2016(SET-Z)/(D)

P. T. O.

(1) 4

86. If ${}^{n}P_{r} = 120 {}^{n}C_{r}$, then the value of r is:

(1) 10 (2) 9

(2) 5

87. The number of terms in the expansion of $(1+\sqrt{2}x)^9+(1-\sqrt{2}x)^9$ is:

	$(1) \frac{ab}{a+b-1}$	$(2) \frac{ab}{a+b}$	$(3) \frac{ab}{a-b}$	$(4) \frac{a+b}{a-b}$
89	9. A straight line Its y-intercept is	passes through (2,	2) and is perpendic	rular to the line $3x + y = 3$.
	(1) $\frac{2}{3}$	(2) $\frac{3}{2}$	(3) $\frac{3}{4}$	(4) $\frac{4}{3}$
90	The line $x + y = 2$	is a normal to the p	parabola $y^2 = 8x$ at the	noint ·
	(1) (2, 4)	(2) (-2,4)	(3) (4, 2)	(4) (3, 2)
91.	. If A and B are tw	o non-empty sets, tl	hen $A \cap (B \cup A)' =$	
	(1) φ	1 /,	(2) A	
	(3) B		(4) Not defined	
92.	If $f(x) = 3^x$, then $f(x) = 3^x$	0), f(1), f(2) are		
	(1) AP	o), 1(1), 1(2) ar		
	(3) HP		(2) GP	
			(4) AG series	
93.	The value of $\frac{1-\tan x}{1+\tan x}$	$\frac{n^2 15^\circ}{n^2 15^\circ}$ is:		
	(1) 2	(2) $\sqrt{3}$	(3) $\frac{1}{2}$	(4) $\frac{\sqrt{3}}{2}$
ВРН-Е	E-2016(SET-Z)/(D)			
				A STANDARD THE METHOD WHEN THE METHOD WAS A STANDARD WITH THE PROPERTY OF THE

(3) 6

(3) 8

88. If $a = 1 + x + x^2 + \dots \infty$ and $b = 1 + y + y^2 + \dots \infty$ where x and y are proper fractions, then $1 + xy + x^2y^2 + \dots \infty$ is equal to :

(4) 7

(4) 5

- **94.** Which of the following statements is incorrect?
 - (1) $\cos \theta = \frac{2}{5}$

 $(2) \sin \theta = -\frac{1}{3}$

(3) $\sec \theta = \frac{1}{2}$

- (4) $\tan \theta = 6$
- **95.** For any complex number z, the minimum value of |z|+|z-1| is:
 - (1) 0
- (2) $\frac{1}{2}$
- (3) 1
- $(4) \frac{2}{3}$
- **96.** If the tangent to the curve $x = a(\theta + \sin \theta)$, $y = a(1 + \cos \theta)$ at $\theta = \pi/3$ makes an angle α with the *x*-axis, then α =
 - (1) $\pi/6$

(2) $\pi/2$

(3) $5\pi/6$

- $(4) 2\pi/3$
- **97.** The value of K for which the function $f(x) = K \sin x + \frac{1}{3} \sin 3x$ has an extremum at $x = \pi/3$ is:
 - (1) 0
- (2) 1
- (3) 2/3
- (4) 2
- **98.** The function $f(x) = x + \cot^{-1} x$ increases in the interval :
 - $(1) (-\infty, \infty)$
- (2) $(-1, \infty)$
- $(3) (1, \infty)$
- (4) $[0,\infty)$

- $99. \quad \int \frac{x + \sin x}{1 + \cos x} \, dx =$
 - (1) $\tan \frac{x}{2} + c$

(2) $x \tan \frac{x}{2} + c$

(3) $\cot \frac{x}{2} + c$

(4) $x \cot \frac{x}{2} + c$

- **100.** $\int_{0}^{\log 5} \frac{e^{x} \sqrt{e^{x} 1}}{e^{x} + 3} dx =$
 - (1) $2 + \pi$ (2) 3π
- (3) 4π
- $(4) 3 + 2\pi$

