CAREER SPECTRUM

STUDENT NAME HERE

COMPLETE CAREER PROFILE

DISCLAIMER

The purpose of this document report is self-discovery. It is designed to help students identify their natural personality strengths, weaknesses and their potential interests, skills and values. This report suggests career tracks based on your assessment score, considering three different factors - viz your personality traits, cognitions levels (or subject matter understanding), and thinking orientation.

The test report should not be used to identify, diagnose or treat psychological/mental health and/or medical problems. The user assumes sole responsibility for any actions or decisions that are made as a result of using this aid of self-discovery.

You will be given key information that will help you understand your unique makeup and the type of work that would be a good match for you. The general approach is much better, because usually there will be several similar occupations that match a person's interests and talents. By using the Spectrum Career Guidance System, you will be able to refine your options into a good choice for a career field. The process of using your talents and interests to make career decisions will serve you well both now and in your future career management.

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REPORT SUMMARY

We have found that below mentioned career tracks are more suitable for you -

Software Programmer / Architect

Computer programmers write code to create software programs. This profession needs qualities like analytical skills, detail orientation and troubleshooting skills. Job perspectives for this job is huge in India.

Mathematics / Statistics Instructor

This career track includes teachers at secondary, higher secondary level and lecturers and professors of colleges and universities. This profession needs communication and mentoring skills. Job perspectives for this job title are always good at any point of time.

Mechanical Engineer

Mechanical engineering is the study of motion, energy and force. The mechanical engineer seeks to control these elements by using a combination of material, human and economic resources to develop mechanical solutions that help satisfy the needs and wants of society.

Physicist / Physics Researcher

Whether you want to explore space, time, matter or the many other intriguing elements of the physical world, this career path is for you. While many physics graduates go on to work within research roles, these are spread across many different industries – including education, automotive and aerospace industries, defense, the public sector, healthcare, energy, materials, technology, computing and even IT.

PERSONALITY TRAITS

Student is likely to have below personality traits and core values -

1. These people are imaginative and open-minded.
2. These people look for possibilities beyond the immediate situation .
3. These people are empathetic and conscientious.
4. These people need a great deal of alone time to reflect and think and tend to keep their feelings close to themselves.
5. They are skilled at understanding the authenticity levels of others.
6. They are curious and excited by variety.
7. They don't like being tied down to a lot of rules, structures, or guidelines.
8. They like to keep their options open

Core Strengths of people with similar intrinsic personalities are -

Empathetic and GenerousThese people care about other people and feel another person's emotions. Because of this sensitivity, these people tend to be thoughtful and kindhearted, and they hate the idea of hurting anyone, even unintentionally.

Open-MindedThese people are tolerent and accepting. They do not judge anyone else's beliefs, lifestyles, or decisions.

CreativeThese people love to see things from unconventional perspectives. They like all sorts of ideas and possibilities and daydreams.

PassionateWhen an idea or movement captures their imagination, these people want to give their whole heart to it. At times, their passion towards new idea makes them accomplish difficult tasks.

IdealisticThese people care deeply for others and believe it is their duty to make a positive impact on the lives of other people in any way they can. These people are capable of great self-sacrifice, and they won't compromise their ethical standards for personal benefit.

Core Weaknesses of people with similar intrinsic personalities are -

Over SensitivityThese people get easily attached emotionally to their friends and other people. This makes them vulnerable to absorbing other people's negative moods or attitudes.

ImpracticalityBecause of their idealistic nature, these people become impractical at times. Sticking to your morals is admirable, but in the real world it may be impossible to accomplish anything unless you can find a way to give and take a little and find practical, if imperfect, solutions to problems.

SelflessnessThese people have a tendency to neglect or suppress their own needs if they believe it is necessary to keep the peace or make others happy. When a person holds his or her insecurities inside for too long, it can eventually cause an emotional breakdown.

