



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 3 Examination in Engineering: August 2015

Module Number: IS 3302

Module Name: Society and the Engineer

[Three Hours]

[Answer all questions, each question carries 12 marks]

Q1. Comment on any **three** of the following:[about 250 words each. 4x3 = 12 Marks]

- a) Engineering offers men and women an unparalleled opportunity to experience the joy of improving the quality of life for humankind through development of engineering solutions to societal problems.
- b) Engineers and their inventions & innovations have helped shape the changes that have made our lives more productive and fruitful.
- c) Engineers should not only possess the knowledge base of the discipline but also be expert thinkers and life long, self-learners.
- d) Society, often views the engineer as a narrow, conservative, numbers-driven person, insensitive to societal issues.

Q2 Write notes on any **three** of the following:[about 250 words each. 4x3 = 12 Marks]

- a) Engineers need to know the engineering fundamentals well and be able to solve complex open-ended problems in a timely way and at a reasonable cost.
- b) Engineers plan, design and create the physical structure through which society lives, works and plays.
- c) Solutions of societal problems require innovative ways with consideration of cultural differences, historical perspectives, legal and economic constraints.
- d) Engineers need to understand and appreciate history, philosophy, culture, and arts along with the creative elements in these disciplines.



- Q3. Discuss any **three** of the following :[about 250 words each. 4x3 = 12 Marks]
- a) Engineers require the ability to understand the interactions that engineering has with the economic, social, health, safety, legal, cultural aspects of society and the uncertainties involved in their prediction.
 - b) Being technically sound and motivated is not enough for engineering students. They need excellent oral and written communication skills for a successful career.
 - c) The engineering graduates today, require the broad education necessary to understand the impact of engineering solutions in a global and societal context, and knowledge of contemporary issues.
 - d) Engineering is not a lonely profession, but is one that is inherently social, requiring interaction with different kinds of professionally trained people to deliver products, processes and systems.

- Q4 Explain any **three** of the following :[about 250 words each. 4x3 = 12 Marks]
- a) Engineers have a professional and legal 'duty of care' to design products, processes and systems that are as safe as is reasonably practicable.
 - b) Engineering has a direct and vital impact on the quality of life of all people and engineers should adopt the highest standards of professional conduct.
 - c) Ethical decisions generate and sustain trust; demonstrate respect, responsibility, fairness and caring; and are consistent with good citizenship.
 - d) Strong parallels exist between ethical decision making and problem solving in engineering. In both instances, a uniquely correct solution is rarely possible.

- Q5 Describe any **three** of the following:[about 250 words each. 4x3 = 12 Marks]
- a) The holistic concept of sustainability stands on the three key integrated pillars of economic, environmental and social sustainability.
 - b) Sustainable development calls for improving the quality of life for all without the use of natural resources beyond the earth's carrying capacity.
 - c) Professional Engineers work to enhance the welfare, health and safety of all while paying due regard to the environment and the sustainability of resources.
 - d) Living sustainably means adopting life-styles and development paths that respect and work within nature's limits.