BPH-EE-2016(SET-Z)/(D)

PART - C (ii)

BIOLOGY

101.	. The F_2 generation offsprings i	in a plant showing incomplete dominance, exhibit:
	(1) Variable genotypic and p	
	(2) A phenotypic ratio of 3:1	
	(3) A genotypic ratio of 1:1	
	(4) Similar genotypic and pho	enotypic ratio of 1:2:1
102.	Diabetes insipidus is caused b	y deficient secretion of :
	(1) Insulin	(2) Glucagon
	(3) Vassopresin	(4) Oxytocin
103.	DOTS strategy is used to treat	
	(1) HIV	(2) Malaria
	(3) Tuberculosis	(4) Hepatitis
104.	Which of the following microb	e is used as biopesticide ?
	(1) Agrobacterium tumefaciens	
	(2) Bacillus thuringiensis	
	(3) Agrobacterium rhizogenes	
	(4) Bacillus amyloliquefaciens	
05.	Organisms called methanogens	are most abundant in a :
	(1) Hot spring	(2) Sulphur rock
	(3) Cattle yard	(4) Polluted stream

106.	Fixation of one molecule of CO ₂ by Calvin-Benson cycle requires:						
	(1) 3 ATP and 2 NADPH + H ⁺						
	(2) 5 ATP and 2 NADPH + H ⁺						
	(3) 12 ATP and 12 NADPH + H ⁺						
	(4) 18 ATP and 12 NADPH + H ⁺						
107.	Photoperiodic stimulus for flowering	is per	ceived by :				
	(1) Shoot tips (2) Leaves	(3)	Flowers	(4) Roots			
108.	Embryo sac is equivalent to:						
	(1) Megaspore	(2)	Integumented	megasporangium			
	(3) Female gametophyte	(4)	Fruit				
109.	The condition where flowers do not op	pen is	known as:				
	(1) Chasmogamous	(2)	Cleistogamous				
	(3) Geitonogamy	(4)	Autogamy				
110.	The coding sequences in eukaryotic Di	NA a:	re known as :				
	(1) Recon (2) Exon	(3)	Intron	(4) Mucon			
111.	Bile is released by the action of:			in the feet and			
	(1) Gastrin	(2)	Secretin				
	(3) Cholecystokinin	(4)	Insulin				
112.	Uricotelic excretion is mainly an adapt	ation	for:				
	(1) Conservation of urea producing er	nzyme	9				
	(2) Raising osmotic concentration of b	lood					
	(3) Conservation of water						
	(4) Storage of waste materials						