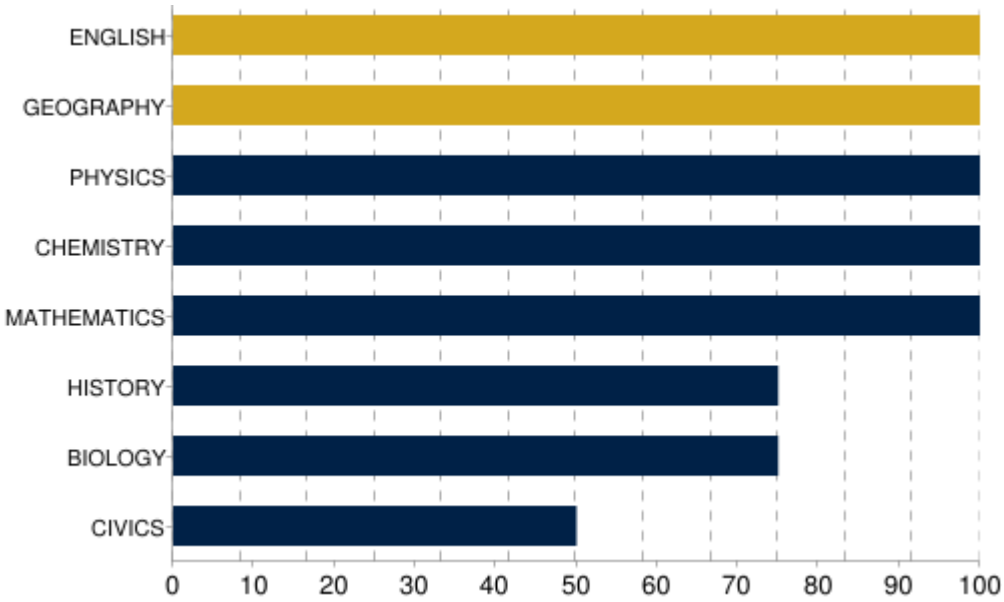
Career Facts:

1. Creativity, originality, and integrity are the things that motivate these people in their career.
2. A quiet place to work, a friendly, caring environment, and an atmosphere of creativity and vision will make them feel at home.

3. They mostly like to select profession, where they can bring their compassion and empathy to others.

4. These people also frequently choose to work in creative and artistic occupations which allow them to think freely and be their unique selves.

COGNITIVE LEVELS



Above chart represents cognitive levels of Student in different subjects.

Core Strengths

ENGLISH

Student has an excellent skills in English and may select English as a primary study stream. English can be studied as an independent study stream. However English is also very much useful in almost every stream of management.
Popular careers for English graduates include:

- Sales and marketing officers - this field is backbone of each and every business and require highly competitive individuals. Good English communication skills along with professional course like MBA helps individual to make good career in this field.

- English Teacher - this field not only needs good English knowledge but also requires strong hold on English literature.

Apart from these fields, strong knowledge of English is required if one wants to pursuit career in News Anchoring, Media and Entertainment, Editor and content management etc.

GEOGRAPHY

Student has an excellent skills in Geography and may select Geography as a primary study stream. Geography can be studied as an independent study stream through courses like M.A or M.Sc. in Geography, Geology, Geophysics etc.
Popular careers for Geography graduates include:
Jobs in government offices for working as a specialist in various departments (this selection mainly takes place through special recruitment public service commission exan drives).
Geography Teachers.

PHYSICS

Student has an excellent skills in Physics and he/she can select Physics as a primary study stream. Physics can either be studied as an independent study stream through courses like M.Sc. in Physics, Astrophysics, Meteorology, Energy Science etc. or through various number of applied stream ranging from Engineering to Medical Physics.
Popular careers through these streams include:

- Physicist (Scientific research in exciting areas like Nano Physics, Superconductivity, Energy Science, Meteorology, Astrophysics, Space Science etc after M.Sc. and Ph.D)

- Various engineering streams ranging from Mechanical Engineering to Aeronautical Engineering (after 12th)

- Jobs in Aeronautical Engineering, Defence organizations like DRDO, Research organizations like ISRO

- Physics Teacher / professor

CHEMISTRY

Student has an excellent skills in Chemistry and he/she can select Chemistry as a primary study stream. Chemistry has large number of applications across many industrie and thus students persuing career in Chemistry rarely face problem of unemployment. Chemistry can either be studied as an independent study stream through courses like M.Sc. in Chemistry or through various number of applied stream ranging from Engineering to Pharmacy.

Popular careers through these streams include:

Jobs in sales, manufacturing and research and development areas in various industries like speciality chemicals, petrochemicals, organic chemistry, paint industry, pharmaceutical companies, ammunation factories, defence sector organizations like drdo etc.

Research Scientist(Scientific research in areas like Material Science, Organic Chemistry, Inorganic Chemistry etc after M.Sc. and Ph.D)

Various engineering streams ranging from Chemical Engineering to Petrochemical Engineering and Plastic Engineering (after 12th)

Chemistry Teacher / professor

MATHEMATICS

Student has an excellent skills in Mathematics and he can select Mathematics as a primary study stream. Mathematics can be studied as an independent study stream.

However, Mathematics is primarily applicable in all streams of engineering, computer science, statistics and accountancy.

