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Chairman, Space Commission and Secretary,

Department of Space

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Esteemed Vice-Chancellor Prof. Takwale, Distinguished Members of the Academic and Management Councils, Members of the Faculty, My dear students, Distinguished guests, Ladies and Gentlemen,

It is a great honour for me to be invited to participate in this august function at the renowned Shivaji University. All those of you who are receiving degrees will remember this important day throughout your life. This is in a way culmination of your hard efforts over past few years to excel in your erudition and learning at this University and I am sure that you had been eagerly looking forward to today's function. It is particularly pleasing for me to share this unique occasion with all of you. I would like to congratulate each one of you and wish you success in your future life and in your chosen field of endeavours.

Your reputed University is named after one of the greatest sons of India. Chhatrapati Shivaji, who shaped Maharashtra into a state of pre-eminence and has become an indelible national icon for courage, fortitude and patriotism. Since time immemorial, the land of Maharashtra has been a home to great personalities who blessed humanity with their shining examples. Social reformers such as Balshastri Jambhekar, Pandita Ramabai, Chhatrapati Shahu Maharaj and Dr. B. R. Ambedkar have a permanent place in our hearts for their monumental contributions and the renaissance they brought about in our society. India's freedom struggle itself was spearheaded by great leaders of this land such as Lokmanya Bal Gangadhar Tilak, Gopal Krishna Gokhale and Vinayak Damodar Savarkar. It is appropriate to say that each and every part of Maharashtra had its role in bringing about the cultural, social and economic revolution of India. Even this city had produced such outstanding men and women who excelled in scholarship and statesmanship, arts and science, trade and services. Whenever, I think of Kolhapur, I recall the outstanding work of my colleague scientist Dr. J.V. Narlikar. I hope that the ambience of this rich heritage will give you strength to set your goals high and shape your future lives.

The century that had just passed, was a watershed in the human history. The political, economic and social landscape of entire globe has changed drastically in the past hundred years. For India too, this was a historic period that shaped her destiny into an independent nation and made her emerge as the world's largest democracy. Our country took gigantic strides after gaining independence in accelerating socio-economic development. We scored impressive achievements in becoming self-sufficient in food, in increasing production of dairy products, in establishing a broad industrial base and improving health services which have increased longevity of our people. Nonetheless, we have many further challenges to meet, particularly in ensuring certain minimum level of quality of life to every citizen. Our inadequacies emerge from the gaps between thoughts and actions, between responsibilities and performance, between ideals and practices and between needs and resources. Over a period of time we find

that the faith in practicing our national ideals of service and sacrifice are eroding. Peace and harmony in our society is often threatened. All these tendencies have been retarding our progress, even as we have the greatest need for accelerating the progress. I firmly believe that we can adequately meet these challenges and take our society on the path of progress provided we have determination. Our experience shows that whenever we have determination and single point devotion, we always achieved the results.

Apart from the challenges I mentioned so far, we can hardly ignore that the new century will present its own new challenges. You are aware of the prodigious pace at which technologies are being developed and are converted into commercial products. Significantly, many of these are relevant for improving the quality of life on earth. However, at another level, technology is used as lever by advanced countries to generate wealth at a bewilderingly rapid pace, and this is helped by a world economic order which is characterized by the globalisation of markets, Hence there is an intense but unequal competition between the technologically advanced nations and their counterparts. Surviving and excelling in such an environment need an extraordinary social discipline and culture of seeking excellence. In other words, we need a major transformation in our society to face the challenges of the new century.

Indeed such challenges are not new to our country which has a history dating back to several millennia in past and has an endowment of civilization that made unique contributions to the world. Throughout her long history, India produced leaders in various fields. From the very early periods, India had interactions with other regions of the globe sharing and exchanging culture, developing trade relations with central Asia even before the advent of silk routes, and extending links with the South-East Asia and the West through maritime trade and through religious interactions. Epoch making leaders were products of our society, which was benefited by its open interaction with other parts of the world. Tumultuous impacts due to invasions and colonization however, impeded the progress of our society resulting in several upheavals in the socio-economic structure of our society. Each time a challenge was presented, Indian society gave birth to a leader who could meet the challenge of the times. We need to reestablish our leadership to face the challenge of current times.