113	. DNA sequence is ATG. What would	be the sequence of bases in anticodon of tRNA?
	(1) ATG	(2) UAC
	(3) TAC	(4) AUG
114.	Who proposed the 'theory of mutatio	n' ?
	(1) J. B. de Lamarck	(2) A. Weisman
	(3) Hugo de Vries	(4) A. I. Oparin
115.	Red data book provides data on :	
	(1) Biota of red sea	
	(2) Effect of red light on photosynthe	sis
1	(3) Red pigmented plants	
	(4) Threatened species	
116.	A disaccharide made up of two glucos	o unito io .
	ap of two gracos	se utitis is:
	(1) Sucrose (2) Maltose	(3) Lactose (4) Dextrip
117.	A cell organelle which is bounded l	(3) Lactose (4) Dextrin by a single membrane and contains enzymes
117.	A cell organelle which is bounded involved in conversion of fat to carboh	by a single membrane and contains enzymes by drate is:
117.	A cell organelle which is bounded involved in conversion of fat to carboh (1) Spherosomes	by a single membrane and contains enzymes by drate is: (2) Lysosomes
	A cell organelle which is bounded involved in conversion of fat to carbon (1) Spherosomes (3) Glyoxysomes	by a single membrane and contains enzymes by drate is:
117.	A cell organelle which is bounded involved in conversion of fat to carboh (1) Spherosomes (3) Glyoxysomes Iron is <i>not</i> a component of:	by a single membrane and contains enzymes by drate is: (2) Lysosomes
	A cell organelle which is bounded involved in conversion of fat to carboh (1) Spherosomes (3) Glyoxysomes Iron is <i>not</i> a component of: (1) Cytochromes	by a single membrane and contains enzymes by drate is: (2) Lysosomes
	A cell organelle which is bounded involved in conversion of fat to carboh (1) Spherosomes (3) Glyoxysomes Iron is <i>not</i> a component of:	by a single membrane and contains enzymes sydrate is: (2) Lysosomes (4) Peroxisomes
118. 119.	A cell organelle which is bounded involved in conversion of fat to carbon (1) Spherosomes (3) Glyoxysomes Iron is <i>not</i> a component of: (1) Cytochromes (3) Catalases	by a single membrane and contains enzymes sydrate is: (2) Lysosomes (4) Peroxisomes (2) Peroxidases
118. 119.	A cell organelle which is bounded involved in conversion of fat to carboh (1) Spherosomes (3) Glyoxysomes Iron is <i>not</i> a component of: (1) Cytochromes (3) Catalases An organism is respiring in a bell jar fill	by a single membrane and contains enzymes by drate is: (2) Lysosomes (4) Peroxisomes (2) Peroxidases (4) Carbonic anhydrases
118. 119.	A cell organelle which is bounded involved in conversion of fat to carboh (1) Spherosomes (3) Glyoxysomes Iron is <i>not</i> a component of: (1) Cytochromes (3) Catalases An organism is respiring in a bell jar fill will contain labelled O ₂ ?	by a single membrane and contains enzymes sydrate is: (2) Lysosomes (4) Peroxisomes (2) Peroxidases (4) Carbonic anhydrases led with ¹⁸ O ₂ . Which product of the respiration

120.	During photorespiration, the conversion in which cell organelle?	n of	phosphoglycolate to glycolate takes place
	(1) Peroxisome	(2)	Glyoxysome
	(3) Mitochondria	(4)	Chloroplast
121.	Viroids are:		(4). Depletion of Ox. in
	(1) ssRNA not enclosed by protein coat		
	(2) ssRNA enclosed by protein coat		
	(3) dsRNA enclosed by protein coat		
	(4) dsDNA enclosed by protein coat		"126. If the name of carifornies in t
122.	The seedless vascular plants are:		
	(1) Bryophytes	(2)	Pteridophytes
	(3) Gymnosperms	(4)	Angiosperms
123.	The spindle fibers involved in the sepatelophase are made of:	ratio	on and migration of chromosomes during
	(1) Microbodies	(2)	Microsomes
	(3) Microtubules	(4)	Endoplasmic reticulum
124.	A monocarpic plant:		
	(1) Has one carpel		(3) Cathina
	(2) Produces only one seed		
	(3) Produces one fruit only		
	(4) Flowers only once in lifetime		
125.	Zymogen is:		
	(1) Enzyme poison	(2)	Enzyme modulator
	(3) Enzyme precursor	(4)	Enzyme inhibitor
BPH-I	EE-2016(SET-Z)/(D)		CONTRACTS CONTRACT. P. T. O.