Popular careers for mathematics graduates include:

Operational research (the science of improving efficiency and making better decisions)

Statistical research (using advanced mathematical and statistical knowledge to improve the operations of organizations)

Intelligence analysis (analysing data to provide useful, useable information to businesses and governments)

General areas of business and management such as logistics, financial analysis, market

research, management consultancy

Careers in IT such as systems analysis and development or research

Careers in the public sector, as advisory scientists or statisticians

Scientific research and development, in fields such as biotechnology, meteorology or oceanography

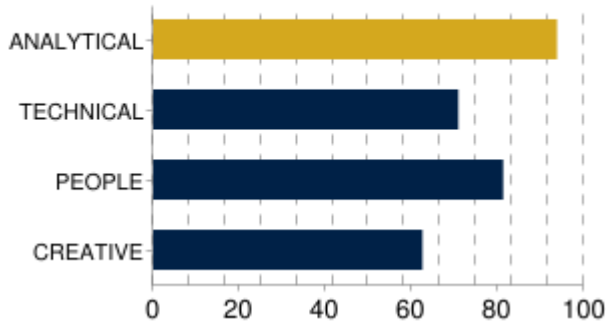
Core Weaknesses

Great! Student has NO weakness area as far as we consider cognitive levels of academic subjects.

Ideally you should be able to complete any curriculum successfully. However, we recommend to follow your strong areas. That is where you have more abilities to excel.

THINKING ORIENTATION

Student's thinking orientation is in given below diagram -



Student's primary thinking orientation is ANALYTICAL Thinking

Strong Areas

- These people do not only find the solution of a problem but always take the best possible approach towards reaching to the solution.
- They are the best people to do the analysis when the situation is critical and complicated.
- They can easily break down the bigger task into smaller tasks and then resolve them independently.
- They take mathematical or other kind of puzzles as a challenge.

Improvement Areas

- They generally do not think of reinventing the wheel. They are best at reusing existing tools. This makes them somewhat weak when it comes to the knowledge of very core part of the subject. Some revisions of core subject matter might help them to improve on this aspect.
- They might not be the best people managers. Their task oriented nature do not allow them to focus more on people whom they are working with. They can create miracles if teamed up with good people managers.

- They might not think of multiple solutions when they find their own solution of a problem.

Career Perspectives

Software Programmer / Architect

Computer programming is all about finding a way to solve typical set of problems. This field requires knowledge of subject matter in order to understand problem statement and a computer programming language. Analytical thinking is one of the key skills required to excel in this career option. Analytical thinking skills of {{student}} will help {{him/her}} in learning programming languages quickly and to analyse the problem statement correctly.

Mathematics / Statistics Instructor

Math teachers work in classrooms in elementary schools, middle schools and high schools. They impart required mathematics curricula to their students, which might include helping them prepare for standardized tests and college entrance exams. Math teachers can train in several ways. Some have bachelor's degrees in education and specialize in mathematics. Others hold bachelor's degrees in mathematics and complete an education program as well. All math teachers in public schools must meet their state's certification or licensing requirements, which usually calls for competency examinations.

Mechanical Engineer

In most of these areas, the mechanical engineer’s goal is to harness or create energy in machines such as boilers, air conditioners and refrigeration equipment. Product design is about designing and manufacturing tangible products, such as engines, personal

computers and dishwashers. Mechanical engineers must be comfortable making decisions. They decide the size, material and shape of every part of a machine or mechanical device. Some decisions are critical to human life, such as those concerning the safety features of an industrial machine or a consumer product.

Physicist / Physics Researcher

The study of physics underlies many pivotal discoveries of the 20th century – including the laser, television, radio, computer technology, and nuclear weapons– and has played a vital role in the development of quantum theory, the theory of relativity, the big bang, and the splitting of the atom.

LEARNING ORIENTATION

Below mentioned are the learning orientation characteristics of Student. These characteristics can be used to make the learning simpler, faster and entertaining.

This will help him/her to learn his/her favourite subjects quickly and to remember his/her learnings for longer durations. This will also help him/her to learn the applications of his favourite areas of interests.

1. These people prefer to engage emotions and aesthetics in learning..
2. They are especially good at theory, particularly when associated with the humanities.
3. These people are independent learners, motivated by interpersonal and human values.
4. They are personal learners, enjoying both abstractions and patterns.
5. These people prefer individualized and personalized approaches to their learning.
6. They are independent learners who prefer to learn outside the confines of the classroom.
7. To engage these people in their learnings, one has to engage emotions within the classroom and provide cooperative and unstructured activities.

CAREER OPTIONS

SOFTWARE PROGRAMMER / ARCHITECT

Computer programming is all about finding a way to solve typical set of problems. This field requires knowledge of subject matter in order to understand problem statement and a computer programming language. Analytical thinking is one of the key skills required to excel in this career option. Analytical thinking skills of {{student}} will help {{him/her}} in learning programming languages quickly and to analyse the problem statement correctly.

