

http://petsngardens.com/file/2014/01/Enjying-With-Familiy.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

**Nanotechnology** may be able to create many new materials and devices with a vast range of applications, such as in medicine, electronics, biomaterials and energy production. On the other hand, nanotechnology raises many of the same issues as any new technology, including concerns about the toxicity and environmental impact of nanomaterials, and their potential effects on global economics, as well as speculation about various doomsday scenarios. These concerns have led to a debate among advocacy groups and governments on whether special regulation of nanotechnology is warranted.

Adapted from http://en.wikipedia.org/wiki/Nanotechnology; 26.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Engineering: mechanical, electrical engineering

2



http://www.walksofitaly.com/blog/wp-content/uploads/2012/08/countryside-ancona-marche.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

#### Grand Challenges for Engineering

What are the great problems that future engineers will need to solve? The NAE received input from 40 countries in a major visioning exercise to highlight what areas of engineering will have great potential for improving mankind's quality of life. To address these Grand Challenges for Engineering, it will take engineering professionals with both a breadth and depth of knowledge, strong leadership, and a dedication to the public good. Challenges:

- Make solar energy economical
- Provide energy from fusion
- Provide access to clean water
- Restore and improve urban infrastructure
- Prevent nuclear terror

Adapted from http://www.raisethebarforengineering.org/future-engineer#Engineer of 2020; 26.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

#### Transport

### 3



http://www.ssdomzale.si/images/banners/SSD-glava.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

#### Journal of mechanical engineering

The international journal publishes original and (mini)review articles covering the concepts of materials science, mechanics, kinematics, thermodynamics, energy and environment, mechatronics and robotics, fluid mechanics, tribology, cybernetics, industrial engineering and structural analysis.

The journal follows new trends and progress proven practice in the mechanical engineering and also in the closely related sciences as are electrical, civil and process engineering, medicine, microbiology, ecology, agriculture, transport systems, aviation, and others, thus creating a unique forum for interdisciplinary or multidisciplinary dialogue.

Adapted from www.sv-jme.eu/journal-information; 26.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Shipyard



http://www.sspilates.ca/wp-content/uploads/2011/02/canada-health-guide-kids.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

The International Journal of Materials Engineering strives to publish articles related to fundamental properties of engineering materials, mechanical characterization, how they are controlled by processing, formed, joined and finished, and how all of these factors influence the selection and design of materials in real-world engineering applications. Subject areas suitable for publication include, but are not limited to the following fields: Biomaterials, materials in industry, energy materials analysis, nuclear energy materials, semiconductor materials, electronic and magnetic materials, crystallography, mechanical behavior of materials, microtechnology, nanotechnology, textile reinforced materials.

Adapted from http://www.sapub.org/Journal/aimsandscope.aspx?journalid=1077, 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Safety at work (accident investigation)



http://www.tc.gc.ca/media/images/marinesafety/col-amsee.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

#### **Preventive maintenance** (PM) has the following meanings:

1. The care and servicing by personnel for the purpose of maintaining equipment and facilities in satisfactory operating condition by providing for systematic inspection, detection, and correction of incipient failures either before they occur or before they develop into major defects.

2. Maintenance, including tests, measurements, adjustments, and parts replacement, performed specifically to prevent faults from occurring. The primary goal of maintenance is to avoid or mitigate the consequences of failure of equipment. This may be by preventing the failure before it actually occurs.

Adapted from http://en.wikipedia.org/wiki/Preventive\_maintenance, 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

**Racing bicycle** 

6



http://moj-dom.me/wp-content/themes/advanced-newspaper/timthumb.php?src=http%3A%2F%2Fmoj-dom.me%2Fwpcontent%2Fuploads%2F2012%2F11%2Fz.jpg&q=90&w=479&zc=1

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

A **seat belt**, also known as a **safety belt**, is a vehicle safety device designed to secure the occupant of a vehicle against harmful movement that may result during a collision or a sudden stop. A seat belt functions to reduce the likelihood of death or serious injury in a traffic collision by reducing the force of secondary impacts with interior strike hazards, by keeping occupants positioned correctly for maximum effectiveness of the airbag (if equipped) and by preventing occupants being ejected from the vehicle in a crash or if the vehicle rolls over.

