

# CHAPTER 6 STUDY GUIDE

## CHEMISTRY

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**Why does the s-block portion of the periodic table span two groups?** Why are groups 1 and 2 called s-block elements? Groups 1 and 2 are called s-block elements because their outermost electrons or valence electrons occupy the s-orbital. Elements in group 1 have 1 valence electron located within the s-orbital. Elements in group 2 have 2 valence electrons within the s-orbital.

**Why are the elements in groups 1A, 8A called representative elements?** Representative elements are called representative elements because they are true to the general properties expected of the group they belong to; this is because the representative elements of a group exhibit similar electron configurations, with the same number of electrons in their valence shell.

**What is the difference between the electron configuration for elements in groups 1A and 2A and for those elements in groups 3A-8A?** What is the difference between the electron configurations for elements in groups 1A and 2A and those for elements in groups 3A-8A? Groups 1A and 2A have valence electrons only in the outermost s orbital. Groups 3A-8A have at least one valence electron in the outermost p orbital.

**Why are members of group 18 virtually unreactive?** The noble gases (Group 18) are located in the far right of the periodic table and were previously referred to as the "inert gases" due to the fact that their filled valence shells (octets) make them extremely nonreactive. The noble gases were characterized relatively late compared to other element groups.

**Why does the p-block portion of the periodic table span 6 groups?** P-block elements are unified by the fact that their valence electrons (outermost electrons) are in the p orbital. The p orbital consists of six lobed shapes coming off a central point at evenly spaced angles. The p orbital can hold a maximum of six electrons, hence why there are six columns in the p-block.

**Why is that group 2 element larger?** Radium (Ra) is the element in Group 2 with the largest atomic size because it has the highest atomic number and the most electron shells (principal energy levels) compared to the other elements in the group. Its valence electrons are farther from the nucleus, which results in a larger atomic size.

**Why does the F block span 14 groups?** Why does the f-block portion of the periodic table span 14 groups? The f-block contains 7 orbitals and each orbital contains a max of 2 electrons. Thus the number of electrons found in the f-block is 14.

**Why do elements in group 8a not react with other elements?** Reason: Noble gases have complete octet so they don't have tendency to pair with other elements and they show zero valency.

**Why are group 2 elements less reactive than group 1 elements?** The Group 2 elements tend to be less reactive than their Group 1 counterparts. The need to remove two electrons in order for the material to react means more energy is needed for electron removal.

**Why do elements in group 2A lose electrons to form cations?** So, because of the low ionization enthalpy of Group 2A elements, it's easier to remove electron from the valence shell of their atoms. Therefore, they will easily lose electrons to form cations.

**Why does chemical reactivity increase from top to bottom in groups 1A and 2A?** As we go down the group, the atom gets bigger. The bigger the atom, the further away the last electron. Therefore, the attraction between the nucleus and the last electron gets weaker. This makes it easier for the atom to give up the electron which increases its reactivity.

**What are some ways group 2A elements differ from group 1A elements?**

**Why is helium different than other elements with two valence electrons?** An atom of helium has two protons in its nucleus and two electrons in its first electron shell. Because the first electron shell can hold a maximum of two electrons, we say helium's valence shell is full. And this is why helium is so unreactive.

**Why do elements in Group 18 not react chemically?** The group of elements at the far right of the table (Group 18) is known commonly as the noble gases. They are generally chemically inert. This means that they do not react with other elements because they already have the desired eight total s and p electrons in their outermost (highest) energy level.

**Why group 18 elements do not participate in chemical reactions readily?** Group 18 elements have high ionization energies because they have a stable electronic configuration. This means it requires more energy to remove an electron and force them to participate in a chemical reaction, making them less reactive.

**Why do s-block elements have two groups only?** The s-block elements of the Periodic Table are those in which the last electron enters the outermost s-orbital. As the s-orbital can accommodate only two electrons, two groups (1 & 2) belong to the s-block of the Periodic Table.

**Why does the s-block have 2 columns?** Because each orbital can have a maximum of 2 electrons, there are 2 columns in the s block, 6 columns in the p block, 10 columns in the d block, and 14 columns in the f block.

**Why is the s-block 2 elements wide?** The width of each orbital block is related to the maximum number of electrons that can be held by a particular orbital (i.e., s orbitals can hold up to two electrons, so the s block is two elements wide; p orbitals can hold up to six electrons, so the p block is six elements wide, etc.).

**Why the s-block in the periodic table has only two columns while the p-block has six?** Short Answer. The s block has only two columns because an s orbital can hold 2 electrons, while the p block has six columns as there are three p orbitals, each able to contain 2 electrons, making a total of 6 electrons.

**What are the Communities of practice in social learning theory?** According to Lave and Wenger's definition, 'Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.

**What is Communities of practice learning?** Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavor: a tribe learning to survive, a band of artists seeking new forms of expression, a group of engineers working on similar problems, a clique of pupils defining their identity in the school, a ...

**What is the identity of the community of practice?** The domain: A community of practice is not merely a club of friends or a network of connections between people. It has an identity defined by a shared domain of interest. Membership therefore implies a commitment to the domain, and therefore a shared competence that distinguishes members from other people.

