Universiti Sains Malaysia
Pusat Pendidikan Jarak Jauh

Peperiksaan Tambahan
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JLS 331 - Bahasa Inggeris Saintifik

Masa: [2 jam]

INSTRUCTIONS

1. Before you begin the exam, ensure that this exam booklet contains **ELEVEN** (11) printed pages.
2. Answer **ALL** questions on the question paper itself.

For Official Use Only

Questions	Marks Awarded	Marks Obtained
1	26	
2	14	
3	22	
4	28	
5	10	
Total	**100**	

...2/-

1. **Read the text below and answer the questions that follow. Answer in complete sentences.**

The 40,000-Mile Phone Call

1. In the summer of 1984, almost two billion television viewers were able to watch the Summer Olympics from Los Angeles, "live via satellite." While a telecommunication satellite beamed the Olympics around the world, most viewers watched the events without stopping to think about how this form of instant communication works, or how it may affect their lives now and in the future, in both positive and negative ways.

2. The advantages of telecommunication systems for the rapid and efficient transmission of information to and from the home and around the world have been described by communications experts. They see the development of these systems as a first step toward eliminating political and geographic boundaries by making every kind of human knowledge available to all. However, the possible disadvantages of this new technology have usually been ignored.

BACKGROUND INFORMATION: APPLICATIONS AND BENEFITS

3. At the beginning of the twentieth century, there were four basic means of transmitting and receiving information over long distances: print, photography, telegraph, and telephone. By the middle of the century, both radio and television had become established means of transmitting sounds and/or pictures. In 1964, the Olympic Games in Tokyo became the first program to be transmitted via satellite.

4. In order to transmit an event such as the Olympics via satellite, television signals are first changed into radio waves, which are then sent from a station on earth to an orbitting satellite. The satellite receives the radio waves, amplifies them, and sends them back to earth, where another station picks them up and changes them back into television signals. Because any form of sound or visual information can be converted into radio waves, satellites are capable of transmitting not only television broadcasts, but telephone calls and printed materials such as books and magazines.

5. The combination of satellites, which transmit information, computers, which store information, and television, which displays information, will transform every home into an education and entertainment center. In theory, every person will have access to an unlimited amount of information.

6. Another important use of telecommunication satellites was demonstrated in 1974 when the "Teacher in the Sky" satellite transmitted educational programs to classes in remote areas of the United States. In 1975, many people in India saw television for the first time as they watched programs about agriculture and health.

7. The satellite also demonstrated how it could help provide medical assistance to people living in isolated areas where transportation and radio communication is difficult. For example, a health worker in an isolated area was able to transmit pictures of a patient's wound to a doctor far away. He was then able to follow the doctor's instructions on how to care for the patient.

8. A different satellite was responsible for saving lives of people at sea. When the ship of famous French oceanographer Jacques Cousteau was damaged near Antarctica, a satellite was used to report the weather to him. This information made it possible for the ship to reach Argentina safely.

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9. Teleconferencing is another service made possible by telecommunication satellites. With teleconferencing, people in different parts of the world are able to "meet" via two-way television. During a world crisis, the nations' leaders could get together quickly to discuss their differences.

10. The most common use of telecommunication satellites, however, has been for transmitting telephone calls. Most of them travel 40,000 miles to a satellite and then back to earth. Today, a satellite is capable of receiving and transmitting more than 18,000 telephone conversations simultaneously. By 1986, a single satellite will be able to transmit 33,000 conversations as well as several television channels-all at the same time.

RISKS AND SHORTCOMINGS

11. Telecommunication can make information from around the world available to use quickly and easily, but some people worry that this may be a risk to our privacy. If personal information is stored in computers, then it may be easily transmitted via satellite to anyone who can pay for the service.

12. Other futurists worry that telecommunication systems may isolate people from each other. They say that when people are able to shop from their homes, do their banking without leaving the house, watch any movie they want on their television, as well as get any information they need, then there will not be as much contact between people. The isolation may have a very destructive effect on social relations.