Academic Tracks :

- SSC
  - HSC (PCM)
    - B.Sc. (Bachelor of Science - IT, Computer Science, Physics, Mathematics, Statistics)
      - M.Sc. (Master of Sciene - IT, Computer Science, Physics, Mathematics, Statistics)
    - B.C.A. (Bachelor of Computer Applications)

- M.C.A. (Master of Computer Applications)
- B.E. (Bachelor of Engineering - Computer, Mechanical, Production, etc)
  - M.E. (Master of Engineering - Computer, Mechanical, Production, etc)
- B.Tech. (Bachelor of Technology)
  - M.Tech. (Master of Tehnology)

Soft Skills :

Below given is the list of soft skills that is required to build a good career into this field. We recommend to start working on these skills as early as possible as soft skills often take time to be sharpen. Few minutes in a day spent to work on soft skills can boost your career.

1. Positive Attitude
2. Supreme Communication Skills
3. Great at Time and Task Management
4. A Good Team Player
5. High End User Focus

Roles & Responsibilities:

Becoming a software programmer, you'll be playing a key role in the design, installation, testing and maintenance of software systems related to any business area. The programs you create are likely to help businesses be more efficient and provide a better service. Major responsibilities also include providing maintaining systems, providing required support to business and end to end communication with all stake holders. Most of the times Software Programmers work in the team and hence team work becomes essential part of these jobs.

Nature Of Job :

These jobs involve working in a corporate office. These are one of the most highly paid jobs in India. These jobs do not required field work and lot of travelling however long working hours and deadlines with mental stress is part of these jobs. But if you are passionate towards computer programming, you will enjoy this job. Challenging part of this job is to keep yourself updated as programming languages and related technologies keep changing and upgrading continuously. You often need to keep yourself updated with latest technological trends. Lack of physical work in office hours may cause some issues. But most of the employers provide gym facilities and recreation areas inside their office premises nowadays in order to take care of their employees.

Future Scope & Responsibilities:

Workforce demand for software engineers will rise along with technological advancement and the growing ubiquity of software. For example, rapid adoption of cloud technologies is driving demand for software engineers who can build secure and scalable cloud programs. Likewise, as the proliferation of computer systems continues and software spreads into new industries and smart devices, the need to develop the computer systems that power these initiatives will create jobs for software engineers. We see lot of new jobs in this career stream within next 10 years.

Key Threats:

1. These jobs have high correlation with global economies and markets. Any or major financial decline in countries like US and Europe might cause job cuts in IT industry of India. Indian IT industry has gone through this scenario in 2008-10 and we do not decline this not to happen again.
2. Automation and Artificial Intelligence is growing with fast speed. This might cause job reduction in Software Programming field. However we strongly believe that this will open new windows of opportunities in longer duration.

Jobs In India:

Multinational IT companies in India such as Tata Consultancy Services, Infosys, Wipro, HCL and many others are one of the largest employment providers in India. Every year Indian IT companies actively recruit new Software Engineers in their organizations.

Start Working On:

1. Solve analytical puzzles, try to link the logical pieces together
2. Solve as many mathematical challenges as you can
3. Read newspaper, Listen to English News channels and debates, Watch English movies, Write essays in English, Practice communicating in English, learn new foreign language (French, Spanish, German, Japanese, etc) if possible
4. Read blogs and news articles related to technological trends.
5. Start learning a programming language and simple algorithms.
6. Read programming language books (refer below list) to learn a new language and if you have computer at home, try to write programs to solve some simple problems.

Recommended Books:

1. Programming Pearls - Jon Bentley
2. HTML for Babies - John C. Vanden-Heuvel, Sr.
3. Hello Ruby: Adventures in Coding - Linda Liukas
4. Coding Games in Scratch - Jon Woodcock
5. Python for Kids: A Playful Introduction to Programming - Jason R. Briggs

Success Stories:

1. Elon Musk

Elon Musk is best known as the famous CEO of Tesla Motors and SpaceX. He got his start with computers. At the age of 12 he began teaching himself to program which later paved the way for the launch of his first company, Zip2. He went on to become a co-founder of PayPal, and then Tesla Motors.

2. Larry Page

Larry Page and co-founder Sergey Brin to thank for the trusty search engine - Google. While at Stanford, Page started Google as a research project, and Brin joined in. The two soon discovered that their project could be used to build a search engine the likes of which no one had ever seen.

3. Mark Zuckerburg

One of the most recognized names on the list, Zuckerburg is the founder of the most widelyused social networking tool of our era Facebook. Zuckerburg started Facebook in his Harvard dorm room as an exclusive site for Harvard students.

4. Jeff Bezos

Jeffrey Preston Bezos is an American technology entrepreneur, investor, and philanthropist. He is the founder, chairman, CEO, and president of Amazon.

Narayan Murthy

5 Nagavara Ramarao Narayana Murthy, commonly referred to as Narayana Murthy, is an Indian IT industrialist and the co-founder of Infosys, a multinational corporation providing business consulting, technology, engineering, and out sourcing services.