120.	In coming ye	ears, the skin disease	es will be n	nore common	due to:		
		in air pollution					
	(2) Increase	in CO ₂			ing a second control of the control		
	(3) Excess us	se of detergents					
	(4) Depletion	n of Ozone					
127.	Which bioged	ochemical cycle is <i>no</i>	ot gaseous	?	Personal Company (1)		
	(1) Carbon c			Nitrogen cy	cle		
	(3) Phosphor	ous cycle		Sulfur cycle			
128.	If the number of chromosomes in the endosperm cells of a plant are 21 chromosomes, what will be the number of chromosomes in the gametes?						
	(1) 21	(2) 14	(3)	7	(4) 44		
129.	Ovulation occurs under the influence of:						
	(1) LH		(2)	FSH			
	(3) Estrogen			Progesteron			
130.	Organ of corti	occurs in:					
	(1) External ea	ar	(2)	Middle ear			
*	(3) Cochlea		(4)	Retina	Their symposium as keep		
					Appendict to the		
					citamina (na citata)		
BPH-EE	E-2016(SET-Z)/(D)			TOTAL CONTRACTOR OF THE SAME		

						DANGAR TO THE OWNER OF THE STREET		 	
1.	3	20. 3	39. 1	58. 3	77. 4	96. 4	115. 2		
2.	2	21. 3	40. 1	59. 2	78. 1	97. 1	116. 4		
3.	1 .	22. 1	41. 2	60. 2	79. 4	98. 2	117. 3		
4.	4	23. 1	42. 2	61. 4	80. 1	99. 1	118. 3		
5.	4	24. 2	43. 2	62. 2	81. 3	100. 3	119. 2	,	
6.	3	25. 1	44. 3	63. 4	82. 1	101. 1	120. 3		
7.	1	26. 2	45. 4	64. 4	83. 2	102. 2	121. 4		
8.	3	27. 1	46. 4	65. 2	84. 2	103. 3	122. 3		
9.	3	28. 1	47. 2	66. 2	85. 4	104. 4	123. 3		
10.	4	29. 1	48. 4	67. 1	86. 2	105. 3	124. 1		
11.	3	30. 1	49. 1	68. 4	87. 4	106. 2	125. 3		
12.	3	31. 1	50. 3	69. 3	88. 3	107. 3	126. 3		
13.	4	32. 1	51. 1	70. 1	89. 2	108. 4	127. 3		
14.	1	33. 3	52. 3	71. 1	90. 1	109. 2	128. 4		
15.	3	34. 3	53. 2	72. 2	91. 3	110. 4	129. 3		
16.	2	35. 3	54. 1	73. 4	92. 4	111. 1	130. 4		
17.	1	36. 2	55. 1	74. 3	93. 1	112. 2			
18.	2	37. 1	56. 1	75. 3	94. 2	113. 3			
19.	1	38. 4	57. 2	76. 2	95. 3	114. 2			

1

															 	 	=====	==
=	1.	1	20. 3	==== 3	39.	3	58.	2	77.	4	96.	2	115.	3				
	2.	1	21. 3	3	40.	1	59.	3	78.	1	97.	4	116.	1				
	3.	3	22.	L	41.	4	60.	4	79.	2	98.	3	117.	2				
	4.	3	23. 3	3	42.	2	61.	2	80.	3	99.	2	118.	3				
	5.	3	24.	3	43.	4	62.	1	81.	1	100.	1	119.	2				
	6.	2	25.	4	44.	4	63.	4	82.	2	101.	3	120.	2				
	7.	1	26.	3	45.	2	64.	1	83.	4	102.	3	121.	2				
	8.	1	27. 2	2	46.	1	65.	1	84.	3	103.	4	122.	3				
	9.	1	28.	1	47.	2	66.	1	85.	3	104.	3	123.	4				
	10.	1	29.	4	48.	3	67.	3	86.	3	105.	4	124.	2				
	11.	3	30.	4	49.	2	68.	2	87.	1	106.	4	125.	4				
	12.	1	31.	2	50.	2	69.	1	88.	2	107.	3	126.	4				
	13.	1	32.	1	51.	4	70.	1	89.	2	108.	3	127.	3				
	14.	2	33.	2	52.	2	71.	4	90.	4	109.	1	128.	3				
	15.	1	34.	1	53.	4	72.	1	91.	2	110.	3	129.	2				
	16.	3	35.	3	54.	1	73.	2	92.	4	111.	1	130.	3				
	17.	3	36.	2	55.	3	74.	1	93.	1	112.	2						
	18.	4	37.	1	56.	2	75.	3	94.	4	113.	3						
	19.	1	38.	4	57.	2	76.	3	95.	1	114.	4						