13 It is important to realize that the same technology that helps us may also harm us. We can prevent this from happening by carefully monitoring the new technology. As one communication expert says, "We must remember that technology alone is not the answer . . . It is the intelligent application of technology that will lead us to success."

(a) In what year were the Olympic Games first transmitted by satellite?

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(b) Do people know more about the positive or negative effects of satellite transmission?

_____

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(c) What were the four ways that information was transmitted eighty years ago?

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(d) Does a satellite receive television signals?

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(e) What kind of signal does a satellite receive?

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_____

(f) What three things will make each home an education and entertainment center?

_____

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_____

(g) How much information will anyone be able to receive?

_____

_____

_____

(h) Name five other uses for satellites.

_____

_____

_____

(i) Do people actually meet at a teleconference?

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_____

(j) How many miles does the average telephone call travel when it is sent by satellite?

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(k) Why do some people think that satellites may decrease our privacy?

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(l) Why do some futurists believe that satellites will decrease interpersonal communication?

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(m) What can we do to prevent the improper use of satellites?

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Source: The New Technologies Readings for Learners of English MacGraw Hill, NCTE 1986.

(26 marks)

2. **Read the passage and answer the questions which follow.**

The Agricultural Revolution

1. On an old-time farm in America there were chickens, turkeys, cows, pigs, and other livestock, but there were very few machines. Most of the work was done by the entire farm family with the help of a "hired hand." Sometimes extra laborers were needed in the busy seasons. Horses provided about 80 percent of the power used, human labor 15 percent, and machines only 6 percent.

2. Today all that has changed. Just as technology changed the face of industry, farms have undergone an "agricultural revolution." On the farm of today, machines provide almost all the power. Modern farmers now have mechanized "hired hands" and keep horses only for pleasure. Besides developing new machinery, scientists and engineers have helped the farmer in many ways. For example, they have developed stronger fertilizers, more effective insecticides, and hybrid seeds which produce larger, tastier fruits and vegetables. Some farmers even have computers which help them use their resources more efficiently. As a result, the farms of today are able to produce much more food with the same amount of labor. This means fewer but larger farms and fewer but more prosperous farmers. However, the agricultural revolution is not over. In the future, farmers will receive even greater benefits from science and technology.

3. One of the most important benefits will be the farm computer. A few forward-looking farmers are already using computers to help them run their farms more efficiently. The computers help them keep more accurate records so they can make better decisions on what crops to plant, how much livestock to buy, when to sell their products, and how much profit they can expect. At the moment, only 1 to 5 percent of the nation's farms use computers, but many people believe that this number will grow to 25 percent in the next five years.

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4. Many computer companies are developing special computer programs just for farmers. Programs are being written for hog producers, grain farmers, potato farmers, and dairy farmers. In the future, farmers will be able to purchase computer programs tailored to their needs. Because of the growing importance of computers on the farm, students at agricultural colleges are required to take computer classes in addition to their normal agricultural courses. There can be no doubt that farmers will rely on computers even more in the future. While the old-time farm depended on horse power, and modern farms depend on machine power, farms of the future will depend on computer power.

5. Another technological advance which is still in the experimental stage is the robot, a real "mechanized hired hand" that will be able to move and, in some ways, think like a human being. Agricultural engineers believe that computer-aided robots will make starting changes in farming before the end of the century. Unlike farmers of the present, farmers of the future will find that many day-to-day tasks will be done for them. Scientists are now developing robots that will be able to shear sheep, drive tractors, and harvest fruit. Even complex jobs will be done by robots. For example, in order to milk their cows, farmers must first drive them into the barn, then connect them to the milking machines, watch the machines, and disconnect them when they are finished. In the future, this will all be done by robots. In addition, when the milking is completed, the robots will automatically check to make sure that the milk is pure. The complete robotization of the farm is far in the future, but engineers expect that some robots will be used as early as 1990.

6. The use of advanced technology on the farm benefits everyone. Farmers of the future won't have to work as hard as those of the past, and scientific advances, which make farms more efficient, enable farmers to produce more food. In fact, while in 1900 the average American farm fed less than seven people, the average farm of today feeds more than 70. Who can tell how many people the farm of the year 2000 may feed?