Adapted from http://en.wikipedia.org/wiki/Seat\_belt; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Mechanisms



http://siol.sdn.si/sn/img/09/227/633859372876033597\_promet2.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

Solar Flight's latest endeavor first caught our attention back in October 2012, when project leader Eric Raymond announced plans to manufacture a solar airplane powerful and aerodynamic enough to carry two people. A successful Kickstarter campaign has brought Raymond one step closer to fulfilling this vision, completing construction and taking flight with the Sunseeker Duo on December 17, 2013.

In the time since, the team has tested the different aspects of the plane's performance such as monitoring the battery system, motor, propeller, folding hub mechanism and landing gear retraction systems. Some instability during unpowered test flights was initially observed, prompting the addition of extra solar cells to the horizontal stabilizer.

Adapted from http://www.gizmag.com/sunseeker-duo-takes-flight/31751/; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

**Forces in engineering** 

8



http://svetovalnicakameleon.si/wp-content/uploads/2011/11/teens.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

A **racing bicycle**, also known as a **road bike**, is a bicycle designed for competitive road cycling, a sport governed by according to the rules of the Union Cycliste Internationale (UCI). The UCI rules were altered in 1934.

The most important characteristics about a racing bicycle are its weight and stiffness which determine the efficiency at which the power from a rider's pedal strokes can be transferred to the drive-train and subsequently to its wheels. To this effect racing bicycles may sacrifice comfort for speed. The drop handlebars are positioned lower than the saddle in order to put the rider in a more aerodynamic posture. The front and back wheels are close together so the bicycle has quick handling.

Adapted from http://en.wikipedia.org/wiki/Racing\_bicycle; 27.4.2014 TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

**Central heating** 

9



http://shrani.si/f/3q/41/3vUKTMND/mediji.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

#### The Nine "Rules of the Garage"

- 1. Work quickly, keep the tools unlocked, work whenever.
- 2. Know when to work alone and when to work together.
- 3. Share tools, ideas. Trust your colleagues.
- 4. No Politics. No bureaucracy. (These are ridiculous in a garage.)
- 5. The customer defines a job well done.
- 6. Radical ideas are not bad ideas.
- 7. Invent different ways of working.
- 8. Make a contribution every day; if it doesn't contribute, it doesn't leave the garage.
- 9. Believe that together we can do anything and invent.

Adapted from http://en.wikipedia.org/wiki/Rules\_of\_the\_garage; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Washing machine





http://www.hotel-azul.si//albums/4fb7e35ea4afb.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

#### How to give instructions:

Clearly this is the primary role of the user manual. It is critical that the instructions are easy to read and are understandable by all users. Many user manuals have instructions that are incomplete, incorrect, or simply have no bearing on the actual product.

- Provide step-by-step sequences in the correct order.
- Provide visual stepping stones (e.g. Step 1, Step 2 etc.)
- Avoid lengthy paragraphs.
- Use everyday words and terms: avoid jargon.
- Check that the instructions match the actual product.
- Explain symbols, icons and codes early.

Adapted from http://www.userfocus.co.uk/articles/usermanuals.html; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

#### Laser technology



http://img.hgtv.com/HGTV/2011/03/17/iStock-12247220\_Child-uses-gardening-tools\_s4x3\_lg.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

Corrosion can be defined as the degradation of a material due to a reaction with its environment. Degradation implies deterioration of physical properties of the material. This can be a weakening of the material due to a loss of cross-sectional area, it can be the shattering of a metal due to hydrogen embrittlement, or it can be the cracking of a polymer due to sunlight exposure.

