

1

H

1s¹

2

He

1s²

3

Li

[He]2s¹

4

Be

[He]2s²

11

Na

[Ne]3s¹

12

Mg

[Ne]3s²

19

K

[Ar]4s¹

20

Ca

[Ar]4s²

21

Sc

[Ar]4s²3d¹

22

Ti

[Ar]4s²3d²

23

V

[Ar]4s²3d³

24

Cr

[Ar]4s¹3d⁵

25

Mn

[Ar]4s²3d⁵

26

Fe

[Ar]4s²3d⁶

27

Co

[Ar]4s²3d⁷

28

Ni

[Ar]4s²3d⁸

29

Cu

[Ar]3d¹⁰4s¹

30

Zn

[Ar]3d¹⁰4s²

37

Rb

[Kr]5s¹

38

Sr

[Kr]5s²

39

Y

[Kr]5s²4d¹

40

Zr

[Kr]5s²4d²

41

Nb

[Kr]5s¹4d⁴

42

Mo

[Kr]5s¹4d⁵

43

Tc

[Kr]5s²4d⁵

44

Ru

[Rn]5s¹4d⁷

45

Rh

[Kr]5s¹4d⁸

46

Pd

[Kr]4d¹⁰

47

Ag

[Kr]4d¹⁰5s¹

48

Cd

[Kr]4d¹⁰5s²

55

Cs

[Xe]6s¹

56

Ba

[Xe]6s²

57-71

La-Lu

72

Hf

[Xe]4f¹⁴5d²6s²

73

Ta

[Xe]4f¹⁴6s²5d³

74

W

[Xe]4f¹⁴6s²5d⁴

75

Re

[Xe]4f¹⁴6s²5d⁴

76

Os

[Xe]4f¹⁴6s²5d⁶

77

Ir

[Xe]4f¹⁴6s²5d⁷

78

Pt

[Xe]4f¹⁴6s¹5d⁹

79

Au

[Xe]4f¹⁴5d¹⁰6s¹

80

Hg

[Xe]4f¹⁴5d¹⁰6s²

87

Fr

[Rn]7s¹

88

Ra

[Rn]7s²

89-103

Ac-Lr

104

Rf

[Rn]5f¹⁴6d²7s²

105

Db

[Rn]5f¹⁴7s²6d³

106

Sg

[Rn]5f¹⁴7s²6d⁴

107

Bh

[Rn]5f¹⁴7s²6d⁵

108

Hs

[Rn]5f¹⁴7s²6d⁶

109

Mt

[Rn]5f¹⁴7s²6d⁷

110

Ds

[Rn]5f¹⁴7s²6d⁸

111

Rg

[Rn]5f¹⁴6d¹⁰7s²

112

Cn

[Rn]5f¹⁴6d¹⁰7s²

+1 s-electron

+1 p-electron

+1 d-electron

+2 d electrons, -1 s-electron

+1 f-electron

+2 f-electrons, -1 d-electron

57

La

[Xe]6s²5d¹

58

Ce

[Xe]6s²4f¹5d¹

59

Pr

[Xe]6s²4f³

60

Nd

[Xe]6s²4f⁴

61

Pm

[Xe]6s²4f⁵

62

Sm

[Xe]6s²4f⁶

63

Eu

[Xe]6s²4f⁷

64

Gd

[Xe]6s²4f⁷5d¹

65

Tb

[Xe]6s²4f⁹

66

Dy

[Xe]6s²4f¹⁰

67

Ho

[Xe]6s²4f¹¹

68

Er

[Xe]6s²4f¹²

69

Tm

[Xe]6s²4f¹³

70

Yb

[Xe]6s²4f¹⁴

71

Lu

[Xe]6s²4f¹⁴5d¹

89

Ac

[Rn]7s²6d¹

90

Th

[Rn]7s²6d²

91

Pa

[Rn]7s²5f³6d¹

92

U

[Rn]7s²5f³6d¹

93

Np

[Rn]7s²5f⁴6d¹

94

Pu

[Rn]7s²5f⁶

95

Am

[Rn]7s²5f⁷

96

Cm

[Rn]7s²5f⁷6d¹

97

Bk

[Rn]7s²5f⁹

98

Cf

[Rn]7s²5f¹⁰

99

Es

[Rn]7s²5f¹¹

100

Fm

[Rn]7s²5f¹²

101

Md

[Rn]7s²5f¹³

102

No

[Rn]7s²5f¹⁴

103

Lr

[Rn]7s²5f¹⁴6d¹

1

H

1s¹

2

He

1s²

3

Li

[He]2s¹

4

Be

[He]2s²

11

Na

[Ne]3s¹

12

Mg

[Ne]3s²