Do you think the following statements are true or false? Write T or F in the boxes.

1. People were the main source of power on the old-time farm. ☐
2. The modern farm is completely computerized. ☐
3. Modern farmers don't keep horses. ☐
4. There aren't as many farmers today as there were 100 years ago. ☐
5. Farmers are richer than they were 100 years ago. ☐
6. There are more farms than there were 100 years ago. ☐
7. Most farmers today use computers. ☐
8. All farmers can use the same kind of computer program. ☐
9. Students at agricultural colleges must take computer courses. ☐
10. Robots are very common on farms today. ☐
11. Robots help farmers make decisions. ☐
12. Farms of the future will produce more food because they will be more efficient. ☐
13. The complete use of robots in the farm is in the near future. ☐
14. Robotization of the farm is an advantage to all concerned. ☐

Source: The New Technologies, NCTE, McGraw Hill, 1986.

(14 marks)

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3. **Read the text and answer the questions that follow. Answer in complete sentences.**

A WORLD ON WHEELS

1. Today we think of automobiles as a necessity, but at first the automobile was a luxury that only the rich could afford. In 1899, only 600 were built and sold. By 1925, the number approached 20 million. Today you can choose from a huge number of models, some costing 25 times the price of others. It is said that there are enough motor vehicles in Great Britain and America to carry their combined populations.

2. Today we can say that much of the world runs on wheels. The four rubber tires of the automobiles move us from work to play. Wheels spin, and people drive off to their jobs. Tires turn, and they go shopping. Hubcaps whirl, and the whole family goes for a drive in the country.

3. In addition to the automobile, other types of motor vehicles shape our lives. Public buses provide quick and inexpensive transportation. No matter if you are travelling 500 miles from one city to another, or just going across town, imagine what your life would be like without buses. Trucks also help us in many ways. It is usually cheaper to send goods by truck than by air or train. And because there are many more highways than there are railways, trucks can go places that trains could not reach. Huge tractor trailers carry good thousands of miles from Europe to Saudi Arabia. Small pickup trucks help farmers in every country get their produce to market.

SOME PROBLEMS AND SOME SOLUTIONS

4. The increased use of automobiles has brought a corresponding increase in automobile-related problems such as traffic accidents and traffic congestion. One of the most serious results of our dependence on the automobile is air pollution. Automobiles pump hundreds of pounds of carbon monoxide and other poisonous gases into the air everyday. Usually these gases do no immediate damage. However, under certain weather conditions, they may form clouds which cover the skies of large urban areas, threatening the lives of everyone, especially the sick and the old.

5. In the past fifteen years people have become increasingly worried about the effects of air pollution. Therefore, some governments have required automobile manufacturers to find a solution to this problem. As a result, many new cards today have antipollution devices which decrease the amount of pollutants released into the air.

THE ENERGY CRISIS

6. During the 1970s, the supply of oil and gasoline suddenly increased, while the price of oil increased dramatically. This "energy crisis" made many people aware of the world's dependence on automobiles and the amount of energy needed to run them. Many people criticized this dependence. These critics argued that the world's oil supply would be used up very quickly if we continued to waste it at the same rate. The criticism was especially strong in the United States, where dependence on the automobile is greatest.

7. Since that time, scientists have been trying to develop alternate forms of energy for our cars. Experimental cars run by solar batteries and electricity have been developed. So far, however, these types of cars are too slow, too inefficient, or too expensive to be widely used. Experimental fuels have also been developed. One of these, gasohol, a combination of gasoline and alcohol, is actually being used in many countries today.

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8. In addition, automotive engineers have been working to decrease the size and weight of automobiles, making them run more efficiently. In order to do this, they use some of the principles of aerodynamics, the study of the effect of air on moving bodies. By using these principles, they have redesigned cars to make them less resistant to air, thus decreasing the amount of fuel they need.