6 Vijay Pandurang Bhatkar

He is an Indian computer scientist, IT leader and educationalist. He is best known as the architect of India's national initiative in supercomputing where he led the development of Param supercomputers. He is a Padma Bhushan, Padma Shri and Maharashtra Bhushan awardee.

MATHEMATICS / STATISTICS INSTRUCTOR

Math teachers work in classrooms in elementary schools, middle schools and high schools. They impart required mathematics curricula to their students, which might include helping them prepare for standardized tests and college entrance exams. Math teachers can train in several ways. Some have bachelor's degrees in education and specialize in mathematics. Others hold bachelor's degrees in mathematics and complete an education program as well. All math teachers in public schools must meet their state's certification or licensing requirements, which usually calls for competency examinations.

Academic Tracks :

- SSC
  - HSC (PCM)
    - B.Sc. (MATHEMATICS, STATISTICS)
      - M.Sc. (MATHEMATICS, STATISTICS)
        - NET / SET
        - M.PHIL
        - Ph.D

- B.Ed.
    - M.Ed.
- D.Ed.

Soft Skills :

Below given is the list of soft skills that is required to build a good career into this field. We recommend to start working on these skills as early as possible as soft skills often take time to be sharpen. Few minutes in a day spent to work on soft skills can boost your career.

1. Communication
2. Team work
3. Problem solving
4. Social Intelligence
5. Emotional Intelligence
6. Cultural Competence

Roles & Responsibilities:

Teachers play vital roles in the lives of the students in their classrooms. Teachers are best known for the role of educating the students that are placed in their care. Beyond that, teachers serve many other roles in the classroom. Teachers set the tone of their classrooms, build a warm environment, mentor and nurture students, become role models, and listen and look for signs of trouble. One of the primary roles of Mathematics teacher is to teach complicated mathematical concepts to students and to improve mathematical thinking capability in students.

Nature Of Job :

1. Highly intellectual job 2. No field works 3. Continuous learning 4. Up gradation to latest trends in mathematics / statistics and teaching methodologies 5. Research and development in mathematics / statistics 6. To attend research conferences and seminars 7. To write research papers / white papers in mathematics / statistics 8. Require lot of patience to solve queries of students 9. Responsibility of conveying knowledge 10. Pressure of adhering timelines and completing syllabus mentioned in curriculum program 11. Pressure of good academic results of the school

Future Scope & Responsibilities:

Key Threats:

There is tough competition for getting a job as a teacher or lecturer in India. Number of students doing professional courses like B.Ed. or D.Ed. to that of jobs created is not in good proportion. However, we expect government to take suitable action to improve the situation. Government is not taking concrete decision on whether a person applying for the post of lecturer should qualify SET (State Eligibility Test) or NET (National Eligibility Test) or whether research degrees like M.Phil. And Ph.D. are enough. We also expect government to take concrete stance in this area.

Jobs In India:

Jobs in government and private schools and universities and research institutes. One can also work as a private tutor and be self-employed professional.

Start Working On:

1. Read recent trends in mathematics, statistics and applied mathematics
2. Read educational magazines
3. Work on crisp and clear communication
4. Learn some educational games and toys

Recommended Books:

1. Teach Like Your Hairs on Fire - Rafe Esquith
2. The Number Devil - Hans Magnus Enzensberger
3. A Gebra Named Al - Wendy Isdell

Success Stories:

1. Julia Robinson

   Julia Hall Bowman Robinson was an American mathematician noted for her contributions to the fields of computability theory and computational complexity theoryâmost notably in decision problems.

2. Leonhard Euler

   Leonhard Euler was a Swiss mathematician, physicist, astronomer, logician and engineer, who made important and influential discoveries in many branches of mathematics, such as infinitesimal calculus.

3. John Forbes Nash Jr.

   John Forbes Nash Jr. was an American mathematician who made fundamental contributions to game theory, differential geometry, and the study of partial differential equations. Nash's work has provided insight into the factors that govern chance and decision-making inside complex systems found in everyday life.

MECHANICAL ENGINEER

In most of these areas, the mechanical engineer's goal is to harness or create energy in machines such as boilers, air conditioners and refrigeration equipment. Product design is about designing and manufacturing tangible products, such as engines, personal computers and dishwashers. Mechanical engineers must be comfortable making decisions. They decide the size, material and shape of every part of a machine or mechanical device. Some decisions are critical to human life, such as those concerning the safety features of an industrial machine or a consumer product.

Academic Tracks :

- SSC
  - HSC (PCM)
    - B.E. (Mechanical / Production / Instrumentation)
      - M.E.
    - B.Tech.
      - M.Tech. (Master of Tehnology)

Soft Skills :

Below given is the list of soft skills that is required to build a good career into this field. We recommend to start working on these skills as early as possible as soft skills often take time to be sharpen. Few minutes in a day spent to work on soft skills can boost your career.