**What are Communities of practice models?** A community of practice (CoP) is a group of people who share a common concern, a set of problems, or an interest in a topic and who come together to fulfill both individual and group goals.

**What are the 4 concepts of social learning theory?** Mediation Processes of Social Learning Theory There are mental factors known as mediational processes that intervene in the learning process and determine whether students acquire a new behavior/learning. The four mediational processes are attention, retention, reproduction, and motivation.

**What is an example of a community of practice?** These are informal groups of individuals united by a shared hobby or interest. This could be a local gardening club or an online gaming community of practice. ? Communities of practice focus on the joy of shared interest, personal growth, and mutual support.

**What are the 3 key elements of Communities in practice?** The three essential elements of a community of practice (shown in the middle column) contain the domain, community, and practice and must all be identifiable within a community in order to use the Communities of Practice framework.

**What is an example of a learning community?** Interest-based learning community: Often communities of learners come together around their shared interests or passions. For example, it might be based on sourdough bread or sports cars. Whatever your interests, you can find or create a learning community around it.

**How do you define a community of learning?** A Community of Learning is a group of education and training providers working together to help learners achieve their full potential. A Community of Learning can include early learning services, schools, kura, and post-secondary education providers.

**What is an example of a community of identity?** Community of identity – groups that share characteristics such as the older people, minority ethnic groups, faith groups, people with disabilities and young people, etc.

**How community influences identity?** Communities are a source of identity. Every community has its distinct traditions, values, and norms. Communities provide a wealth of organized and deep rooted knowledge, which builds from countless interactions of various socio-political, socio-economic, and socio-cultural attributes that occur over time.

**What is the purpose of community practice?** Provide a shared context for people to communicate and share information, stories and personal experiences in a way that builds understanding and insight. Enable dialogue between people who come together to explore new possibilities, solve challenging problems, and create new, mutually beneficial opportunities.

**What are two benefits of communities of practice?** As members of communities of practice develop enhanced skills such as networking and confidence, organizations will also gain value in retention of talent and innovation, among other benefits.

**What is the community of practice learning theory?** The concept of community of practice originated in Etienne's work with Jean Lave (Lave and Wenger, 1991), which challenged long-standing notions about learning. In particular, they argued that learning does not rest with the individual but is a social process that is situated in a cultural and historical context.

### **What are the three characteristics of a community of practice?**

**What is the cognitive social learning theory?** Cognitive Social Learning Theory (Bandura, 1977, 1986) The theory suggests that humans learn behaviors by observing others and choosing which behaviors to imitate. Behaviors that are rewarded are more likely to be repeated, whereas behaviors that are punished are less likely to be repeated.

**What is an example of social cognitive theory?** Think of a time that you have learned a skill or behavior from observing another person. For example, you may have learned altruistic behavior from seeing your parents bring food to a homeless person, or you may have learned how to train a dog from watching The Dog Whisperer.

**What is cognitive learning theory?** This concept of knowing how you think is the basis for cognitive learning theory. This theory on cognition asks learners to look at thinking and mental processes, and how cognitive thinking can be influenced by external and internal factors. If your cognitive processes are working normally, it's easier to learn.

### **How to establish a community of practice?**

**What are Communities of Practice in education?** Communities of Practice gather to discuss topics related to a specific job task or role that each member has in common. This creates an environment of shared experience that enables participants to compare methods and processes – benefiting all.

**What is a best practice community?** The goal of the Communities of Practice is to use best practices to constantly seek the most efficient and effective ways to create consistency and ensure success, among and between each other, as well as the communities they serve.

**What is the community of learning theory?** In a community of learners, people assist each other in learning to be responsible, making choices and solving problems in ways that fit their own needs while coordinating with those of others and with group functioning.)

**What is the community based practice theory?** Community based program theory emphasizes the importance of an ecological perspective, with multiple interventions delivered at multiple levels and in multiple settings within the community. There is considerable evidence that multifaceted programs are indeed more effective than narrowly focused efforts.

**What are communities of practice sociology?** The term "community of practice" is that group that Lave and Wenger referred to, who share a common interest and a desire to learn from and contribute to the community with their variety of experiences (Lave & Wenger 1991).

**What are the different types of learning communities?** They cite four generic forms of learning communities: curricular, classroom, residential, and student-type (p.

### **Solution of Fluid Mechanics: Douglas 5e**

**1. Question:** How do you solve the Navier-Stokes equations for an incompressible, viscous fluid? **Answer:** The Navier-Stokes equations are a set of partial differential equations that describe the motion of fluids. For incompressible, viscous fluids, they can be solved using various numerical methods, such as the finite difference method, the finite volume method, or the finite element method.

**2. Question:** What is the boundary layer approximation and when is it valid? **Answer:** The boundary layer approximation is a simplification of the Navier-Stokes equations that assumes that the flow is primarily parallel to a solid surface. It is valid when the fluid is thin relative to the length scale of the surface, and when the viscous forces are dominant near the surface.