LOOKING TOWARD THE FUTURE

9. The use of computers is probably the most interesting innovation in modern automobiles. In the 1970s, minicomputers were first introduced to monitor the amount of fuel automobiles used. Today, computers do far more than that. Many new cars have computers which monitor the engine and automatically make any changes that are necessary. Other computers actually "speak" to the driver, warning of mechanical and safety problems with messages such as, "Your engine oil pressure is low. Prompt service is required." When the driver corrects the problem, the computer may even say "Thank you"." Drivers do not need to know English because the computer can be programmed to speak several different languages.

10. Automobile experts say that in the future computers will begin to take over more and more of the responsibility of running and even driving the car. Engineers are now working on car navigation systems which will locate the vehicle's position on a video map inside the car and help the driver reach his or her destination quickly and safely. For example, when there is a traffic tie-up, the computer will count the cars on the road ahead, warn the driver, and offer suggestions for alternate routes. Someday drivers may simply tell their cars where they want to go and sit back as their automated chauffeurs take them to their destination.

11. The automobile has changed the way we live, but the growth of the car industry has not always been beneficial. Along with the convenience that the automobile has given us come its drawbacks: traffic accidents, traffic congestion, air pollution, and wasted energy. But governments, the automobile industry, and groups of private citizens are working to find solutions to these problems. It is difficult to predict what automobiles will look like in the year 2000, but the chances are good that they will be safer, cleaner, and more efficient than they are today.

(a) How do we use cars in our everyday lives?

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(b) Why are trucks important for commerce?

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(c) What are some of the negative consequences of our dependence on automobiles?

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(d) What have the automobile manufacturers done to decrease air pollution?

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(e) When was the energy crisis?

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(f) Why are some people worried about our use of energy?

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(g) What are scientists doing to decrease our dependence on oil?

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(h) How have engineers used the principles of aerodynamics?

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(i) How are computers being used in cars today?

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(j) How will computers be used in cars of the future?

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(k) How will cars of the future compare with cars today?

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Source: The New Technologies Readings for Learners of English, NCTE, 1986.

(22 marks)

4. **Read the following passage and fill in the blanks with words chosen from the list below. The number in brackets indicate the frequency of usage of the word in the passage.**

stored (2)	its (2)
call	related
form	charges
released (2)	like
work	
substances	
kinetic	

The Many Forms of Energy

Energy is the ability to do work. When a hammer strikes a nail, it exerts a force on the nail that causes it to move. The movement of the hammer has the ability to do work and therefore has a _____ of energy that we _____ kinetic energy. Kinetic energy is the energy of motion.

An object may have energy not only because of its motion but also because of _____ position or shape. For example, when a watch spring is wound, it is storing energy. When this energy is _____ , it will do the work of moving the hands of the watch. This form of energy is called potential energy. Potential energy is _____ energy. Water in a dam is another example of potential energy.

There are many types of _____ and potential energy, including chemical, thermal, mechanical, electrical, and nuclear energy. Chemical energy is potential energy that is stored in gasoline, food, and oil. Just as the watch spring needs to be released to do the _____ of moving the hands, the energy stored in food molecules needs to be released by enzymes or _____ in the body, and the energy stored in gasoline must be _____ by the spark plug to do _____ work of propelling the car forward. Thermal energy may be defined as the kinetic energy of molecules. When a substance is heated, the molecules move faster, which causes that substance to feel hot. Mechanical energy is energy _____ to the movement of objects. Electric energy is energy that is produced by electric _____. Nuclear energy is the energy that is _____ in the nucleus of certain kinds of atoms, _____ uranium.

Source: English for Science, Fran Zimmerman, Prentice Hall Regents, 1989.

