YEARLY PLAN

2010

SCIENCE FORM 3

YEARLY PLAN 2010 FOR FORM 3 SCIENCE

Week	Learning Objective	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
1 (4 - 8/1)	THEME: MANAGEMENT AND CONTINUITY OF LIFE LEARNING AREA: 1. RESPIRATION 1.1 Analyzing the human breathing mechanism.	Observe models or computer software to identify the structure of the human respiratory system which consists of the nasal cavity, trachea, bronchitis lungs, ribs, diaphragm and the intercostals muscle. Examine a model of a lung to identify the bronchus, bronchiole an alveolus. Built the functional model of the human respiratory system to show the relationship between the air pressure in the thoracic cavity and the process of inhalation and exhalation. Discuss the breathing mechanism.	A student is able to • Identify the structure of the human respiratory system. • Identify the structure of the lung. • Describe the structure of inhalation and exhalation. • Relate the changes of the pressure in the thoracic cavity to inhalation and exhalation. • Describe the breathing mechanism.	The contraction and relaxation of the internal and external intercostal muscles are not required.	
2 (11 - 15/1)	1.2 Understanding the transport of oxygen in the human body.	View a video or computer software then gather and interpret data on the following a) diffusion of oxygen from the alveoli into the blood	A student is able to • Describe the diffusion of oxygen from the alveoli into the blood capillaries.		

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		capillaries and from the blood capillaries into the cells. b) transport of oxygen by the red blood cells in the form of oxyhaemoglobin.	• Describe the transport of oxygen by blood. • Describe the diffusion of oxygen from the blood capillaries into the cells.		
	1.3 Realizing the importance of a healthy respiratory system.	Collect and interpret data on the following a) substances that are harmful to the respiratory system, i.e nicotine and tar (from the smoke of cigarettes), sulphur dioxide (from factories), and carbon monoxide (from the smoke of vehicles) and haze. b) Effect of harmful substances such as toxin and carcinogen on the respiratory system. c) Diseases of the respiratory system.	A student is able to • List the which are harmful to the respiratory system • Explain the effects of pollutants in the respiratory system. • List the diseases that affects the respiratory system. • Practice good habits to improve the quality of air.		

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		Carry out an activity to show the effects of smoking on the lung. Hold or visit an exhibition on the effects of smoking and diseases of the lungs. Brainstorm ideas on how to improve air quality and put these ideas into practice.			
3 (18 - 22/1)	<u>LEARNING AREA 2</u>: BLOOD CIRCULATION AND TRANSPORT. 2.1 Understanding the transport system in humans.	Observe and study models, computer software or videos on the structure of the heart and types of blood vessels (i.e: artery, vein and capillary) in the blood circulatory system. Examine a live specimen of a heart to identify its structure Discuss the following a) Function of the heart. b) Characteristics of the blood vessels and their functions. Carry out and activity to compare and contrast oxygenated and deoxygenated	A student is able to • Describe the circulatory system as a system of tubes with a pump and valves that ensure one way flow of blood. • State the function of the heart. • Identify the structure of the human heart. • Compare and contrast the structure of arteries, veins and capillaries. • Relate the characteristics of the blood vessels to their functions. • Compare and contrast oxygenated and deoxygenated		

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		blood. Stimulate the flow of blood in the circulatory system. Discuss the role of the blood circulatory system in the transport of substances. Invite a medical officer to give a talk on "Taking Care of Your Heart".	blood. • Illustrate the path of the blood flow in the circulatory system. • Describe the role of the blood circulatory system in the transport of substances. • Explain the importance of maintaining a healthy heart.		
4 (25 - 29/1)	2.2 Analyzing the human blood.	Invite a physician to give a talk on the following a) The constituent of blood, i.e. plasma, red blood cells, white blood cells, platelet and their functions. b) The blood groups, i.e. A, B, AB and O. c) The compatibility between the blood group of the donor and that of the recipient. d) The importance of blood donation. e) The storage and handling of donated blood.	A student is able to • State the constituents of blood and their function. • Stste the blood groups. • Match the blood group of the donor to that of the recipient. • Justify the importance of blood donation. • Describe how donated blood is stored and handled.	Universal donor and universal recipient should be included.	Blood donation – derma darah Blood group – kumpulan darah Physician – doctor Universal donor – penderma universal Universal recipient – penerima universal.