**3. Question:** How do you calculate the drag force on a sphere? **Answer:** The drag force on a sphere can be calculated using the drag coefficient, which depends on the Reynolds number. The drag coefficient can be found experimentally or numerically, and the drag force can then be calculated as the product of the drag coefficient, the fluid density, the sphere's diameter, and the square of the velocity.

**4. Question:** What is the difference between laminar and turbulent flow? **Answer:** Laminar flow is characterized by smooth, orderly motion, while turbulent flow is

characterized by chaotic, unpredictable motion. The transition from laminar to turbulent flow occurs when the Reynolds number exceeds a critical value.

**5. Question:** How do you solve for the velocity profile in a pipe? **Answer:** The velocity profile in a pipe can be solved using the Hagen-Poiseuille equation for laminar flow or the Prandtl-Karman equation for turbulent flow. These equations relate the velocity to the pressure gradient, the pipe diameter, and the fluid viscosity.

**What is cost accounting CPA?** They focus on organizational costs, monitor spending, analyze data, and provide efficient solutions. These accountants assist with budgeting, pricing, and operational performance evaluations, as well. Compared to many other accounting positions, cost accountants have a larger influence on business decisions.

**What is cost accounting presentation?** Cost accountancy is the application of costing and cost accounting principles, methods and techniques to the art, science and practice of cost control and the ascertainment of profitability. It includes the presentation of information derived there from for the purposes of managerial decision making.

**What is the cost accounting paragraph?** Cost accounting is a managerial accounting process that involves recording, analyzing, and reporting a company's costs. Cost accounting is an internal process used only by a company to identify ways to reduce spending.

**What is cost accounting What is the scope?** Cost accounting is a business practice in which you record, examine, summarize, and understand the money that a business spent on a process, product, or service. It can help an organization control costs and engage in strategic planning to improve cost efficiency.

**What are the four types of cost accounting?** The different types of cost accounting include standard costing, activity-based costing, lean accounting, and marginal costing.

**Is cost accounting hard?** But the basics of cost accounting aren't overly difficult, meaning it's not rocket science. But when you get into more advanced cost accounting, things can be much more complicated.



**What is the formula for cost accounting?** This comprehensive cost assessment takes into account both variable and fixed costs, serving as a pivotal element in determining the overall financial efficiency of production operations. The formula for total production cost is as follows:  $\text{Total Production Cost} = \text{Total Fixed Costs} + \text{Total Variable Costs}$ .

**What are the five purposes of cost accounting?** The main objective of cost accounting are ascertainment of cost, fixation of selling price, proper recording and presentation of cost data to management for measuring efficiency and for cost control and cost reduction, ascertaining the profit of each activity, assisting management in decision making process.

**What is the basic concept of cost accounting?** Cost Accounting is a business practice in which we record, examine, summarize, and study the company's cost spent on any process, service, product or anything else in the organization. This helps the organization in cost controlling and making strategic planning and decision on improving cost efficiency.

**What is the main focus of cost accounting?** Cost accounting looks to assess the different costs of a business and how they impact operations, costs, efficiency, and profits. Individually assessing a company's cost structure allows management to improve the way it runs its business and, therefore, improve the value of the firm.

**What are the principles of cost accounting?** The cost principle is an accounting principle that records assets at their respective cash amounts at the time the asset was purchased or acquired. The amount of the asset that is recorded may not be increased for improvements in market value or inflation, nor can it be updated to reflect any depreciation.

**What are the two basic types of cost accounting systems?** A cost accounting system helps determine how much the production of a good or service will cost. There are two types of systems: job order costing and process costing.

**Who is the main user of cost accounting?**

**What are the two functions of cost accounting?** Budgeting and forecasting. Organizations can prepare budgets and financial forecasts using the necessary cost

data. Inventory management: Accounting of costs plays a crucial role in effective inventory management through inventory valuation. Financial statement preparation.

**What are the elements of cost accounting?** The elements of cost accounting are made up of three key pillars: direct materials, direct labour, and overheads. Direct materials are the raw inputs used in production, direct labour is the human resource input, and overheads cover indirect costs associated with production.

**What is a CPA in costing?** The CPA calculation is calculated by dividing your total costs (marketing costs) spent by the number of new customers in the same time period. For example, if for one month all your marketing efforts cost about \$500 and your number of potential customers is 100, your customer acquisition cost would be 5\$.

**What does a cost accountant do?** The role of cost accountants in an organisation includes preparing budget forecasts, developing cost-control systems, monitoring expenses, implementing cost-saving measures and interpreting financial data to identify trends or potential problems.

**What is CPA and CMA in accounting?** A CMA (certified management accountant) focuses on identifying business growth strategies based on their comprehensive financial analyses. This stands in contrast to a CPA (certified public accountant), a more general accounting designation that isn't as involved in management and strategy decisions.

**What is the difference between a cost accountant and a regular accountant?** Accountants record all financial information to determine the financial health of organizations or individuals. Cost accountants focus on the various costs that organizations incur and what these costs mean for operations, pricing, and supply chains.

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