

PYQSide

NEET STRUCTURE OF ATOM — QUANTUM MECHANICAL MODEL OF ATOM AND QUANTUM NUMBERS — PYQS

Max. Marks: 72

Questions: 18

Section A (MCQ)

Q.1 Match List-I with List-II : [NEET (UG) 2026]

List-I (Quantum Numbers)		List-II (Orbital)	
A.	$n = 2, l = 1$	I.	3d
B.	$n = 4, l = 0$	II.	2p
C.	$n = 5, l = 3$	III.	4s
D.	$n = 3, l = 2$	IV.	5f

- (1) A-II, B-III, C-IV, D-I (2) A-I, B-II, C-III, D-IV
(3) A-II, B-III, C-I, D-IV (4) A-IV, B-II, C-III, D-I

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full solution



Q.2 Match List I with List II.

List I (Quantum Number)		List II (Information provided)	
A.	m_l	I.	Shape of orbital
B.	m_s	II.	Size of orbital
C.	l	III.	Orientation of orbital
D.	n	IV.	Orientation of spin of electron

Choose the correct answer from the options given below : [NEET (UG) 2024]

- (1) A-I, B-III, C-II, D-IV (2) A-III, B-IV, C-I, D-II
(3) A-III, B-IV, C-II, D-I (4) A-II, B-I, C-IV, D-III

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Q.3 The relation between n_m (n_m = the number of permissible values of magnetic quantum number (m)) for a given value of azimuthal quantum number (l), is [NEET (UG) 2023]

- (1) $l = 2n_m + 1$ (2) $n_m = 2l^2 + 1$
(3) $n_m = l + 2$ (4) $l = \frac{n_m - 1}{2}$

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Q.4 Match List-I with List-II :

List-I (quantum number)		List-II (orbital)	
a.	$n = 2, l = 1$	i.	2s
b.	$n = 3, l = 2$	ii.	3s
c.	$n = 3, l = 0$	iii.	2p
d.	$n = 2, l = 0$	iv.	3d

Choose the correct answer from the options given below : [NEET (UG) 2022 (Phase 2)]

- (1) (a)-(iii), (b)-(iv), (c)-(ii), (d)-(i)
(2) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
(3) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)
(4) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

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Q.5 Two electrons occupying the same orbital are distinguished by [NEET 2016 (Phase 1)]

- (1) azimuthal quantum number
(2) spin quantum number
(3) principal quantum number
(4) magnetic quantum number

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Q.6 How many electrons can fit in the orbital for which $n = 3$ and $l = 1$? [NEET 2016 (Phase 2)]

- (1) 2 (2) 6 (3) 10 (4) 14

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full solution



Q.7 The angular momentum of electron in 'd' orbital is equal to [AIPMT 2015 (Cancelled)]

- (1) $2\sqrt{3} \hbar$ (2) $0 \hbar$ (3) $\sqrt{6} \hbar$ (4) $\sqrt{2} \hbar$

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full solution



Q.8 What is the maximum number of orbitals that can be identified with the following quantum numbers?

$n = 3, l = 1, m_l = 0$

[AIPMT 2014]

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

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full solution



Q.9 What is the maximum number of electrons that can be associated with the following set of quantum numbers ?

$$n = 3, l = 1 \text{ and } m = -1$$

[NEET 2013]

- (1) 4 (2) 2 (3) 10 (4) 6

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Q.10 The orbital angular momentum of a p-electron is given as

[AIPMT 2012 (Mains)]

- (1) $\frac{h}{\sqrt{2}\pi}$ (2) $\sqrt{3}\frac{h}{2\pi}$ (3) $\sqrt{\frac{3}{2}}\frac{h}{\pi}$ (4) $\sqrt{6}\frac{h}{2\pi}$

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full solution



Q.11 Maximum number of electrons in a subshell with $l = 3$ and $n = 4$ is

[AIPMT 2012 (Prelims)]

- (1) 14 (2) 16 (3) 10 (4) 12

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full solution



Q.12 The correct set of four quantum numbers for the valence electron of rubidium atom ($Z = 37$) is

[AIPMT 2012 (Prelims)]

- (1) 5, 1, 1, $+\frac{1}{2}$ (2) 6, 0, 0, $+\frac{1}{2}$
(3) 5, 0, 0, $+\frac{1}{2}$ (4) 5, 1, 0, $+\frac{1}{2}$

Scan or tap for the
full solution



Q.13 The total number of atomic orbitals in fourth energy level of an atom is

[AIPMT 2011 (Prelims)]

- (1) 8 (2) 16 (3) 32 (4) 4

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full solution



Q.14 Maximum number of electrons in a subshell of an atom is determined by the following

[AIPMT 2009]

- (1) $2\ell + 1$ (2) $4\ell - 2$ (3) $2n^2$ (4) $4\ell + 2$

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Q.15 Which of the following is not permissible arrangement of electrons in an atom ?

[AIPMT 2009]

- (1) $n = 5, \ell = 3, m = 0, s = +1/2$
(2) $n = 3, \ell = 2, m = -3, s = -1/2$
(3) $n = 3, \ell = 2, m = -2, s = -1/2$
(4) $n = 4, \ell = 0, m = 0, s = -1/2$

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full solution



Q.16 Consider the following sets of quantum numbers:

	n	l	m	s
(i)	3	0	0	+1/2
(ii)	2	2	1	+1/2
(iii)	4	3	-2	-1/2
(iv)	1	0	-1	-1/2
(v)	3	2	3	+1/2

Which of the following sets of quantum numbers are not possible?

[AIPMT 2007]

- (1) (i), (ii), (iii) and (iv) (2) (ii), (iv) and (v)
(3) (i) and (iii) (4) (ii), (iii) and (iv)

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Q.17 The orientation of an atomic orbital is governed by

[AIPMT 2006]

- (1) principal quantum number
(2) azimuthal quantum number
(3) spin quantum number
(4) magnetic quantum number.

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Q.18 The following quantum numbers are possible for how many orbitals :

$$n = 3, l = 2, m = +2 ?$$

[AIPMT 2001]

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

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ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	1	2	4	1	2	2	3	1	2	1	1
Ques.	12	13	14	15	16	17	18				
Ans.	3	2	4	2	2	4	1				