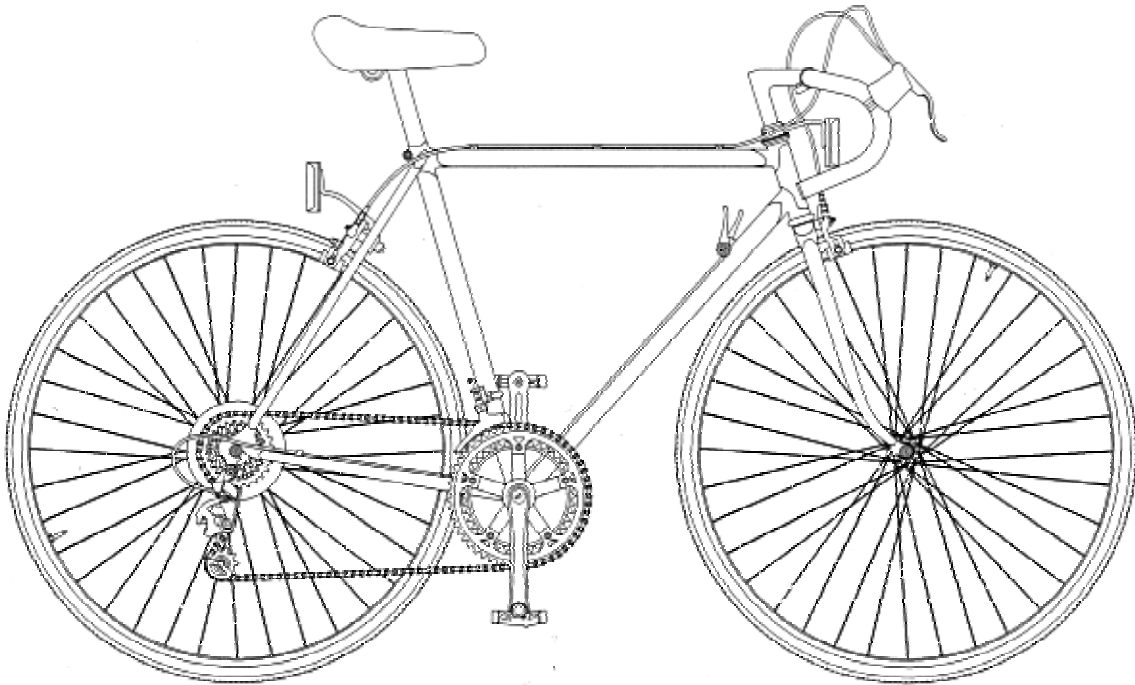


## ***Technical Essay Questions:***

### **Technical Analysis and Description Task**



Describe the components and functionality of the bicycle shown. Each major component should be thoroughly described, with a description of its physical characteristics (size, weight, etc.) and with an explanation of its function. In addition, the bicycle should be described in its entirety.

**This writing task may seem deliberately underspecified and vague- this is to test your ability to make reasonable assumptions about assignments without micromanagement.**

## Technical Summary Task

Read the article below and create an approximately 500 word summary. Each critical aspect covered in the article should be preserved in the written summary. The summary must closely conform to the 500 word length and be easily understood by a general audience of college educated readers.

**This writing task may seem deliberately underspecified and vague- this is to test your ability to make reasonable assumptions about assignments without micromanagement.**

## Medical Passage

Mouth and throat diseases, which range from cavities to cancer, cause pain and disability for millions of Americans. This fact is disturbing because almost all oral diseases can be prevented.

For children, cavities are a common problem that begins at an early age. Tooth decay affects more than one-fourth of U.S. children aged 2–5 and half of those aged 12–15. Low-income children are hardest hit: about half of those aged 6–19 years have untreated decay. Untreated cavities may cause pain, dysfunction, absence from school, underweight, and poor appearance—problems that can greatly reduce a child’s capacity to succeed in life.

Tooth decay is also a problem for U.S. adults, especially for the increasing number of older adults who have retained most of their teeth. Despite this increase in tooth retention, tooth loss remains a problem among older adults. One fourth of adults over age 60 years have lost all of their teeth—primarily because of tooth decay, which affects more than 90% of adults over age 40 years, and advanced gum disease, which affects 5%–15% of adults. Tooth loss can affect self-esteem, and it may contribute to nutrition problems by limiting the types of food that a person can eat.

In addition, oral cancers pose a threat to the health of U.S. adults. Each year, about 28,000 people learn that they have mouth and throat cancers, and nearly 7,200 die of these diseases.

In 2005, Americans made about 500 million visits to dentists, and an estimated \$84 billion was spent on dental services. Yet many children and adults still go without measures that have been proven effective in preventing oral diseases and reducing dental care costs. For example, over 100 million Americans still do not have access to water that contains enough fluoride to protect their teeth, even though the per capita cost of water fluoridation over a person’s lifetime is less than the cost of one dental filling.

The Center for Disease Control (CDC) is committed to ensuring that all people, especially those at greater risk for health disparities, will achieve their optimal lifespan with the best possible quality of health in every stage of life. With new health protection goals that support healthy people in healthy places across all life stages, CDC is setting the agenda to enable people to enjoy a healthy life by delaying death and the onset of illness and disability by accelerating improvements in public health.

In addition, CDC is the lead federal agency responsible for promoting oral health through public health interventions. With fiscal year 2006 funding of about \$11.7 million, CDC

- Helps states strengthen their oral health programs, reach people hardest hit by oral diseases, and expand the use of measures proven effective in preventing oral diseases.
- Promotes oral health in communities, schools, and health care settings nationwide.
- Supports research to strengthen prevention efforts in communities.
- Evaluates the cost-effectiveness of prevention strategies.

