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New-chapter

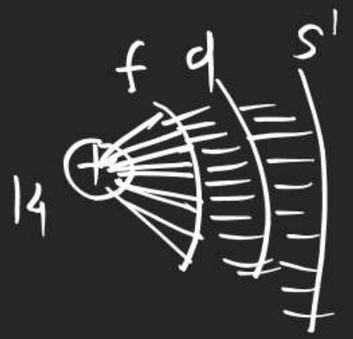
S-Block

IA	IIA
	Be
Li	
Na	Mg
K	Ca
Rb	Sr
Cs	Ba
* Fr	* Ra

IA | 1 group [alkali metals]

they are called alkali metals because their oxides and hydroxides are basic in nature.

$_{87}Fr$ =



Conf. ⇒ ns^1

Atomic radii ↑ down the group

Li < Na < K < Rb < Cs

I.E ↓ down the group

Li > Na > K > Rb > Cs < Fr

due to poor S.E of 4f sub shell

$$_{87}Fr = 1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^6\ 5s^2\ 4d^{10}\ 5p^6\ 6s^2\ 4f^{14}\ 5d^{10}\ 6p^6\ \underline{7s^1}$$

$$= [\underline{Rn}]\ \underline{7s^1}$$

$$= [Xe]\ 6s^2\ 4f^{14}\ 5d^{10}\ 6p^6\ \underline{\underline{7s^1}}$$

M·B·S [metallic bond strength]

M·B·S ∝ number of u·p·e [unpaired electron]

$M \cdot B \cdot S \propto \frac{1}{\text{size}}$

down the group size ↑ M·B·S ↓

order of metallic bond strength

Li > Na > K > Rb > Cs > Fr → liq. at 27°C

Li is harder than other metals

$$M.B.S \propto \frac{1}{\text{Softness}}$$

[these metals are soft and easily cut by knife
they Have metallic lustre due to presence of free electron]

Crystalline structure

they Have crystalline structure B.C.C

Having Co-ordination number

of 8

M.P/B.P ∝ M.B.S

order of M.P/B.P

Li > Na > K > Rb > Cs ← for

↓

liquid

Reducing power

$M \longrightarrow M^+ + e^-$

(Reducing agent)

order of Reducing power

Li Na K Rb Cs

Ans Li > Cs > Rb > K > Na

due to high H.E [Hydration energy]

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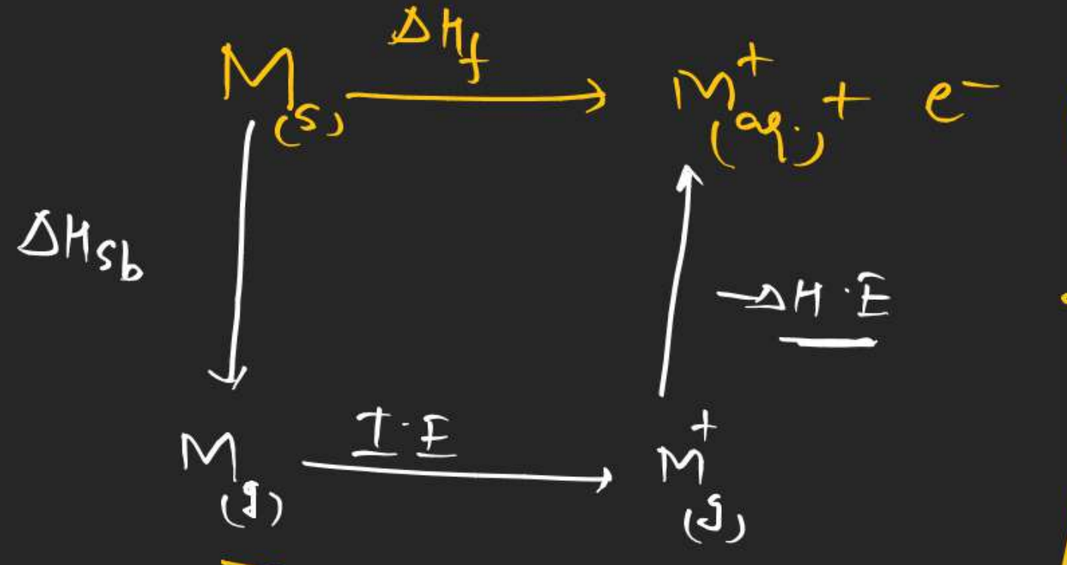
Li
Na
K
Rb
Cs