19

K

[Ar]4s¹

20

Ca

[Ar]4s²

21

Sc

[Ar]4s²3d¹

22

Ti

[Ar]4s²3d²

23

V

[Ar]4s²3d³

24

Cr

[Ar]4s¹3d⁵

25

Mn

[Ar]4s²3d⁵

26

Fe

[Ar]4s²3d⁶

27

Co

[Ar]4s²3d⁷

28

Ni

[Ar]4s²3d⁸

29

Cu

[Ar]3d¹⁰4s¹

30

Zn

[Ar]3d¹⁰4s²

37

Rb

[Kr]5s¹

38

Sr

[Kr]5s²

39

Y

[Kr]5s²4d¹

40

Zr

[Kr]5s²4d²

41

Nb

[Kr]5s¹4d⁴

42

Mo

[Kr]5s¹4d⁵

43

Tc

[Kr]5s²4d⁵

44

Ru

[Rn]5s¹4d⁷

45

Rh

[Kr]5s¹4d⁸

46

Pd

[Kr]4d¹⁰

47

Ag

[Kr]4d¹⁰5s¹

48

Cd

[Kr]4d¹⁰5s²

55

Cs

[Xe]6s¹

56

Ba

[Xe]6s²

57-71

La-Lu

72

Hf

[Xe]4f¹⁴5d²6s²

73

Ta

[Xe]4f¹⁴6s²5d³

74

W

[Xe]4f¹⁴6s²5d⁴

75

Re

[Xe]4f¹⁴6s²5d⁴

76

Os

[Xe]4f¹⁴6s²5d⁶

77

Ir

[Xe]4f¹⁴6s²5d⁷

78

Pt

[Xe]4f¹⁴6s¹5d⁹

79

Au

[Xe]4f¹⁴5d¹⁰6s¹

80

Hg

[Xe]4f¹⁴5d¹⁰6s²

87

Fr

[Rn]7s¹

88

Ra

[Rn]7s²

89-103

Ac-Lr

104

Rf

[Rn]5f¹⁴6d²7s²

105

Db

[Rn]5f¹⁴7s²6d³

106

Sg

[Rn]5f¹⁴7s²6d⁴

107

Bh

[Rn]5f¹⁴7s²6d⁵

108

Hs

[Rn]5f¹⁴7s²6d⁶

109

Mt

[Rn]5f¹⁴7s²6d⁷

110

Ds

[Rn]5f¹⁴7s²6d⁸

111

Rg

[Rn]5f¹⁴6d¹⁰7s²

112

Cn

[Rn]5f¹⁴6d¹⁰7s²

+1 s-electron

+1 p-electron

+1 d-electron

+2 d electrons, -1 s-electron

+1 f-electron

+2 f-electrons, -1 d-electron

57

La

[Xe]6s²5d¹

58

Ce

[Xe]6s²4f¹5d¹

59

Pr

[Xe]6s²4f³

60

Nd

[Xe]6s²4f⁴

61

Pm

[Xe]6s²4f⁵

62

Sm

[Xe]6s²4f⁶

63

Eu

[Xe]6s²4f⁷

64

Gd

[Xe]6s²4f⁷5d¹

65

Tb

[Xe]6s²4f⁹

66

Dy

[Xe]6s²4f¹⁰

67

Ho

[Xe]6s²4f¹¹

68

Er

[Xe]6s²4f¹²

69

Tm

[Xe]6s²4f¹³

70

Yb

[Xe]6s²4f¹⁴

71

Lu

[Xe]6s²4f¹⁴5d¹

89

Ac

[Rn]7s²6d¹

90

Th

[Rn]7s²6d²

91

Pa

[Rn]7s²5f³6d¹

92

U

[Rn]7s²5f³6d¹

93

Np

[Rn]7s²5f⁴6d¹

94

Pu

[Rn]7s²5f⁶

95

Am

[Rn]7s²5f⁷

96

Cm

[Rn]7s²5f⁷6d¹

97

Bk

[Rn]7s²5f⁹

98

Cf

[Rn]7s²5f¹⁰

99

Es

[Rn]7s²5f¹¹

100

Fm

[Rn]7s²5f¹²

101

Md

[Rn]7s²5f¹³

102

No

[Rn]7s²5f¹⁴

103

Lr

[Rn]7s²5f¹⁴6d¹

1

H

1s¹

2

He

1s²

3

Li

[He]2s¹

4

Be

[He]2s²

11

Na

[Ne]3s¹

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19

K

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20