(28 marks)

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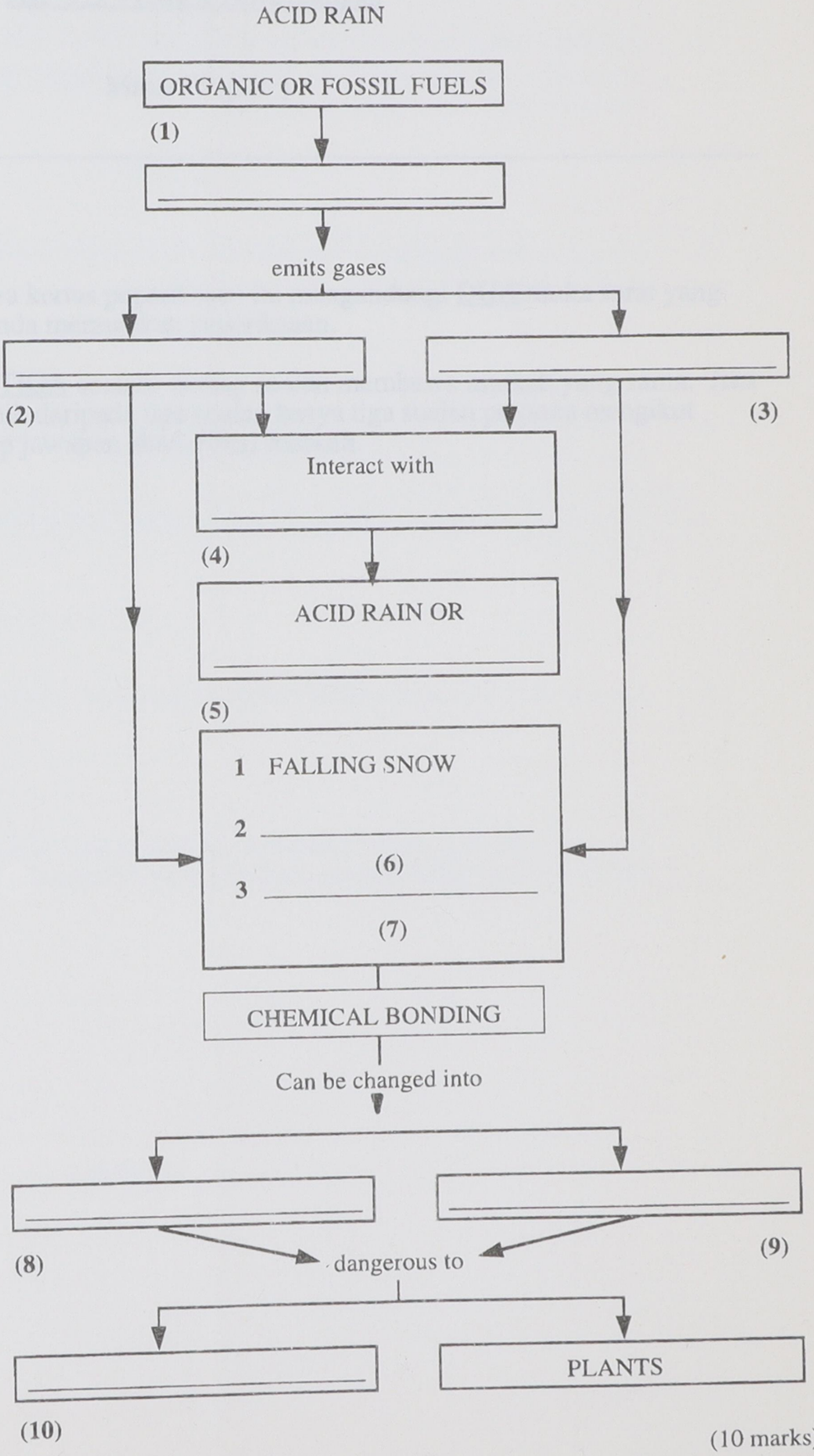
5. Read the following description of acid rain and label the accompanying flow chart.

ACID RAIN

Research indicates that much of the acid rain is caused by the burning of organic or fossil fuels such as coal, oil and gas. The combustion of these fuels ejects gases like sulphur dioxide and nitrogen oxides into the atmosphere.

These pollutants can be conveyed hudreds and even thousands of kilometres by large air masses. En route, many of the airborne oxide particles fall back] to earth.

Through the process of chemical bonding, the oxides can be transformed by a rainstorm, falling snow or even dew into sulphuric acids are dangerous to plant and animal life. Furthermore, the oxides can also interact chemically with the moisture in the flowing air mass to form acid rain or snow.



(10 marks)

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