CDC provides 12 states with funds, technical assistance, and training to build strong oral health programs. With CDC support, states can better promote oral health, monitor oral health behaviors and problems, and conduct and evaluate prevention programs. In addition, 7 of the 12 states receive funding to develop and coordinate community water fluoridation programs or school-based dental sealant programs. CDC also works with the Association of State and Territorial Dental Directors to guide states on oral health issues, improve state oral health program standards, and help states develop the expertise to assess oral health needs and conduct effective prevention programs.

CDC provides national leadership in assessing the appropriate use of various forms of fluoride. CDC also works with state and national partners to improve the quality of water fluoridation and to implement water fluoridation in new communities. Over the past 60 years, the damage caused by tooth decay has been drastically reduced, primarily through the use of fluoride. The most cost-effective way to deliver the benefits of fluoride to all residents of a community is through water fluoridation—that is, adjusting the fluoride in the public water supply to the right level for decay prevention.

A peer-reviewed CDC study found that, in communities with more than 20,000 residents, every \$1 that is invested in community water fluoridation yields about \$38 in savings each year from fewer cavities treated. The Task Force on Community Preventive Services, which strongly recommends community water fluoridation, concluded that tooth decay in American children has decreased by 30%–50% because of fluoridation.

CDC activities for promoting fluoride include the following:

- Issuing Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States.
- Providing fluoridation training to state drinking water system engineers, dental directors, and other public health staff members.
- Managing a Web-based system that helps states monitor the quality of fluoridated water systems.
- Educating people throughout the country on the appropriate use of fluoride products.

Dental sealants—a plastic coating applied to the chewing surfaces of the back teeth—are a safe, effective way to prevent cavities among schoolchildren. In some cases, sealants can even stop tooth decay that has already started. Sealants significantly reduce a child's risk for having untreated cavities.

Although progress has been made toward the national Healthy People 2010 objective, which calls for half of all U.S. children to have dental sealants, only about one-third of children aged 6–19 do. Children in some racial and ethnic groups and who live in low-income households are less likely to have sealants. For example, fewer than 1 in 4 African American and Mexican American children have sealants.

The Task Force on Community Preventive Services strongly recommends school-based or school-linked sealant programs as an effective way to prevent and control cavities. In addition, CDC researchers evaluated several strategies and found that delivering sealants to all children attending low-income schools was a cost-effective strategy for reducing disparities in sealant use. By offering school-based or school-linked programs, some communities have already reached the Healthy People 2010 objective for dental sealants. CDC currently is working with experts to revise the guidelines for school-based dental sealant programs.

CDC continues to expand activities that support a range of community approaches to promote adult oral health and reduce oral disease. These approaches include monitoring oral health

status, expanding partnerships, supporting prevention research, and increasing public and professional awareness of common oral conditions, risk factors, and healthy behaviors. CDC provides resources to expand partnerships among the aging services network and key stakeholders, such as state dental directors, dental professionals, nurses, home health aides, and members of schools of dentistry and dental hygiene. CDC funds Arizona, Rhode Island, and Iowa for State-based Examples of Network, Innovation, Opportunity, and Replication (SENIOR) grants to implement pilot oral health projects for selected groups of older adults.

Infection control in dental offices is essential to ensuring the public's safety and retaining its confidence. To help minimize the risk of transmitting infectious diseases in the dental environment, CDC published an updated Guidelines for Infection Control in Dental Health-Care Settings. CDC recommendations guide infection control practices in dental offices nationally and globally and provide direction for the public, policy makers, and dental practitioners. These recommendations also affect technology development in the dental industry. In addition, CDC investigates disease outbreaks and environmental hazards in dental offices and identifies emerging problems.

Through the Prevention Research Centers, CDC supports research to examine the effectiveness of innovative strategies to promote oral health in predominantly low-income, ethnically diverse communities. For example, one project is testing whether the Activities of Daily Living tool that home care workers use to assess health care support and service needs can be used to address the oral health needs of the homebound elderly. Another program trains elderly adults to teach oral health to children—an approach that benefits both age groups. Partners in these efforts include schools of public health and dentistry, professional groups, and state health departments.

Routine surveys provide a wealth of information about the oral health of Americans—for instance, what are the most serious oral health problems, how many people are receiving preventive services, which oral diseases are on the rise, and which groups of people are most at risk. CDC supports Web-based systems that bring together oral health data from many sources and make this information widely available to public health professionals and consumers.

For example, the National Oral Health Surveillance System links data from various state-based systems, including state oral health surveys and the Behavioral Risk Factor Surveillance System. In addition, the annual State Dental Program Synopses present state population demographics and information about the activities and funding levels of state dental programs.

Currently, CDC is leading a panel of experts in developing self-reported measures of gum (periodontal) status. CDC also is working to improve the accuracy of oral cancer data collected by state cancer registries in order to improve our understanding of patterns of oral cancer detection in states. In addition, CDC helps health departments collect, interpret, and share oral health data specific to their areas. States and communities use the data to monitor their progress in meeting Healthy People 2010 goals for oral health, target limited resources to people with the greatest needs, and compare their oral health problems with those of other states and the nation as a whole.

CDC will continue to help states strengthen their oral health programs and develop effective interventions. CDC also will continue to seek opportunities to work with partners in oral health research, surveillance, education, and evaluation in order to develop and extend prevention interventions to additional communities.