

WorksheetCloud.com - Memorandum

Subject: Grade 7 NATURAL SCIENCES

Topic: Natural Sciences: Exam Term 4

Total Marks: 99

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1. B 4
- Explanation:** A dynamo is a generator that makes use of the rotation of conducting coils in a magnetic field. Kinetic energy is needed to rotate either the coils or the magnetic field. The rotation produces electrical energy. Kinetic energy is a form of mechanical energy. That is why we say that generators convert mechanical energy to electrical energy. In some systems the sum of the gravitational potential energy and kinetic energy is called mechanical energy.
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2. A 4
- Explanation:** Metals are generally good conductors of heat. This means that metal cooking pots can transfer heat energy from the stove to the food. It also means that heat is transferred from the cooked food to the surroundings once the stove is switched off. Therefore metal pots cannot keep food warm.
- Metals can withstand high temperatures, but that will not prevent the food from burning. Most metal pots will rust if they are not used and cleaned correctly.
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3. B 4
- Explanation:** It orbits around the Earth once every 29½ days. This means that we will see a FULL MOON at least once a month. The Moon's surface is covered with CRATERS, which are caused by asteroids, comets, etc. crashing into it.
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4. C 4
- Explanation:** The SUMMER SOLSTICE falls on 21 December. The Earth completes a revolution around the Sun in 365¼ days. Leap year (366 days) occurs once every 4 years ($\frac{1}{4} \times 4 = 1$ extra day).
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5. B 4
- Explanation:** RADIOACTIVITY in nuclear waste can cause cancer and other incurable diseases. Nuclear waste has to be sealed in lead containers and buried in selected areas.
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6. D 4
- Explanation:** Convert all the energy values to the same unit. Then calculate the total energy in each case.
- The egg contains $316\ 000 \div 1\ 000 = 316$ kJ.
- The bread contains $205 \times 2 = 410$ kJ.
- One table spoon of cheese contains $212\ 300 \div 1\ 000 = 212,3$ kJ. The total value for the cheese is therefore $212,3 \times 2 = 424,6$ kJ.
- The banana contains 475 kJ.
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7. system 3
- Explanation:** A system consists of different parts working together to perform a certain task. The national electricity supply system consists of different electrical parts or circuits that work together to spread electricity throughout the country. The national grid contains more than 300 000 km of power lines.
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8. useful output
usable output 3
- Explanation:** An efficient appliance produces mostly useful energy. Only a small portion of the output energy is unwanted or wasted. A machine that is 100% efficient does not transfer any energy to the surroundings. Theoretically such a machine will be able to carry on working forever, without any additional input energy. Such a machine currently does not exist.
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9. convection 3
- Explanation:** Heat is generally transferred in three ways. Convection uses the movement of gas or liquid particles to transfer heat from one place to another. Earth's mantle moves very slowly because of convection currents that transfer heat from the hot interior of Earth to its surface.