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5 (1 - 5/2)	2.3 Analyzing the transport system in plant.	Observe a willed plant and discuss how it occurred Examine the epidermis of a leaf under a microscope to identify the stomata. Carry out experiments to study the factors affecting the rate of transpiration. Carry out activities to study the following a) Transport of synthesized blood substances via the phloem. b) Transport of water from roots to the leaves via the xylem. Examine cross-sections of root, stem and leaf to identify the location of xylem and phloem. Discuss the roles of transpiration in the transport of water and minerals.	A student is able to: • Describe how wilting occurs, • Describe what transpiration is, • Describe the function of stomata, • Identify the factors affecting the rate of transpiration, • Describe how the factors affect the rate of transpiration, • Describe the roles of transpiration, • Investigate the pathway of water in a cut stem using a suitable stains, • Identify the location of xylem and phloem, • Describe the functions of xylem and phloem.	The transport of water and minerals in transpiration should be emphasized.	Transport – pengangkutan Transpiration – transpirasi.

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6 (8 - 12/2)	LEARNING AREA 3: EXCRETION 3.1 Understanding human excretion.	Discuss what excretion is. Examine models, chats or view computer software to identify the excretory system, i.e. skin, lungs and kidneys. Discuss the excretory products of each excretory organ, i.e water, carbon dioxide, minerals, salt, and urea. Discuss the importance of excretion.	A student is able to: • Explain what excretion is, • Identify the excretory organs in humans. • State the excretory products of each excretory organ, • Explain the importance of excretion.		Excretion – perkumuhan
	3.2 Analyzing the urinary system in human.	Examine models, chats or view computer software of the urinary system to identify the location of kidneys, ureters, urinary bladder and urethra. Collect and interpret data on the function of the kidney. Examine a live specimen of a kidney to: a) Describe the shape of the kidney,	A student is able to: • Identify the locations of kidneys and the other parts of the urinary system. • Describe the shape pf the kidney. • Identify the structures of the kidney. • Describe the function of the kidney. • Explain the importance of maintaining healthy kidneys.	The structure and the function of the nephron <u>is not required.</u> Describe briefly how a dialysis machine works.	Kidney – ginjal Urinary bladder – pundi kencing

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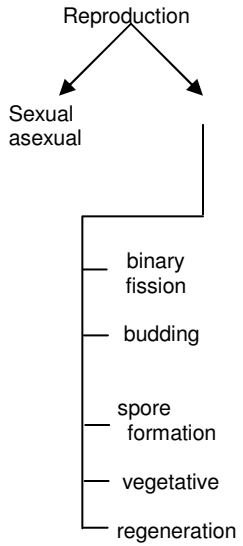
		b) Identify the components of the kidney, i.e. the cortex, medulla and pelvis. Discuss the following: a) The importance of the kidneys, b) Living with kidney failure.			
	3.3 Analyzing excretion in plants.	Collect and interpret data on the following: a) The ways plants eliminate their excretory product, b) The excretory products of plants, i.e. carbon dioxide, water and complex waste products.	A student is able to: • describe the ways plants eliminate their excretory products, • identify the excretory products of plants.		Asexual reproduction – pembiakan aseks Binary fission – belahan dedua Budding – pertunasan External fertilization – persenyawaan luar Internal fertilization – persenyawaan dalam Sexual reproduction – pembiakan seks Spore formation – pembentukan spora Vegetative reproduction –
7 (15 – 19/2)	<u>LEARNING AREA 4</u>: REPRODUC-TION 4.1 Understanding sexual and asexual reproduction.	Discuss the following: a) The importance and types of reproduction, b) The similarities and differences between sexual and asexual reproduction. Using charts, diagrams, videos or computer software to study the following:	A student is able to: • state the importance of reproduction, • state the types of reproductions, • state the fertilization is, • describe internal and external fertilization,		

