

SAICE 2013 Essay Topics for Professional Registration

The current process of registration with the Engineering Council of South Africa was implemented in January 1998. The ECSA "Discipline-Specific Guidelines for Civil Engineering" of February 2003, Clause 6.5, indicates that two essays will have to be written by candidates:

- The first essay will be on one of two technical subjects set by the reviewers in the context of the training report and the interview.
- The second essay will be on one of two topics selected by the interviewers from a list published in advance by SAICE.

Guidance notes for the assessment of essays are set out in the Guidelines for Professional Registration of Civil Engineers, available from the Institution.

The topics for the second essay for 2013 are listed below, and have been approved by the Professional Advisory Committee on Civil Engineering at ECSA:

1. Discuss the most significant influences, attitudes and strategic issues relevant to the total project cycle.
2. In projects for developing countries emphasis is often placed on the need for transfer of technology. How can this best be achieved in practice?
3. Discuss the importance of environmental regulations on the design, documentation, and construction of civil engineering projects, use your own experiences to illustrate your argument.
4. Although failures may be a disaster for the individuals concerned, many have led to advances in theory, design and construction methods. Discuss how failures should be dealt with so as to ensure the maximum benefit to society and the engineering community.
5. Discuss the opportunities and threats inherent in industrial and infrastructure projects which impact on local communities and the role civil engineers can play in delivering value to society through their involvement in such projects. Use your own experience where appropriate.
6. Discuss the difference between 'Quality Control' and 'Quality Assurance'. Discuss the requirements for quality management by clients, designers and contractors, and their respective contributions to the success of a project.
7. Describe how you have implemented health and safety legislation on the projects you have worked on, and detail what opportunities you think there are for improving health and safety performance.
8. Discuss the principle of whole life asset management with specific respect to Municipal infrastructure using a single service to illustrate your argument.
9. Risk is inherent in most civil engineering work. Discuss the ways in which such risks can affect the employer and the contractor, and how they can influence the form of contract and the contract price.

10. "The estimation of costs of schemes and their budgetary control is one of the key functions of the engineer". Discuss how engineers should be trained to fulfil this function in design and construction?
11. Identify the areas in which disagreement between a Resident Engineer's staff and the Contractor's staff may develop. How can good relations be achieved between these parties? Illustrate where possible from your own experience.
12. Describe the authority of the Engineer to delegate decisions to the Engineer's Representative under the General Conditions of Contract (GCC) for construction works (the 2004 and 2010 versions have reference). In what circumstances could an Engineer vary the level of delegation during the construction period?
13. Discuss how the application of ethics in civil engineering projects or contracts should be regulated in order to ensure that the negative impact of corruption and similar practices are eliminated or at least minimized.
14. Discuss the role that the civil engineering profession has to play with respect to poverty alleviation.
15. Discuss the impact the National Environmental Management Act and its regulations have on the planning, design and construction of a civil engineering project.
16. What can civil engineers do to raise the profile of maintenance of capital infrastructure?
17. Why should a Registered Professional Engineer not undertake work of a nature for which their education, training and experience have not rendered them competent to perform? What in your view ought to be the punishment for contravening this competency prescription in the Code of Conduct?