1. Problem solving ability
2. Creativity for developing and designing products
3. Good Communication Skills
4. Teamwork - Mechanical engineering involves teamwork with a diverse team of people to solve problems.
5. Logical and reasoning abilities and strong analytical and mathematical skills

Roles & Responsibilities:

This job includes tasks like Product Design, Research and Development, Manufacturing, Systems Management and Energy Management. Mechanical engineers typically do the following: Analyze problems to see how mechanical and thermal devices might help solve a particular problem Design or redesign mechanical and thermal devices or subsystems, using analysis and computer-aided design Investigate equipment failures or difficulties to diagnose faulty operation and to recommend remedies Develop and test prototypes of devices they design Analyze the test results and change the design or system as needed Oversee the manufacturing process for the device

Nature Of Job :

These jobs involve working on machines in workshops. These are one of the decently paid jobs in India. These jobs require physical work and long working hours. Targets with deadlines are also part of these jobs. Challenging part of this job is to keep yourself updated as a technologist. You often need to keep yourself updated with latest technological trends. Like other engineers, mechanical engineers use computers

extensively. Mechanical engineers are routinely responsible for the integration of sensors, controllers, and machinery. Computer technology helps mechanical engineers create and analyze designs, run simulations and test how a machine is likely to work, interact with connected systems, and generate specifications for parts.

Future Scope & Responsibilities:

There are always plenty of opportunities for mechanical engineers in the fields of aerospace engineering, automotive engineering, energy sector, manufacturing industries, railway engineering and so on. Government organizations like ONGC also do recruit mechanical engineers through competitivie exams.

Key Threats:

1. Growing competitive pressures from peer companies and employees in same organization leads to high competition in career growth.
2. Introduction of a new and better product by a competitor sometimes leads to job cuts.
3. Trade barriers and price wars often results in business instability for the organization and employees may have to face the consequences.

Jobs In India:

India is a fast growing economy and there will be many more job opportunities for mechanical engineers in next 20 years - escpecially in infrastructure and manufacturing sectors. Government of India has now started focusing on manufacturing sector and this will lead to more job opportunities for mechanical and electronics engineers. Moreover, government also conducts recruitment drives for mechanical engineers in different PSUs, Railways and Defence sectors. Job advertisements are posted in Employment News time to time.

Start Working On:

Try to understand internal mechanism of small household devices and machines

(with parental guidance if required)

2. Improve knowldge of hows and whys of internal mechanisms of machines
3. Understand concepts of aerodynamics, thermodynamics etc.
4. Visit mechanical manufacturing nearby your place and try to understand how people work in such factories.
5. Start learning design softwares like CAD.

Recommended Books:

1. Engineering Vibration - Daniel J. Inman
2. Industrial Automation - Hands On - Frank Lamb
3. The Finite Element Method - Linear Static and Dynamic Finite Element Analysis - Thomas J. R. Hughes
4. Mechanical and Electrical Systems in Architecture, Engineering and Construction - Frank R. Dagostino, Joseph B. Wujek

Success Stories:

Rudolf Diesel

Rudolf Christian Karl Diesel was a German inventor and mechanical engineer, famous for the invention of the Diesel engine. Diesel understood thermodynamics and the theoretical and practical constraints on fuel efficiency. He knew that as much as 90% of the energy available in the fuel is wasted in a steam engine. His

work in engine design was driven by the goal of much higher efficiency ratios. In his engine, fuel was injected at the end of the compression stroke and was ignited by the high temperature resulting from the compression. From 1893 to 1897, Heinrich von Buz, director of MAN SE in Augsburg, gave Rudolf Diesel the opportunity to test and develop his ideas. The first successful Diesel engine ran in 1897 and is now on display at the German Technical Museum in Munich.Rudolf Diesel obtained patents for his design in Germany and other countries, including the United States. He was inducted into the Automotive Hall of Fame in 1978.

2

Willis Carrier

Willis Haviland Carrier (November 26, 1876 – October 7, 1950) was an American engineer, best known for inventing modern air conditioning. Carrier invented the first electrical air conditioning unit in 1902. In 1915, he founded Carrier Corporation, a company specializing in the manufacture and distribution of heating, ventilation, and air conditioning (HVAC) systems.

3

Karl Benz

Karl Friedrich Benz was a German engine designer and automotive engineer. His Benz Patent Motorcar from 1885 is considered the first practical automobile. He received a patent for the motorcar in 1886. Karl Benz showed his real genius, however, through his successive inventions registered while designing what would become the production standard for his two-stroke engine. Benz soon patented the speed regulation system, the ignition using sparks with battery, the spark plug, the carburetor, the clutch, the gear shift, and the water radiator.

