Dr. Kamal Laksiri, President of the Institute of Engineers Sri Lanka
Prof. Ranjith Dissanayake, President-Elect and officials of IESL
Distinguished invitees
Dear Parents and Graduates
Ladies and gentlemen

Good morning!

I feel honoured to have been invited to speak at the convocation of the Institute of Engineers in Sri Lanka, which is one of the most esteemed professional bodies in the country, providing high-quality higher education in a wide range of fields in Engineering. Today degrees were conferred on over 1000 graduands at the convocation. This is a very special event in the life of any graduate and also one that is celebrated the world over with joy by their loved ones and families. May I take this opportunity to felicitate the graduates who have received their degrees today.

Dear graduates, today marks the successful completion of a long journey in the quest for knowledge. It is also the commencement of another, no less important quest to apply the knowledge and skills you have acquired for the benefit of the community. Your well-rounded and well-grounded degree will lay a firm foundation for your career progression and advancement in keeping with your interests, talents and competencies. Therefore I exhort you not to be complacent and rest on your laurels in the belief that you have reached the pinnacle of education.

Moreover, be mindful that we are living in an era of unprecedented explosion of knowledge. Thus, the advancement of the frontiers of knowledge is very rapid and the half-life of knowledge is short; hence, what you learn today may be outdated tomorrow. Therefore it is of utmost importance for you to you keep tending your stock of knowledge on a regular basis.

In the past, the future was rather certain and predictable, so that we could produce graduates with a career for life. However, today we are living in a "VUCA" environment characterized by Volatility, Uncertainty, Complexity and Ambiguity, and the economic, social, technological and environmental landscapes are in a state of flux and rapid change. Therefore, now we ought to produce graduates for a life of careers, to equip them with the multiple skills and competencies which are crucially important to thrive and succeed in a "VUCA" environment – an environment replete with challenges as well as opportunities. Graduates equipped with such attributes will be able to seek and seize opportunities, create new enterprises, and contribute to enhancing existing enterprises by dealing with challenges effectively.

Today lifelong learning or learning from womb to tomb is not an adjunct or option, but an imperative that every citizen, particularly every graduate, should cultivate in order to be successful in life. The late Dr. Abdul Kalam, former President of India said that young minds that have been ignited are the most powerful of all resources - mightier than any other resource on the earth, in the sky and under the sea. These minds are bubbling with creativity and enthusiasm and their trapped energies and suppressed initiatives need to be liberated and harnessed. Only a burning candle can light another candle. I am certain that during your rewarding stint at the IESL you had the benefit of such "candles" that ignited your passion, unleashing your innate potential for the

betterment of self and humanity. What a great responsibility and moral obligation the intellectuals and professionals of this country have in this crucial hour to release the dormant inner energy of youth and guide this tremendous energy in a constructive manner for national development. We want to see the ignited passion, the flame within, continue to glow with the passage of time, without waning or diminishing, fuelled and fanned by devotion to lifelong learning.

Dear graduates, now you are on the threshold of becoming a budding scientist, a potential intellectual. Hence, I wish to share with you the prime functions and responsibilities of an intellectual as defined by Late Prof. Justice Christopher Weeramantry, a world-renowned legal luminary and former Vice-President of the International Court of Justice in Hague:

1. Contribution to advancement and dissemination of knowledge

2. Continuous acquisition of knowledge

3. Systematization of knowledge and

4. Proffering advice and guidance based upon knowledge.

John Naisbitt in his book entitled "Megatrends" said "Today people are drowning in information, but starving for knowledge". That is absolutely true and there is a positive distinction between information and knowledge. As knowledge becomes an increasingly important part of innovation and industrial development, academia as knowledge-producing and disseminating institutions plays an increasing role in industrial innovation. Thus, in a knowledge-based economy, HEIs become key players in the innovation system both as a human capital provider and a seed-bed of new enterprises.

Here, comes to my mind what Ralph Waldo Emerson, a great philosopher from the USA once said, " What lies before you and what lies behind you are small matters when compared with what lies within you: when we bring out what lies within you into the world miracles happen"

President of IESL, therefore we have an immense collective and shared responsibility to create a nurturing, stimulating and conducive environment so that the graduates and youth of the country will blossom, expressing their innate and inborn potential and talents to the benefit of the country and humanity.