Materials can be metals, polymers (plastics, rubbers, etc.), ceramics (concrete, brick, etc.) or composites-mechanical mixtures of two or more materials with different properties.

Adapted from http://corrosion.ksc.nasa.gov/corr\_fundamentals.htm; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Automation technology



http://www.revijaanja.si/files/2011/06/aktivna-druzina/uvodna.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

A motorcycle (also called a motorbike, bike, moto or cycle) is a two or three wheeled motor vehicle. Motorcycle design varies greatly to suit a range of different purposes: long distance travel, navigating urban traffic, cruising, sport, racing and off-road riding. Statistically, there is a large difference between the car-dominated developed world, and the more populous developing world where cars are less common than motorcycles. In the developed world, motorcycles are mainly a luxury good, used mostly for recreation, as a lifestyle accessory, or a symbol of personal identity, while in developing countries motorcycles are overwhelmingly utilitarian.

Adapted from http://en.wikipedia.org/wiki/Motorcycle; 27.4.2014

TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Refrigerator

http://dwellingintheword.files.wordpress.com/2013/09/pr27-friends.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

In the technology world, the latest advancement is only as good as the next thing coming down the line. The auto industry is constantly bringing us new technologies, whether it be for safety, entertainment, usefulness or simply for pure innovation. Many new car technologies are either specifically built for safety or at least have some sort of safety focus to them. Some of the latest car innovations we've found are some truly exciting technologies that could revolutionize not just the automotive industry but human transportation in general. Some of it will help keep us safe, some will give us information like never before and some will let us kick back and just enjoy the ride.

Adapted from http://auto.howstuffworks.com/under-the-hood/trends-innovations/5-future-car-technologies.htm; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Portable generator

14



http://1.bp.blogspot.com/\_J7r9VXWUFOg/S\_LkRomevpI/AAAAAAAAAAA/feI0T5xZ4iQ/s1600/berlitz1.jpg: 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

Another recent asphalt advance has been the development of coloured or textured surfaces. These are increasingly used as a safety mechanism to make it easier for drivers to identify lanes set aside for special uses, such as bus lanes, bus stops and cycle paths. Coloured asphalt is also used to alert driver attention to dangerous areas, such as hidden junctions or sharp bends, as well as areas requiring special safety precautions, such as outside schools. Asphalt is 100% recyclable and is routinely milled and re-laid along with fresh materials, saving money and preserving non-renewable natural resources.

Adapted from http://www.eurobitume.eu/bitumen/applications/application-roads/benefits; 27.4.2014

TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Plants for generating electricity

15



http://files.coloribus.com/files/adsarchive/part\_134/1344005/file/language-school-styria-hat-small-82646.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

Computer-aided design (CAD) is the use of computer systems to assist in the creation, modification, analysis, or optimization of a design. CAD software is used to increase the productivity of the designer, improve the quality of design, improve communications through documentation, and to create a database for manufacturing. CAD output is often in the form of electronic files for print, machining, or other manufacturing operations.

Computer-aided design is used in many fields. Its use in designing electronic systems is known as Electronic Design Automation, or EDA. In mechanical design it is known as Mechanical Design Automation (MDA) or computer-aided drafting (CAD), which includes the process of creating a technical drawing with the use of computer software.

Adapted from http://en.wikipedia.org/wiki/Computer-aided\_design; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Cars

### 16



http://www.itcmazara.it/comenius-hermes/images/the\_perfect\_european.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

Maintenance, repair and operations (MRO) or maintenance, repair, and overhaul involves fixing any sort of mechanical, plumbing or electrical device should it become out of order or broken (known as repair, unscheduled, or casualty maintenance). It also includes performing routine actions which keep the device in working order (known as scheduled maintenance) or prevent trouble from arising (preventive maintenance). MRO may be defined as, "All actions which have the objective of retaining or restoring an item in or to a state in which it can perform its required function. The actions include the combination of all technical and corresponding administrative, managerial, and supervision actions."