Robert Stephenson

4

Robert Stephenson was an early railway engineer. The only son of George Stephenson, the 'Father of Railways', he built on the achievements of his father. Robert has been called the greatest engineer of the 19th century.

5

Suhas Patankar

Suhas V. Patankar (born 22 February 1941) is an Indian mechanical engineer. He is a pioneer in the field of computational fluid dynamics (CFD) and Finite volume method. He is currently a Professor Emeritus at the University of Minnesota. He is also president of Innovative Research, Inc. Patankar's most important contribution to the field of CFD is the SIMPLE algorithm that he developed along with his colleagues at Imperial College. Patankar is the author of a book in computational fluid dynamics titled Numerical Heat Transfer and Fluid Flow which was first published in 1980. This book has since been considered one of the groundbreaking contributions to computational fluid dynamics due to its emphasis on physical understanding and insight into the fluid flow and heat transfer phenomena. He is also one of the most cited authors in science and engineering.

PHYSICIST / PHYSICS RESEARCHER

The study of physics underlies many pivotal discoveries of the 20th century – including the laser, television, radio, computer technology, and nuclear weapons– and has played a vital role in the development of quantum theory, the theory of relativity, the big bang, and the splitting of the atom.

Academic Tracks :

- SSC
    - HSC (With Physics and Maths)
        - B.Sc.(Physics/Astrophysics)
            - M.Sc.(Physics/Astrophysics)
        - Ph.D.(Physics)

Soft Skills :

Below given is the list of soft skills that is required to build a good career into this field. We recommend to start working on these skills as early as possible as soft skills often take time to be sharpen. Few minutes in a day spent to work on soft skills can boost your career.

1. Strong Mathmatical aptitude and abilities - remember Mathematics is the language of Physics
2. Analytical thinking skills
3. Ability to think clearly using logic and reasoning
4. Good verbal communication skills
5. Excellent writing skills
6. Understanding of computer systems and applications

Roles & Responsibilities:

On a large scale, physicists are responsible for designing experiments, implementing them using the scientific method and drawing conclusions which will be beneficial to the advancement of science and industry. Writing and publishing research papers is also part of their job. A physicist can also educate others in advanced, intermediate and basic physics.

Nature Of Job :

Job of researcher involves highly intellectual tasks including building complex theories, laboratory experiments and publishing results in research magazines. Long working hours and continuous laboratory / observatory work in part of their daily job.

Future Scope & Responsibilities:

Physicists are one of the highly respected individuals in the world. They are known for their high intellectual abilities, hard work and persistance. Organizations like NASA, Europian Space Agency and CERN keep recruiting Physicists for their research projects. Also organizations like Tesla, Ford etc are highly dependent on Physicists and Engineers for their new inventions and patents.

Key Threats:

This job demands long working hours which may build up mental pressure on researcher. Work environment is often limited to laboratory. One may feel disconnected from rest of the society while working on certain research project. Another threat is that our government unfortunately does not spend large amount of money on research and development and thus job opportunities remain limited for physicists in our country. However, Government of India has now started allocating more and more funds to the sectors like Space Physics, Energy Science and Nanotechnology and we hope that we will need more Physicists to serve our country in upcoming years.

Jobs In India:

Reasearch Institutes like ISRO, Indian Institute of Science, BARC, TIFR etc are always in search of Physicists and they recruit University Students as entry level researchers in their organizations. India will need innovative way of creating energy and we will have more demand of researchers in the area of Energy Science, Material Physics and Nanotechnology. Also India is one of the leading country in the area of Space Science and we will need more Physicists to work in Space Science, Astronomy and Astrophysics in upcoming years. Physicists also do work as professors in all Indian universities and do teach post graduate students.

Start Working On:

1. Try to know hows and whys of universe and world around you.)
2. Start reading biographies of Physicists.
3. Start performing small experiments related to Physics around you
4. Watch documentaries related to amazing world of Physics, Astronomy and Cosmology

5. Visit Physics Research Laboratories and Obervatories nearby your place.

Recommended Books:

1. For the Love of Physics - From the End of the Rainbow to the Edge Of Time - A Journey Through the Wonders of Physics - Walter Lewin
2. From Classical to Quantum Fields - Laurent Baulieu, John Iliopoulos, Roland Seneor
3. The Philosophy of Physics - Dean Rickles
4. The Amateur Scientist - C.L. Stong
5. Fundamentals of Physics - R. Shankar

Success Stories:

1. Albert Einstein

   Albert Einstein was a German-born theoretical physicist who developed the theory of relativity, one of the two pillars of modern physics (alongside quantum mechanics). His work is also known for its influence on the philosophy of science. He is best known to the general public for his mass–energy equivalence formula E = mc2, which has been dubbed 'the world's most famous equation' He received the 1921 Nobel Prize in Physics for his services to theoretical physics, and especially for his discovery of the law of the photoelectric effect a pivotal step in the development of quantum theory.

