



# Quantum Number - Part II

Course on Inorganic Chemistry for Class XI - 2023

Ques

Which of the f.n represents size and energy

Shell

~~(1)~~

n

(2) l

(3) m

(4) s

# Azimuthal Q.N ( $l$ )

another name  
of Azimuthal Q.N

- Secondary Q.N
- Angular Q.N
- Subsidiary Q.N

discoverer

Sommerfeld

⑤ it represents subshell / subenergy level

3 value = 0 to  $n-1$

value  $n \leq l \times$

always  $n > l$

$n = 4$

$l = 0$

s

sharp

1

p

principal

2

d

diffuse

3

<sup>f</sup>  
fundamental

$$n = 3$$

$l =$	0	1	2
	s	p	d

Number subshell = number of shell



$$n=4$$

$l$  shape


0 s  Spherical

number of orbital  
 $(2l+1)$

$$2 \times 0 + 1 = 1$$

number of  $e^-$   
 $2(2l+1)$

$$2$$

1 p  dumbbell

$$2 \times 1 + 1 = 3$$

$$6$$

2 d  double dumbbell

$$5$$

$$10$$

3 f Complex

$$1$$

$$7$$

$$14$$

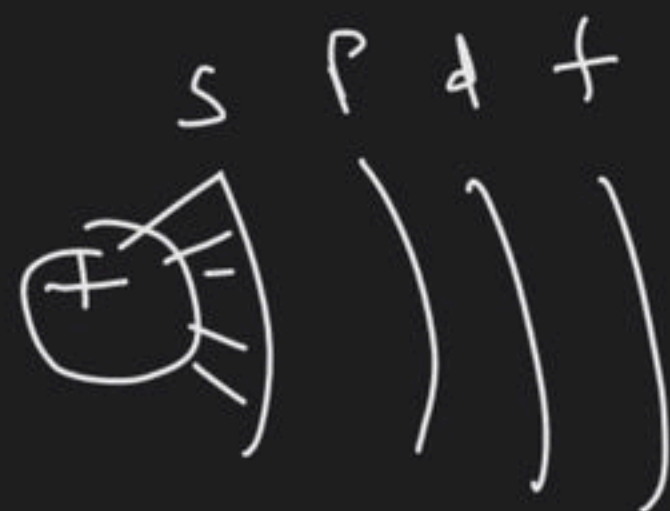
represent

Energy of

Sub shell in a shell

$$n=4$$

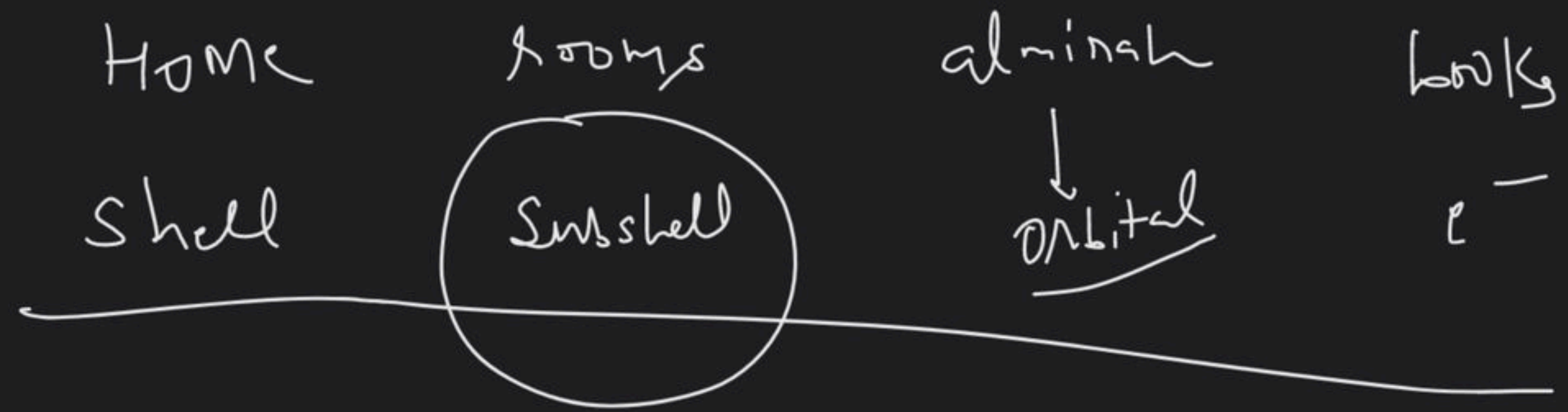
$$s < p < d < f$$



(closeness towards nucleus)

$$\underline{s > p > d > f}$$





find the maximum number of  $e^-$  in f-subshell

(a) 7

(b) 5

(c) 10

~~(d) 14~~

Which of the following subshell is not possible

~~(a) 2d~~

(b) 4f

(c) 5p

~~(d) all subshell possible~~

X  
(2d) 4f

$\begin{bmatrix} n=2 \\ l=2 \end{bmatrix}$  X  $\begin{matrix} n=4 \\ l=3 \end{matrix}$

5p  
 $n=5$   
 $l=1$

	$l$
s =	0
p =	1
d =	2
f =	3

n value always  $>$  l value

2d

✓  
4f

✓  
5p

$n = 2$

$n = 4$

$n = 5$

$l = 2$

$l = 3$

$l = 1$

$\left\{ \begin{array}{l} S = 0 \\ P = 1 \\ d = 2 \\ f = 3 \end{array} \right.$

Value  $l = 0$  to  $n-1$



4



Which of the following Subshell is not Possible

(a) 5f ✓

$$n = 5$$
$$l = 3$$

(b) 6d ✓

$$n = 6$$
$$l = 2$$

~~(c) 1p~~ (d)

$$\left. \begin{array}{l} n = 1 \\ l = 1 \end{array} \right\}$$

all possible

$$l = 1$$
$$s = 0$$

$$p = 1$$

$$d = 2$$

$$f = 3$$

$$\left\{ \begin{array}{l} g = 4 \\ h = 5 \end{array} \right.$$



Which of the following Subshell  
is not possible

X  
(a)  $3f$

X  
(b)  $4g$

X  
(c)  $5h$

(d) all are  
not possible

$3f$

$$n = 3$$

$$l = 3$$

$$n = 4$$

$$l = 4$$

$$n = 5$$

$$l = 5$$



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**Other Books on Chemistry**


Problems and Solutions in Organic Chemistry  
for JEE (Main & Advanced)  
Surendra K. Mishra



**Vishal Joshi**

Director, Co-Founder and HOD of Inorganic Chemistry at Nucleus Education, Kota – is the author of this book. He is a famous name in the field of Inorganic Chemistry and is also the mentor of Chitraang Murdia (AIR 1, JEE Advanced 2014). Various JEE aspirants under his mentorship have ranked under top 20 in JEE across different years. He is also the mentor of Kshitiz Garg who won gold medal for India in International Chemistry Olympiad.

I have been actively involved in the proofreading of this book and believe that it will give ample practice for all topics in Inorganic Chemistry for IITJEE. Joshi Sir's (VJ Sir) teaching methodology relies on making concepts logical which can be inherently seen in this book.

  
**Chitraang Murdia**  
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