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		a) Fertilization, b) Internal and external fertilization, c) The various ways of asexual reproductions, i.e. binary fission, building, spore formation, vegetative reproduction and regeneration. Discuss and classify animals and plants according to how they reproduce.	• compare and contrast sexual and asexual reproduction, • classify animals and plants according to the ways of reproduction.		pembiakan vegetatif Regeneration – penjanaan semula
8 (22 – 26/2)	4.2 Analyzing male reproduction system.	Identify the following parts of the main reproductive system with the help of charts, models, videos computer software: a) The sexual organs, i.e. testes and penis, b) The other related parts, i.e. the scrotum, urethra, sperm ducts and prostate glands. Discuss the following:: a) The function of the different parts of the male reproductive system, b) The role of sperm in reproduction,	A student is able to: • identify the parts of the male reproductive system, • describe the function of the different parts of the male reproductive system, • state the role of sperm in reproduction, • Describe the changes in male during puberty.		Emotional changes – perubahan emosi Penis – zakar Puberty – baligh Sperm – sperma Sperm duct – duktus sperma

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		c) The physical, physiological and emotional changes in male during puberty.			
8 (22 - 26/2)	4.3 Analyzing female reproduction system.	Identify the following parts of the main reproductive system with the help of charts, models, videos computer software: a) The sexual organs, i.e. ovaries and uterus, b) The other related parts, i.e. the fallopian, vagina and cervix. Discuss the following:: c) The function of the different parts of the female reproductive system, d) The role of sperm in reproduction, e) The physical, physiological and emotional changes in male during puberty Simulate the differences between male and female gametes in terms of size, numbers and mobility.	A student is able to: • identify the parts of the female reproductive system, • describe the function of the different parts of the female reproductive system, • state the role of ovum in reproduction, • describe the changes in female during puberty. • Compare and contrast male and female gametes in terms of size, numbers and mobility.		Cervix – servik Vagina – faraj

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	4.4 Analyzing the menstrual cycle.	Discuss the following: a) Menstruation and menstrual cycle, b) The changes in the uterus wall during menstrual cycle, c) The relationship between the fertile phase of the menstrual cycle and fertilization, d) The importance of personal hygiene during menstruation.	A student is able to: • Describe the meaning of menstruation, • Describe the menstrual cycle, • Describe the changes in the uterus wall during menstrual cycle, • Relate the fertile phase of the menstrual cycle to fertilization, • Explain the importance of personal hygiene during menstruation.	The description of the menstrual cycle should not include hormones.	Fertile phase – fasa subur Menstrual cycle – kitar haid Personal hygiene – kebersihan diri
	4.5 Analyzing fertilization and pregnancy.	Discuss the following with the help of diagrams, charts, models, videos or computer software: a) The location of implantation of embryo, b) The development of a zygote into an embryo and subsequently into a fetus until birth.	A student is able to: • Describe the fertilization in human, • Identify the location of implantation of embryo, • Describe the development of a zygote into embryo and subsequently into a fetus until birth.	The concept of fertilization in human should include tracing the pathway of sperm and ovum until they meet and fuse.	Fertilization – persenyawaan Implantation - penempelan

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9 (1 – 5/3)	4.6 Understanding the importance of pre-natal care.	Organize an exhibition of a multimedia presentation on the following: a) The importance of taking nutritious food during pregnancy, b) The effect of smoking and the taking of certain substances such as drugs and alcohol on the embryo and fetus.	A student is able to: • relate the importance of taking nutritious food to the health of both fetus during pregnancy, • explain the importance of avoiding the intake of substances that are harmful to the fetus.		Deformity – kecacatan Nutritious food – makanan berkhasiat
	4.7 Evaluating importance of research in human reproduction.	Collect and interpret data on the following: a) The meaning of sterility, b) Ways to overcome sterility, i.e nutrition, hormone treatment, surgery and in vitro fertilization (IVF). c) Birth control, i.e. rhythm method, the use of condom, contraceptive pills, intrauterine contraceptive device (IUCD), spermicides vasectomy and ligation. Debate on birth control and its effects on society. Discuss the importance of research on human reproduction.	A student is able to: • state the meaning of sterility, • describe ways to overcome sterility, • describe the method of birth control, • present argument against the abuse of birth control and its effect on the community, • explain the importance of research on human reproduction.	Birth control methods to be included: natural, chemical, mechanical, hormonal and surgical.	Ligation – ligasi Sterility – kemandulan Vasectomy - vasaktomi