2

Sir Isaac Newton

Sir Isaac Newton was an English mathematician, physicist, astronomer, theologian, and author (described in his own day as a "natural philosopher") who is widely recognised as one of the most influential scientists of all time and as a key figure in the scientific revolution. His book Philosophiæ Naturalis Principia Mathematica (Mathematical Principles of Natural Philosophy), first published in 1687, laid the foundations of classical mechanics. Newton also made seminal contributions to optics, and shares credit with Gottfried Wilhelm Leibniz for developing the infinitesimal calculus. In Principia, Newton formulated the laws of motion and universal gravitation that formed the dominant scientific viewpoint until it was superseded by the theory of relativity. Newton used his mathematical description of gravity to prove Kepler's laws of planetary motion, account for tides, the trajectories of comets, the precession of the equinoxes and other phenomena, eradicating doubt about the Solar System's heliocentricity. He demonstrated that the motion of objects on Earth and celestial bodies could be accounted for by the same principles. Newton's inference that the Earth is an oblate spheroid was later confirmed by the geodetic measurements of Maupertuis, La Condamine, and others, convincing most European scientists of the superiority of Newtonian mechanics over earlier systems.

Stephen Hawking

Stephen Hawking was an English theoretical physicist, cosmologist, and author who was director of research at the Centre for Theoretical Cosmology at the University of Cambridge. He was the Lucasian Professor of Mathematics at the University of Cambridge between 1979 and 2009. Hawking's scientific works included a collaboration with Roger Penrose on gravitational singularity theorems in the framework of general relativity and the theoretical prediction that black

holes emit radiation, often called Hawking radiation. Hawking was the first to set out a theory of cosmology explained by a union of the general theory of relativity and quantum mechanics. He was a vigorous supporter of the many-worlds interpretation of quantum mechanics.

4

Richard Feynman

Richard Feynman was an American theoretical physicist, known for his work in the path integral formulation of quantum mechanics, the theory of quantum electrodynamics, the physics of the superfluidity of supercooled liquid helium, as well as his work in particle physics for which he proposed the parton model. For contributions to the development of quantum electrodynamics, Feynman received the Nobel Prize in Physics in 1965 jointly with Julian Schwinger and Shin'ichiro Tomonaga. Feynman developed a widely used pictorial representation scheme for the mathematical expressions describing the behavior of subatomic particles, which later became known as Feynman diagrams. During his lifetime, Feynman became one of the best-known scientists in the world. In a 1999 poll of 130 leading physicists worldwide by the British journal Physics World, he was ranked as one of the ten greatest physicists of all time.

Marie Curie

Marie Curie was a Polish and naturalized-French physicist and chemist who conducted pioneering research on radioactivity. She was the first woman to win a Nobel Prize, the first person and the only woman to win the Nobel Prize twice, and the only person to win the Nobel Prize in two different scientific fields. She was part of the Curie family legacy of five Nobel Prizes. She was also the first woman to become a professor at the University of Paris, and in 1995 became the first woman to be entombed on her own merits in the Panthéon in Paris. Her achievements

include the development of the theory of 'radioactivity' (a term she coined), techniques for isolating radioactive isotopes, and the discovery of two elements, polonium and radium. Under her direction, the world's first studies were conducted into the treatment of neoplasms using radioactive isotopes. She founded the Curie Institutes in Paris and in Warsaw, which remain major centres of medical research today. During World War I she developed mobile radiography units to provide X-ray services to field hospitals.

6

Sir C. V. Raman

Sir C. V. Raman was an Indian physicist who made groundbreaking works in the field of light scattering. With his student K. S. Krishnan, he discovered that when light traverses a transparent material, some of the deflected light change wavelength and amplitude. This phenomenon was a new type of scattering of light and was subsequently known as the Raman effect (Raman scattering). His works earned him the 1930 Nobel Prize in Physics and was the first non-white, Indian or Asian person to receive a Nobel Prize in any branch of science.

7

Satyendra Nath Bose

was an Indian mathematician and physicist specialising in theoretical physics. He is best known for his work on quantum mechanics in the early 1920s, collaboration with Albert Einstein in developing the foundation for Bose–Einstein statistics and the theory of the Bose–Einstein condensate. A Fellow of the Royal Society, he was awarded India's second highest civilian award, the Padma Vibhushan in 1954 by the Government of India.

Jayant Narlikar

8

Jayant Vishnu Narlikar is an Indian astrophysicist. He developed with Sir Fred Hoyle the conformal gravity theory, known as Hoyle–Narlikar theory. It synthesises Albert Einstein's theory of relativity and Mach's principle. It proposes that the inertial mass of a particle is a function of the masses of all other particles, multiplied by a coupling constant, which is a function of cosmic epoch.

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