Adapted from http://en.wikipedia.org/wiki/Maintenance,\_repair,\_and\_operations; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Maglev train (Magnetic levitation train)

17



http://warnet.ws/img3/224/frog/2.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

There seem to be a lot of new and recent supercars that should be affordable. Don't think we don't appreciate what it takes to produce the finer things, but this economy has us rethinking what's necessary in ways we never imagined. Cars that command six figures based on name and/or outright speed are tougher sells.

The cars that follow are viewed in a slightly different way. They're still great. We'd take any or all of them in a heartbeat, given the chance. However, the highlighted traits we've classified as character in the past are beginning to appear as flaws -- or if you like, opportunities for more market-agreeable pricing.

Adapted from http://www.askmen.com/top\_10/cars/top-10-supercars-that-should-be-affordable.html; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Maintenance



https://fbcdn-sphotos-h-a.akamaihd.net/hphotos-ak-frc3/t1.0-9/s403x403/1902062\_10152255578054042\_1348413415\_n.jpg

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

A thermal power station is a power plant in which the prime mover is steam driven. Water is heated, turns into steam and spins a steam turbine which drives an electrical generator. After it passes through the turbine, the steam is condensed in a condenser and recycled to where it was heated; this is known as a Rankine cycle. The greatest variation in the design of thermal power stations is due to the different fossil fuel resources generally used to heat the water. Some prefer to use the term energy center because such facilities convert forms of heat energy into electrical energy.

Adapted from http://en.wikipedia.org/wiki/Thermal\_power\_station; 27.4.2014

TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Repairs



http://static.guim.co.uk/sys-images/Guardian/Pix/site\_furniture/2010/11/2/1288718299681/Weather-scenes-001.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

Robotics is the branch of technology that deals with the design, construction, operation, and application of robots as well as computer systems for their control, sensory feedback, and information processing. These technologies deal with automated machines that can take the place of humans in dangerous environments or manufacturing processes, or resemble humans in appearance, behavior, and/or cognition. Many of today's robots are inspired by nature contributing to the field of bio-inspired robotics. Throughout history, robotics has been often seen to mimic human behavior, and often manage tasks in a similar fashion. Today, robotics is a rapidly growing field, as technological advances continue, research, design, and building new robots serve various practical purposes, whether domestically, commercially, or militarily. Many robots do jobs that are hazardous to people such as defusing bombs, mines and exploring shipwrecks.

Adapted from http://en.wikipedia.org/wiki/Robotics; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Waste recycling plant



#### TASK 2: Read the text and be prepared to discuss it with the examiner.

- The principles of safety engineering are to identify potential safety risks and mitigate them. Mitigation includes reducing the odds of accidents occurring or reducing the severity of an accident once it occurs. This process is accomplished by changing the product design to prevent dangerous failures from occurring. Safety measures also are added to protect people if a hazard does occur.
- Fire safety engineering or fire protection engineering minimizes the risk of buildings catching fire or collapsing during a fire.

Adapted from http://www.ehow.com/facts\_6821882\_definition-safety-engineering.html; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

#### **Careers in engineering**



http://papermed.com/wp-content/uploads/2012/04/muscle-twitching-all-over-body1.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

Also in the mechanical engineering sector, the advantages of laser welding are well known. Together with specialized service providers, ALPHA LASER has developed laser devices to be used primarily for repairs of machines. The ALPHA LASER systems are particularly suitable for repairs of camshaft and crankshaft, compressor rotors, turbine rotors, gearwheel, rollers and casing parts.

The benefits are obvious: The properties of the Basis material remain preserved after welding. There is no coarse grain Formation in the material due to the limited heataffected-zone of the laser (only the tenth of a Millimeter). For weldings at room temperature, no thermal treatment is necessary. Further advantages are the possibility of welding at room temperature without thermal pre-treatment of the basis material.