While the twentieth century firmly manifested the role of science and technology in development, strategies followed by several countries in past have also contributed to the lopsided progress in the world. The signs of this is already apparent through manifestations such as global warming, alarming rates of pollution and the social tensions leading to human misery. The lesson that we can learn from this is that we have to combine material progress with spiritual values. Maintaining the integrity of our environment is a duty as sacred as finding solutions to eradicate the problem of hunger.

In order to effectively meet the challenges of our times, we have to view them as opportunities. Our achievements through the green revolution, the white revolution and more recently our forays in frontier areas such as information technology, space, nuclear and biotechnologies bear ample evidence of our capabilities to excel by global standards. Having been associated with our national space programme, I feel proud to mention that India is recognized as a leading space faring nation today, operating some of the world's best satellites. We have not

only produced more advanced systems but have also shown to the world how these could be used in the context of nation's development such as providing communication services, disaster warning and generation of information to manage our natural resources effectively. I am happy to note that Maharashtra State is one of the leading states in the application of satellite remote sensing data for various applications such as watershed development, prediction of agricultural yields, characterization of bio-diversity, monitoring of forests, hilly area development and generation of information relevant to disaster management. There is considerable scope for universities such as yours to take part in these challenging tasks. ISRO is keenly interested to enhance its co-operation with academia to undertake research and application development activities involving space technology and I urge that the Shivaji University should become active participant in this.

A major initiative is taken currently by the Indian Space programme to extend the use of satellite medium for improving the delivery of health services. A survey by the Indian Medical Society found that as much as 75% of the qualified consulting doctors practice in urban centers, whereas a majority of patients come from rural areas. Availability of hospital facilities is also skewed in favour of urban areas, which makes it necessary for the rural population to travel long distances to obtain specialists consultation and care. In view of this inherent imbalance, adoption of Telemedicine technology provides the advantage of improving the delivery of quality health care for rural and isolated populations in hilly areas and offshore islands. Using INSAT satellites several experiments have already begun in different parts of our country. In years to come, satellites which are specially designed for such applications in health care will be developed.

No revolution will take place in the new century without the role of knowledge. Even in the past century, knowledge has been a major player in creation of economic and social progress. If we have to advance nationally and also wish to play a meaningful role in the comity of nations, imperative of rapidly spreading literacy, education and skills cannot be over emphasized. However, if we have to eradicate illiteracy, which is afflicting about one third of our population within a reasonable time and if we have to impart them with necessary skills to make them economically independent and socially empowered, such a task is mind boggling. There cannot be solution for this problem without application of modern technology. Based on the experience of long standing work we have done in using INSAT satellites for developmental communications, a dedicated satellite for education is being planned. While this can provide wide coverage and speedy access to even remote corners of the country, an equally important function will be the generation of educational content and software programmes that meet the twin objectives of strengthening formal education and eradication of illiteracy. This could provide innumerable opportunities to talented and educated young people. Some of you can become pioneers in such endeavors.

As young persons, you are passing through an important period in your life. In a human life span, it is said that about one fourth is spent in childhood and in acquiring education. An equal amount is spent in fighting illness and old age. What is remaining could be summed up to hardly two decades which is all that is available for achieving what we want to achieve in life. Hence, time is the most precious resource, which you should harness purposefully.

When we look at the march of nations who have advanced both socially and economically, we find that they were able to do this through the application of modern knowledge and through their ability to organize themselves. We have many lessons to learn from this and through our own experiences. Central to the success of complex endeavours of modern times is the team work. Such a team spirit is also very important if we have to stand up to the intense competition at international level. As a nation, we have to play an active role in the comity of nations and position ourselves to effectively participate in the rule making process.

My dear friends,

Your vision for yourselves for your family, for your village or city will ultimately become the vision for India. Therefore, you must have a vision and then realize those visions with dedication, commitment and hard work. It is in your hands to usher a new era of hope, abundance and equity. What you need is a new spirit of hope and confidence in yourselves. I hope that the understanding and knowledge you have gained at the university will provide you with sufficient perception and courage to tread into the unknown and create your destiny in this competitive world. Learn from your past but envision the future. Look at the world with frank and confident eyes and translate the lessons it holds into a better life for society and our people. I wish you all a bright future and pray that you are endowed with necessary strength, courage and wisdom to face life with all its opportunities and challenges.