Ca

[Ar]4s²

21

Sc

[Ar]4s²3d¹

22

Ti

[Ar]4s²3d²

23

V

[Ar]4s²3d³

24

Cr

[Ar]4s¹3d⁵

25

Mn

[Ar]4s²3d⁵

26

Fe

[Ar]4s²3d⁶

27

Co

[Ar]4s²3d⁷

28

Ni

[Ar]4s²3d⁸

29

Cu

[Ar]3d¹⁰4s¹

30

Zn

[Ar]3d¹⁰4s²

37

Rb

[Kr]5s¹

38

Sr

[Kr]5s²

39

Y

[Kr]5s²4d¹

40

Zr

[Kr]5s²4d²

41

Nb

[Kr]5s¹4d⁴

42

Mo

[Kr]5s¹4d⁵

43

Tc

[Kr]5s²4d⁵

44

Ru

[Rn]5s¹4d⁷

45

Rh

[Kr]5s¹4d⁸

46

Pd

[Kr]4d¹⁰

47

Ag

[Kr]4d¹⁰5s¹

48

Cd

[Kr]4d¹⁰5s²

55

Cs

[Xe]6s¹

56

Ba

[Xe]6s²

57-71

La-Lu

72

Hf

[Xe]4f¹⁴5d²6s²

73

Ta

[Xe]4f¹⁴6s²5d³

74

W

[Xe]4f¹⁴6s²5d⁴

75

Re

[Xe]4f¹⁴6s²5d⁴

76

Os

[Xe]4f¹⁴6s²5d⁶

77

Ir

[Xe]4f¹⁴6s²5d⁷

78

Pt

[Xe]4f¹⁴6s¹5d⁹

79

Au

[Xe]4f¹⁴5d¹⁰6s¹

80

Hg

[Xe]4f¹⁴5d¹⁰6s²

87

Fr

[Rn]7s¹

88

Ra

[Rn]7s²

89-103

Ac-Lr

104

Rf

[Rn]5f¹⁴6d²7s²

105

Db

[Rn]5f¹⁴7s²6d³

106

Sg

[Rn]5f¹⁴7s²6d⁴

107

Bh

[Rn]5f¹⁴7s²6d⁵

108

Hs

[Rn]5f¹⁴7s²6d⁶

109

Mt

[Rn]5f¹⁴7s²6d⁷

110

Ds

[Rn]5f¹⁴7s²6d⁸

111

Rg

[Rn]5f¹⁴6d¹⁰7s²

112

Cn

[Rn]5f¹⁴6d¹⁰7s²

+1 s-electron

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+1 d-electron

+2 d electrons, -1 s-electron

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+2 f-electrons, -1 d-electron

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La

[Xe]6s²5d¹

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Ce

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63

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[Xe]6s²4f⁷

64

Gd

[Xe]6s²4f⁷5d¹

65

Tb

[Xe]6s²4f⁹

66

Dy

[Xe]6s²4f¹⁰

67

Ho

[Xe]6s²4f¹¹

68

Er

[Xe]6s²4f¹²

69

Tm

[Xe]6s²4f¹³

70

Yb

[Xe]6s²4f¹⁴

71

Lu

[Xe]6s²4f¹⁴5d¹

89

Ac

[Rn]7s²6d¹

90

Th

[Rn]7s²6d²

91

Pa

[Rn]7s²5f³6d¹

92

U

[Rn]7s²5f³6d¹

93

Np

[Rn]7s²5f⁴6d¹

94

Pu

[Rn]7s²5f⁶

95

Am

[Rn]7s²5f⁷

96

Cm

[Rn]7s²5f⁷6d¹

97

Bk

[Rn]7s²5f⁹

98

Cf

[Rn]7s²5f¹⁰

99

Es

[Rn]7s²5f¹¹

100

Fm

[Rn]7s²5f¹²

101

Md

[Rn]7s²5f¹³

102

No

[Rn]7s²5f¹⁴

103

Lr

[Rn]7s²5f¹⁴6d¹