Samuel Johnson said, "Great works are performed not by strength, but by perseverance", and Newton said, "If I have seen farther than others, it is because I have stood on the shoulders of giants." Thomas Alva Edison said "Genius is 1% inspiration and 99% perspiration". We need to learn from these geniuses. We know that there is no shortcut to distinction or excellence. We also know that diamonds are only coal put under immense pressure. Therefore, perspiration, perseverance and persistence, 3 Ps, are the key to success.

We want the graduates to be bold and adventurous, to take calculated risks - while still being grounded in reality - and to embark upon innovative, challenging and novel enterprises rather than

to be satisfied with unexciting, unchallenging and routine pen-pushing positions. This is particularly important as entrepreneurs account for only about 2% of the population in Sri Lanka as against 11.6% in Bangladesh, 19.6% in Vietnam and 27.5% in Thailand.

Dear graduates, in your ascent towards the heights of learning, you have reached a level from which you have a broader view than is available to most citizens. Plato reminded us that even those who scale the pinnacles of learning must not make the common mistake of continuing to live in that rarified atmosphere. They must descend again among average citizens and join in their labours. Then only would the years of special training and effort that have gone into their education be rewarded and justified.

Now let me say a few words about engineering and engineers without which my address would be incomplete and imbalanced. As you know, the birth of engineering dates from the era when our ancestors evolved as farmers from hunter-gatherers. It is considered the third oldest profession after prostitution and politics. It has existed since the first human settlement and has advanced with the construction of large projects such as the **Great Wall in China (200 BC)** and the **Pont du Gard in France (60 AD)**.

Throughout history, engineers have been the unsung and often silent heroes of the advancement of civilization. We don't know the names of the engineers who designed the pyramids at Giza, the Appian Way in Italy or the first arch. Engineers hardly get front-page banner bold headlines for their accomplishments, even though these provide the basic building blocks on which society is based. But that's OK and no issue because real leadership is not about accolades, recognition, plaques or awards. It is about endeavours for the betterment of humanity. **John Quincy Adams** (6th US President) said, "If your actions inspire others to dream more, learn more, do more and become more, you are a leader." Therefore, as engineers, you are leaders.

Engineering and economic development are like Siamese twins, inextricably interwoven. Economic progress is impossible without adequately developed social and physical infrastructure such as houses, buildings, roads, bridges, ports, canals, reservoirs, water distribution and transport infrastructure networks, computers, ships and airplanes Therefore there is a close and positive relationship between engineering inputs and economic development.

Today we are living in a fast-paced world where the technological landscape is dynamic and rapidly changing. Now people talk about low-cost technological innovations which are disaster-resilient and ecofriendly, about green structure with low embodied energy, and about wanting grey space be replaced with green and blue space (Grabs). We need to develop low-cost technological innovations to provide shelter, water, and sanitation, water, energy etc. to 70% of the rural population.

As **Therodore von Karmen** said “Scientists discover the world that exists. Engineers create the world that never was”. Scientists think big and challenge engineers to turn discoveries into visible technologies. Engineers show what is possible through innovative technologies and inspire scientists to think even bigger. Together they form a virtuous circle.

Moreover, emerging fields such as artificial intelligence are sending reverberations across numerous fields including civil engineering. The emergence of autonomous (self-driving) and electric vehicles will reshape the transportation infrastructure. New ideas such as Hyperloop Transportation Technologies, proposed by Elon Musk, involve construction of massive tubes in a low-pressure frictionless environment where pods are travelling at a speed greater than 700 mph.

We live in a time of great promise, in which growth is no longer efficiency-driven, but innovation-driven. A knowledge-driven economy revolves around talents, because talents create knowledge. Talent has become the foremost resource in today's innovation-driven global economy. Talent begets talent. Talent is highly mobile and actively sought.

Therefore, wherever you are going to be and whatever you are going to do, please nurture a deep sense of national commitment in your hearts. Your parents, amidst manifold difficulties and hardships, left no stone unturned to bestow upon you the greatest endowment - that is Education. Hence, it is incumbent upon you acquit yourselves so as to fulfill their dreams and aspirations. I wish you all a bright, rewarding and prosperous future!

May the IESL under the able and visionary leadership of President Dr. Kamal Laksiri and President-Elect Prof. Ranjith Dissanayake, go from strength to strength and emerge as a leading seat of higher learning in Engineering in Sri Lanka.

Thank you.

Prof. Ranjith Senaratne
Chairman/National Science Foundation