$\Delta G = \Delta H - T\Delta S$

$\star$ $\Delta H_f = \Delta H_{sb} + I.E - \Delta H \cdot E$

$\Delta H \cdot E$ higher for Li due to it's small size

Ques Which of the following alkaline earth metal is Radioactive

(1) Li (2) Na (3) Fr (4) none

Which of the following element have High Hydration energy

(1) Li^+ (2) Na^+ (3) K^+ (4) Be^{+2}

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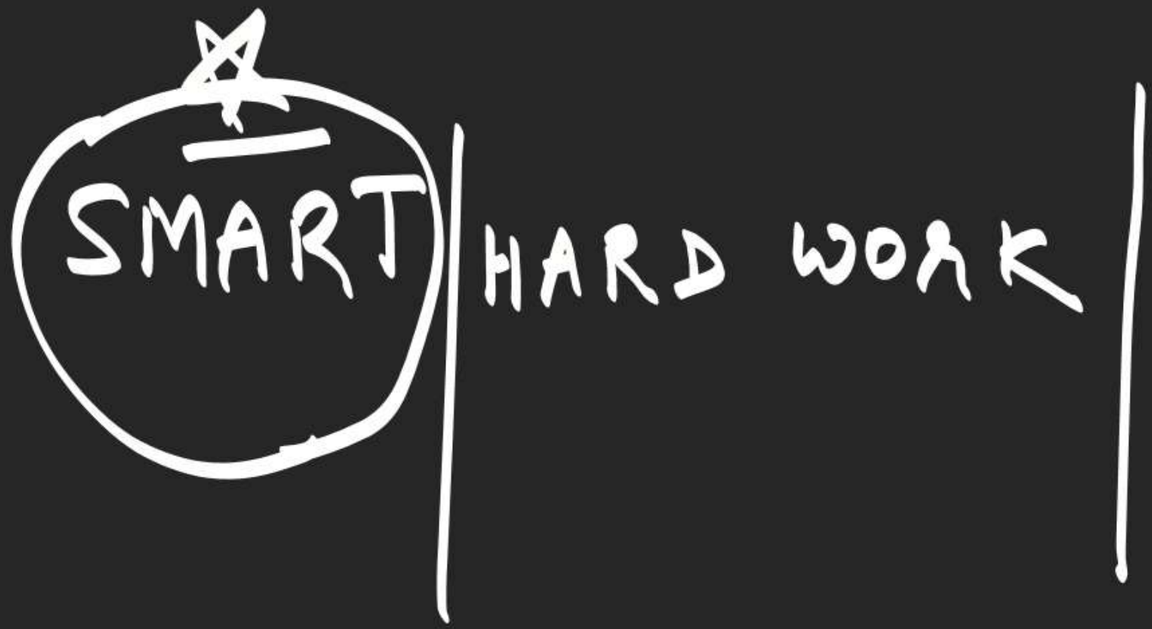

A 1
B 2
C 3
D 4

Which of the following element is not s-block

(1) Li

(2) Na

(3) B

(4) none of these

Which of the following s-Block element is soft among having ns^2 Conf.

(1) Li
(2) Na
(3) Fr
(4) none

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$$D = \frac{M\uparrow}{V\uparrow}$$

$D\uparrow$ down the groups

8 [3 Li
8 [11 Na
18 [19 K
18 [37 Rb
18 [55 Cs
32 [87 Fr

Size ↑

order of D

Li < Na > K < Rb < Cs

Li < K < Na < Rb < Cs

Na = $1s^2$ | $2s^2\ 2p^6$ | $3s^1$

K = $1s^2\ 2s^2\ 2p^6$ | $3s^2\ 3p^6\ 3d^0$ | $4s^1$

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	Na	K
Cap. of e^-	8	18
filling of e^-	8	8