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10 (8 – 12/3)	FIRST TERM EXAMINATION				
11 (22 – 26/3)	4.8 Analyzing the sexual reproductive system of flowering plants.	Examine flowers to identify the following parts: a) Petal and sepal, b) The male part, i.e the stamen which consist of the filament, anther and pollen grains, c) The female part, i.e. the pistil which consist of the stigma, style, ovary and ovules, Use a microscope or hand lens to observe the following: a) The cross-section and longitudinal section of an ovary to identify the ovules, b) Pollen grains. Discuss the function of the following: a) Flowers reproduction, b) Male reproductive path of the flower, c) Male reproductive path of the flower	A student is able to: • identify the different parts of a flower, • identify the male and female reproductive parts of a flower, • identify the male and female gametes, • describe the functions of the male and female reproductive parts of a flower in sexual reproduction.		Petal – ranggi Pollen grain – butir debunga

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	4.9 Analyzing pollination.	Discuss the following with the help of models, charts, videos or computer software: a) Pollination, b) Types of pollination, c) Similarities and differences of self-pollination and cross-pollination, d) Advantages of cross-pollination, e) Uses of cross-pollination in agriculture. Carry out an activity to study the various types of flowers to identify their pollinating agents.	A student is able to: • describe what pollination is, • relate the characteristics of flowers to their agent of pollination, • state the type of pollination, • compare and contrast self-pollination and cross-pollination, • explain the advantages of cross-pollination, • explain the use of cross-pollination in agriculture.		Agriculture – pertanian Cross-pollination – pendebungaan kacuk Self-pollination – pendebungaan sendiri
	4.10 Understanding the development of fruits and seed in plants.	Use a microscope to observe the development of pollen tubes in different percentage of sucrose solution (5% - 10%) Draw annotated diagrams of the following: a) The fertilization process in plats, b) The formation of fruits and seeds.	A student is able to: • identify the location where fertilization occurs in flower, • describe fertilization in plants, • describe the formation of fruits and seeds.		Germination percambahan Sucrose solution – larutan sukrosa

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		Discuss the following: a) The location where fertilization occurs in flower, b) Fertilization in plants, c) Formation of fruits and seeds.			
12 (29/3 – 2/4)	4.11 Synthesizing the concept of germination of seeds.	Dissect a seed longitudinally and identify its structure using hand lens or microscope. Collect and interpret data on the following: a) Function of the different parts of a seed, i.e. the embryo (radicle, plumule and cotyledons) and testa, protected by the pericarp (fruit wall), b) Physically changes of seeding in terms of the development of radicle, plumule and cotyledon. Carry out small group discussions to: a) Identify the variables related to the germination of seeds, b) Formulates hypotheses	A student is able to • identify the structure of a seed, • explain the function of the different parts of a seed, • describe the physical changes of seeding during germination, • make hypotheses on the conditions required for the germination of seeds, • design an experiment to study the conditions required for the germination of seeds, • carry out the experiment to study the conditions required for the germination of seeds, • draw conclusions on the conditions required for the germination of seeds.		Cotyledon – kotiledon Plumule – plumul Radicle – radikal Seeding – anah benih Germination - percambahan

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		about the conditions required for the germination of seeds. Design and carry out experiments to determine the conditions required for the germination of seeds.			
	4.12 Application of vegetative reproduction in flowering plants.	Carry out a study of the vegetative reproduction of various plants in a nursery to identify the types of vegetative reproduction Discuss what vegetative reproduction is. Discuss the application f research carried out in vegetative reproduction in agriculture.	A student is able to • explain with examples the meaning of vegetative reproduction. • State the parts of the plants that can reproduce vegetative • Classify flowering plants according to the parts that can reproduce vegetative • Describe the application of research carried out on vegetative reproduction in agriculture.	Biotechnology can be produce. Examples of vegetative reproduction in plant tissue culture. Details of plant tissue culture are <u>not</u> required.	
13 (5 – 9/4)	<u>LEARNING AREA 5</u>: GROWTH 5.1 Analyzing the	Discuss the following: a) Characteristics used to measure growth rate such as height and weight b) Meaning of growth	A student is able to • describe what growth is • identify the characteristics used to measure growth rate		Growth – pertumbuhan