Adapted from http://www.alphalaser.de/en/applications/mechanical-engineering.html; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

#### **Understanding instructions**



http://www.bodyteam.si/wp-content/uploads/2010/05/prehrana.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

With the launch of a new wind farm in June, the smallest of Spain's Canary Islands is expected to become the world's first island to rely solely on wind and water power for its energy needs, according to a report in Think Progress. The island of El Hierro, westernmost in the Canary Islands chain, will use five wind turbines and pump-storage hydroelectricity to produce power for its 10,000 residents and the desalination plants that provide their water. When the wind isn't blowing, hydropower will be produced by releasing water from the volcanic crater into a lower reservoir, a process called pumpstorage hydroelectricity.

Adapted from http://www.trust.org/item/20140502044519-8cs0u/; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Warnings and signs

HI HIM

Source: https://lh6.googleusercontent.com/-lyyF6YtKmfk/TYyZjkUvmII/AAAAAAAAQQ/Ai7w02x-\_4Y/s1600/ball.jpg

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

**Biomimicry Creates New Tires** 

Biomimicry is the science that imitates nature to create new products. Resilient Technologies, a Wisconsin based company, has created a tire that can't go flat. Instead of using a pressurized air cavity, the tire design relies on a geometric pattern of six-sided cells that are arranged in a matrix like a honeycomb. It has the same ride, reduced noise levels and heat generation as pressurized tires. The goal was to



create an airless tire with uniform flexibility and load transfer that would endure tremendous wear and tear and still perform well. The best design was found in nature, which was the honeycomb (= satovje).

Adapted from http://www.inventor-strategies.com/latest-inventions.html#sthash.ZRvnRHMa.dpbs; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Applying for a job



http://www.flixya.com/files-photo/t/e/c/technotec-1692280.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

#### Important Mechanical Engineering Contributions

This list underlines the importance of the mechanical engineering profession to modern human civilization. Eight of these technologies (Automobile, Airplane, Agricultural Mechanization, Air Conditioning and Refrigeration, Spacecraft, Household Appliances, Nuclear Technologies, High-performance Materials) were the primary responsibility of mechanical engineers and mechanical engineering. Five others (Electrification, Water Supply and Distribution, Highways, Imaging, Health Technologies, Petroleum and Petrochemical Technologies) involve major contributions from mechanical engineers. Finally, mechanical engineers have played a primary historical role in the development of computer technologies through their work with analog computers.

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

#### Robotics



http://www.skokuzivot.hr/wp-content/uploads/ucenje.gif; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

Mechanical engineering is a discipline of engineering that applies the principles of engineering, physics and materials science for analysis, design, manufacturing, and maintenance of mechanical systems. It is the branch of engineering that involves the production and usage of heat and mechanical power for the design, production, and operation of machines and tools. It is one of the oldest and broadest engineering disciplines. The engineering field requires an understanding of core concepts including mechanics, kinematics, thermodynamics, materials science, structural analysis, and electricity. Mechanical engineers use these core principles along with tools like computeraided engineering, and product lifecycle management to design and analyze manufacturing plants, industrial equipment and machinery, heating and cooling systems, transport systems, aircraft, watercraft, robotics, medical devices, weapons, and others.

Adapted from http://en.wikipedia.org/wiki/Mechanical\_engineering; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

**Future of engineering** 



http://ilab.engr.utk.edu/cirpc/images/tipslider/20-computer.jpeg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

#### Working as a Mechanical Engineer

Working as a mechanical engineer can be a rewarding and fulfilling experience. Mechanical engineers work to design, build and analyze motor vehicles, aircraft, heating and cooling systems, watercraft, manufacturing plants, industrial equipment and machinery, robotics, medical devices, alternative energy and more. Mechanical engineering has a long history, and mechanical engineers join a host of renowned inventors such as Archimedes (Golden Crown, Archimedes Screw, Claw of Archimedes), Henry Ford (Ford Motor Company), Rudolf Diesel (diesel engine) and Bill Nye the Science Guy (hydraulic pressure resonance suppressor used in the Boeing 747).