10. waning	3
Explanation: After a full moon the moon starts to wane and then goes into a cycle again of waxing when the moon starts to get fuller.	
11. Gravity Force of gravity Gravitational force	3
Explanation: All objects in the universe has the tendency to attract each other because of their mass. This phenomenon is called gravity. The word "gravity" comes from the Latin word gravitas that means weight or seriousness.	
12. spring	3
Explanation: When the Sun and the Moon are aligned with Earth, the force of gravity exerted by the Sun and the Moon on Earth's water works together. This causes water at high tides to be pulled further away from Earth than usual, causing extra-high high tides. At the same time, the low tides will be extra-low. Both phenomena are called spring tides.	
13. solar energy	3
Explanation: The adjective "solar" relates to the Sun. Energy that comes from the Sun is therefore called solar energy. The Latin word for "sun" is sol. The isiZulu word for "sun" is ilanga.	
14. North	3
Explanation: In June, the North Pole is turned towards the Sun and therefore, the Northern Hemisphere experiences summer.	
15. twice two times	3
Explanation: An equinox occurs twice a year, on 21 March and 22 September.	
16. chemicals	3
Explanation: When the chemicals are used up, the battery no longer has the energy to produce the electric current and has to be thrown away. Some dry batteries called NICADS (with nickel and cadmium electrodes) can be recharged.	
17. non-renewable	3
Explanation: All fuels that take longer to form than the rate at which humans are depleting them, are called non renewable resources.	
18. (1) Blades of the turbine is turned by falling water. Mechanical energy is transferred to a generator. 8 (2 per answer) (2) Blades of the turbine is turned by steam. Steam is produced by a chemical reaction. Mechanical energy is transferred to a generator. (3) Blades turn an axle attached to a gearbox. The gearbox transfers mechanical energy to a generator. (4) Up and down movement of water creates an air column. Changes in the air column turn the blades of a turbine.	
Explanation: The basic operation of hydro-electric and nuclear power stations is almost the same as for coal-fired power stations. In hydro-electric power stations, the blades of a turbine is turned by falling water. In nuclear power stations, heat energy is supplied by a nuclear reaction. This converts water to steam and the steam turns the blades of a turbine.	
The wind turbines on a wind farm each have its own small generator inside.	
In a tidal power plant the movement of waves is used to created an air column that is compressed and decompressed. Changes in the air column turns the blades of a turbine.	
Currently Eskom only has one nuclear power plant and one wind farm that generates significant amounts of electricity.	

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19. (1) A: styrofoam 8 (2 per answer)
(2) C: plastic
(3) D: glass
(4) B: metal

Explanation: Styrofoam is the poorest heat conductor and therefore the best insulator. Heat transfer from the milk to the surroundings will be very slow and therefore the milk in container A will be the hottest.

The plastic used for cups is a better insulator than glass.

Metal is the best conductor of heat and therefore the milk in container B will be the coolest.

Styrofoam is made from a chemical called polystyrene. Generally 96-99% of styrofoam is air. That is why it is so light.

20. (1) radiation 6 (2 per answer)
(2) convection
(3) conduction

Explanation: Heat from the fire is transferred to the pot through radiation.

The movement of water particles in the pot causes convection currents. This heats up the whole body of water after a while.

No particles are necessary for the heat to reach the pot. Where the handle is attached to the pot, metal and plastic solids touch. Heat is transferred by conduction. That is why it is so important that the handle is made from an insulator, otherwise you will burn if you hold the pot.

21. (1) the Sun 8 (2 per answer)
(2) Jupiter
(3) Earth
(4) the Moon

Explanation: Even though the Sun has a greater radius than Earth, its mass is enormous in relation to Earth. The Sun will attract an object with a much greater force than Earth. Jupiter is the planet in our solar system that exerts the greatest force of gravity on objects. Even though the Moon's radius is smaller than that of Earth, its mass is 81 times smaller than Earth's. The force of gravity is less on the Moon than on Earth.

22. (1) Neptune 4 (2 per answer)
(2) Mercury

Explanation: Our solar system contains eight planets with their moons and one star, namely, the Sun. Mercury circles the sun the fastest of all the planets.

23. (1) the sun's energy 4 (2 per answer)
(2) solar

Explanation: Solar geysers are placed on the roof of a house (refer to picture). Heat is transferred from the sun to the water in the geyser by radiation, conduction and convection. The greatest benefit of using a solar geyser is that the energy is free and renewable.
The solar geyser does not need a mains connection and it reduces one's electricity bill.

24. (1) 37 degrees Celsius 4 (2 per answer)
(2) radiates heat

Explanation: Your body also heats the air next to your skin. This heat escapes by convection and by wind moving the warm air away from your body. You keep warm when you wear clothing such as a jersey. The jersey is the same temperature as its surrounding. The jersey keeps you warm by preventing the heat from escaping from your body.

24 Questions, 3 Pages