							22
=	=	======	======	======	=======		
1. 2	20. 4	39. 4	58. 4	77. 4	96. 3	115. 4	
2. 1	21. 3	40. 2	59. 1	78. 3	97. 1	116. 1	
3. 1	22. 2	41. 1	60. 1	79. 2	98. 2	117. 2	
4. 1	23. 1	42. 2	61. 2	80. 1	99. 2	118. 3	
5. 1	24. 4	43. 3	62. 1	81. 2	100. 4	119. 4	•
6. 3	25. 4	44. 2	63. 4	82. 4	101. 4	120. 3	
7. 1	26. 1	45. 2	64. 3	83. 1	102. 3	121. 3	
8. 1	27. 1	46. 1	65. 1	84. 4	103. 3	122. 3	
9. 2	28. 3	47. 3	66. 4	85. 1	104. 1	123. 4	
10. 1	29. 3	48. 2	67. 2	86. 1	105. 3	124. 3	
11. 2	30. 3	49. 1	68. 4	87. 2	106. 4	125. 4	
12. 1	31. 3	50. 1	69. 1	88. 4	107. 3	126. 1	
13. 2	32. 3	51. 2	70. 3	89. 3	108. 3	127. 2	
14. 1	33. 4	52. 2	71. 3	90.3	109. 2	128. 3	
15. 3	34. 1	53. 2	72. 4	91. 4	110. 3	129. 2	
16. 3	35. 3	54. 3	73. 1	92. 1	111. 2	130. 2	
17. 1	36. 4	55. 4	74. 2	93. 2	112. 3		
18. 3	37. 2	56. 2	75. 3	94. 1	113. 4		
19. 3	38. 4	57. 1	76. 2	95. 3	114. 2		

1. 3	20.3	39. 2	58. 4	77. 1	96.3	115.	4	
2. 1	21. 2	40. 2	59. 4	78. 2	97. 4	116.	2 ·	
3. 1	22. 1.	41. 1	60. 2	79. 2	98. 1	117.	3 .	
4. 2 °	23. 1-	42. 3	61. 4	80. 4	99. 2	118.	4.	
5. 1·	24. 1.	43. 2.	62. 2.	81. 4	100. 3	119.	2 .	
6. 2.	25. 1	44. 1.	63. 4'	82. 1	101. 4	120.	4.	
7. 1.	26. 3.	45. 1.	64. 1	83. 2	102. 3	121.	1.	
8. 2	27. 3	46. 2.	65.3	84. 1	103. 3	122.	2 -	
9. 1	28. 4	47. 2	66. 2,	85. 3	104. 2	123.	3	
10. 3	29. 1	48. 2	67. 1.	86. 2	105. 3	124.	4 .	
11. 3	30. 3	49. 3	68. 4,	87. 4	106. 1	125.	3.	
12. 1	31. 3-	50. 4.	69. 1	88. 1	107. 2	126.	4 .	
13. 3	32. 2	51. 2	70. 1	89. 4	108. 3,	127.	3 -	
14. 3	33. 1 ⁻	52. 1,	71. 2	90. 1	109. 2.	128.	3.	
15. 4	34. 4	53. 4	72. 4	91. 1	110. 2	129.	1.	
16. 1	35. 4°	54. 3	73. 3	92. 2	111. 3 ~	130.	3	
17. 1	36. 1	55. 1-	74. 2	93. 4	112. 3			
18. 3	37. 2	56. 4	75. 1	94. 3	113. 4			
19. 3	38. 3.	57. 2,	76. 3	95. 3	114. 3 .			