Adapted from http://www.me.utexas.edu/about/work.php; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

**Challenges for engineering** 

### 27



ASIMO: Advanced Step in Innovative Mobility

http://newsimg.bbc.co.uk/media/images/39428000/gif/\_39428513\_asimo\_info416.gif; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

#### Silicon

Silicon is the chemical element in the periodic table that has the symbol Si and atomic number 14. A tetravalent metalloid, silicon is less reactive than its chemical analog carbon. It is the second most abundant element in the Earth's crust, making up 25.7% of it by weight. Silicon is a very useful element that is vital to many human industries. It is used frequently in manufacturing computer chips and related hardware. Because silicon is an important element in semiconductor and high-tech devices, the high-tech region of Silicon Valley, California, is named after this element.

Adapted from http://www.sciencedaily.com/articles/s/silicon.htm; 13.4.2013

TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

#### Free time



http://davidmcbee.com/wp-content/uploads/2011/10/cell-phone-evolution-iphone.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

#### Tools can be gifts for mechanical engineers

Many mechanical engineers are likely good with their hands and enjoy creating things or doing repairs around the house. Choose a tool, such as an electrical drill or a set of screwdrivers. You could also tailor your tool to the type of work he likes to do. For example, if he builds furniture, choose a battery-operated sander or a jigsaw. Another option is to choose a tool box or a tool cabinet so that he can organize and store all of his tools.

Adapted from http://www.ehow.com/info\_8065627\_gifts-mechanical-engineer.html; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

#### **Education for mechanical engineers**

*Researchers carry out analysis of 36 mobile phones to determine which contain the most toxic chemicals in their components* 



http://www.dailymail.co.uk/sciencetech/article-2213366/Chemical-breakdown-What-really-goes-new-iPhone.html; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

#### Calipers

The first time I played with a pair of calipers, I was maybe 9 years old and following my dad around to a space satellite fabrication facility. An engineer picked a pair of calipers up and showed me that it was possible



to measure the thickness of my hair. Three thousandths of an inch thick. I thought that was pretty cool. All that I had known before was measuring with a ruler, with precision down to maybe a 1/16th, or maybe a 1/32nd of an inch. A good pair of calipers can measure within .0005". It's a useful tool for measuring thicknesses, inside diameters, outside diameters, and depth.

Adapted from http://engineerblogs.org/2012/02/awesome-tools-for-every-mechanical-engineer-by-sam-feller/; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

#### **Unusual vehicles**

30



http://www.icecoelectric.com/Blog%20Pics/Safety%20Matters/10-rules.jpg; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

**Aerospace engineering** is the primary branch of engineering concerned with the research, design, development, construction, testing, science and technology of aircraft and spacecraft. It is divided into two major and overlapping branches: aeronautical engineering and astronautical engineering. Aeronautics deals with aircraft that operate in Earth's atmosphere, and astronautics deals with spacecraft that operate outside the Earth's atmosphere. Aerospace engineering deals with the design, construction, and study of the science behind the forces and physical properties of aircraft, rockets, flying craft, and spacecraft. The field also covers their aerodynamic characteristics and behaviors, airfoil, control surfaces, lift, drag, and other properties.

Adapted from http://en.wikipedia.org/wiki/Aerospace\_engineering; 27.4.2014

TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

**Family and friends** 

31



https://www.google.si/#q=rocket+images; 27.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

As early as 500 BC, Chinese scientists had studied and learned much about magnetism in nature. For example, they knew that iron ore, called magnetite, tended to align itself in a North/South position. Scientists learned to "make magnets" by heating pieces of ore to red hot temperatures and then cooling the pieces in a North/South position. The original lacquered earth plate, dating to the 3rd century BC, is currently on display at the Museum of Chinese History. Later, the magnets were placed on bronze plates marked with directional bearings. Compasses were first used in Feng Shui, the layout of buildings. By 1000 AD, navigational compasses were widely used on Chinese ships, enabling them to navigate without stars in view. The magnetic compass remains an essential navigational tool today.