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	pattern of human growth.	c) Growth pattern in male and female d) Effects of nutrition on the development of physical and mental well-being of children. Carry out activities to interpret the growth curve for male and female from infancy to adulthood.	• analyze the growth curve for male and female • compare and combine between the growth rate in male and female • describe the effects of nutrition on growth in children.		
14 (12 – 16/4)	<u>THEME</u>: MATTER IN NATURE <u>LEARNING AREA 1</u>: LAND AND ITS RESOURCES. 1.1 Analyzing the various minerals found in the Earth crust.	Discuss what a mineral is. Collect and interpret data on the various types of minerals that exist in the Earth crust: a) Natural elements, i.e. gold and silver. b) Natural compounds, i.e. oxides, carbonate, sulphide and silicates. Discuss and identify the elements in a few natural components. Carry out activities to study the following:	A student is able to • describe what mineral is • explain through examples that minerals exist in the form of natural elements or natural compounds • identify the elements in natural compounds • describe the properties of minerals • write equations in words to show the effect of heat on the minerals.		Compound – sebatian Earth crust – kerak Bumi Element – unsure Gold – emas Hardness – kekerasan Silver (argentums) - emas

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		a) Hardness of minerals b) Solubility of minerals in water c) The effect of heat on some metal carbonates, oxides and sulphides.			
15 (19 - 23/4)	1.2 Understanding the reaction between metals and non-metals.	Brainstorm and discuss the following: a) Examples of metals b) Examples of non-metals Carry out activities to study the reaction of some metals, i.e. magnesium, aluminium, zinc and iron with the following non-metals: a) oxygen b) sulphur. Collect and interpret data on silicon compounds that exist in the form of silica and silicate/	A student is able to • state the examples of metals and non-metals • describe the examples between metals and non-metals • write equations in words for the reaction between metals and non-metals • stet that metals react with non-metals in different rate.	The reactivity <u>need not</u> be introduced.	Non-metal – bukan logam Metal – logam
	1.3 Understanding silicon compounds.	Carry out activities to study the properties of silica and silicate as follow: a) solubility in water b) reaction with hydrochloric acid c) effect of heat	A student is able to • state the different forms of silicon compounds. • State examples of silica. • State examples of silicate. • Relate the properties of		Silicon compound – sebatian silikon.

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		Visit factories to learn about the process of making glass, ceramic, electronic chips and fibre optics. Discuss the uses of silicon compounds in our daily life.	silicon compounds to their stability. • Explain through examples the uses of silicon compounds in the daily life.		
15 (19 - 23/4)	1.4 Analyzing calcium compound.	Collect and interpret data on calcium compound. Carry out activities to study the following: a) The properties of calcium compound in term of its reaction with acid, solubility in water and the effects of heat. b) The formation of calcium oxide (quicklime) and calcium hydroxide (slake lime) Discuss the following a) Uses of calcium compounds, i.e. calcium carbonate, calcium oxide and calcium hydroxide. b) Properties of calcium compounds with reference to their uses.	A student is able to • State the elements in calcium carbonate • Identify the various form of calcium carbonate. • Describe the properties of calcium carbonate. • Write equations in words for the reaction of calcium carbonate. • Describe the formation of calcium oxide and calcium hydroxide. • Relate the properties calcium compounds to their uses.		Calcium carbonate – kalsium karbonat Slaked lime – kapur mati Quicklime – kapur tohor Solubility – selarutan