Adapted from http://www.vhinkle.com/china/inventions.html# ; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Slovenia

32



https://www.google.si/search?q=inventions+that+changed+the+world&tbm=isch&tbo=u&source=univ&sa=X& ei=qdx1U-yHHavN7Aa8tYDgBQ&ved=0CDcQsAQ&biw=1093&bih=521

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

#### Thermoelectric generator on glass fabric for wearable electronic devices

Wearable computers or devices have been hailed as the next generation of mobile electronic gadgets, from smart watches to smart glasses to smart pacemakers. For electronics to be worn by a user, they must be light, flexible, and equipped with a power source, which could be a portable, long-lasting battery or no battery at all but a generator. How to supply power in a stable and reliable manner is one of the most critical issues to commercialize wearable devices. Scientists have now proposed a solution to this problem by developing a glass fabric-based thermoelectric (TE) generator that is extremely light and flexible and produces electricity from the heat of the human body.

Adapted from http://www.sciencedaily.com/releases/2014/04/140410131458.htm; 13.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

#### Learning languages



http://www.seas.upenn.edu/awe/

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

One of the greatest inventions of the medieval world was the mechanical clock. The difficulty in inventing a mechanical clock was to figure out a way in which a wheel no bigger than a room could turn at the same speed as the Earth, but still be turning more or less continuously. If this could be accomplished, then the wheel became a mini Earth and could tell the time.

Yi Xing, a Buddhist monk, made the first model of a mechanical clock in 725 AD. This clock operated by dripping water that powered a wheel which made one full revolution in 24 hours. An iron and bronze system of wheels and gears made the clock turn. This system caused the chiming of a bell on the hour.

Adapted from http://www.vhinkle.com/china/inventions.html#Mechanical\_Clock; 27.4.2014

TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Travelling

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Adapted from https://fbcdn-sphotos-d-a.akamaihd.net/hphotos-ak-xap1/t1.0-9/p403x403/ 1017332\_10151584481918183\_1922621715\_n.jpg

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

More and more women are discovering that a career as a mechanical engineer will allow them to tackle society's needs in a wide variety of challenging, interesting and rewarding ways. At work, women engineers are professionally respected, valued, and wellrewarded. Most employers accommodate the needs and schedules of their engineers with family. In ME at the U, women typically earn better grades than men in engineering courses and frequently find themselves in leadership positions in groups and student societies. Women have bright futures in Mechanical Engineering. They are actively recruited for the diverse perspectives that they can bring to innovation and public service.

Adapted from http://mech.utah.edu/academics/women-m-e/; 27.4.2014

TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

Food and eating habits



http://www.solihullcarers.org/wordpress/wp-content/uploads/health\_and\_safety.gif; 13.4.2014

#### TASK 2: Read the text and be prepared to discuss it with the examiner.

For many, the days of do-it-yourself auto repairs are long gone. As a result, the costs associated with fixing cars have gone up. Technicians require more training, which makes them more valuable -- and more expensive. Digital Age cars have parts that are much more costly to replace. And hybrid cars also pose a significant increase in price to repair. Hybrids like the Toyota Prius, for instance, are built with a transmission that's not in wide use yet. Replacement parts aren't built and sold by many companies, as components for more prevalent transmissions are.

Adapted from http://auto.howstuffworks.com/under-the-hood/trends-innovations/future-car-repair.htm; 27.4.2014

#### TASK 3: Think about the given topic and be prepared to discuss it with the examiner.

My home