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	1.5 Analyzing natural fuel resources and their importance.	Access alternator visit PETROSAINS, national Science centre or an oil refinery to collect information on the formation of natural fuel resources found in Malaysia. Carry out an activity to study fractional distillation of petroleum. Discuss the following a) Characteristics and uses of the various fractions of petroleum. b) Contribution of petroleum and natural gas industry to the economic development of our country. c) Efficient ways of using petroleum and other natural fuel resources.	A student is able to • list the natural fuel resources. • Explain the formation of natural fuel resources. • Describe the fractional distillation of petroleum. • Describe the characteristics of the various fractions from the fractional distillation of petroleum. • Describe the uses of the various fraction of petroleum. • Explain the contribution of petroleum and natural gas industry to the economic development of our country. • Generate ideas on how to use natural fuel resources effectively.		Fraction – petroleum Fractional distillation-penyulingan berperingkat Natural fuel resources – sumber bahan api semulajadi Petroleum – minyak mentah
16 (26-30/4)	THEME: ENERGY IN LIFE LEARNING AREA 1: ELECTRICITY	Carry out the following activities: a) Producing static electrical changes in materials through friction. b) Detecting state electrical changes using an	A student is able to • Describe what electrostatics is. • State the type of static electrical charges. • State the properties of static		Polythene – politena\ Charge – cas

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		electroscope. c) Observing what happens	electrical charges.		
	1.1 Understanding electrostatics.	Discussing the following: a) What electrostatics is. types of static electrical changes b) Types of static electrical charges. c) Examples of material that are easily charged e.g. lightning. d) Safety measures to be taken when dealing with electrical charges e.g the use of lighting conductor.	• Describe how static electrical charges can be produced in some materials. • Describe ways to detect static electrical charges. • Explain everyday phenomena caused by static electrical charges. • State the safety measures to be taken when dealing with static electricity.		
	1.2 Understanding electricity.	Collect and interpret data on the sources of electrical energy used in everyday life. Carry out an activity to observe the flow of electric current using a Van de Graff generator and a galvanometer. Discuss the following: a) electricity b) Current. c) voltage. d) resistance. Direction of current and electron flow in an electric current.	A student is able to • Give examples of sources of electrical energy used in everyday life. • State what electricity is. • State what voltage is. • State what resistance is. • Describe the direction of current and electron flow in an electric circuit.		Current – arus Resistance – rinrangan Voltage - voltan

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	1.3 Applying the understanding of measuring electricity.	Collect information and carry out a multimedia presentation on the discovery of the unit for: a) current, i.e ampere. b) voltage, i.e volt. c) resistance, i.e ohm. Examine the instruments and discuss its use for measuring a) current. b) voltage. Assemble an electric current and measure its current and voltage.	A student is able to • Identify the instrument for measuring current. • Identify the instrument for measuring voltage. • Stet the unit for current. • State the unit for voltage. • State the unit for resistance. • Measure current in an electric circuit. • Measure voltage in an electric circuit.		
17 (3 - 7/5)	1.4 Synthesizing the relationship between current, voltage and resistance.	Design and an experiment to study the following: a) Effect of the change in resistance on current. b) Effects of the change in voltage on current. Discuss the following: a) Relationship between voltage current and resistance. b) Ohm's Law. Match the component found in an electric circuit to their	A student is able to • Design an experiment to study the relationship between resistance and current. • Carry out the experiment to study the relationship between resistance and current. • Describe the effects of the change in resistance on current. • Design an experiment to study the relationship between voltage and current.	Interpretation of graph should be emphasized.	Complete circuit – litar lengkap Parallel circuit – litar selari Series circuit – litar bersiri

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		symbols.	• Carry out the experiment to study the relationship between voltage and current. • Describe the effect of the change in voltage and current. • State Ohm's Law.	Simple calculations can be introduced.	
	1.5 Synthesizing the concept of parallel and series	Draw the following circuit diagrams and assemble the circuits: a) A complete circuit. b) A series circuit. c) A parallel circuit. Discuss the similarities and differences between a series circuit and a parallel circuit with the help of illustrations. Carry out activities to study current, voltage and resistance in a series circuit.	A student is able to • Identify the components of an electric circuit and their symbols. • Draw a diagram of a complete circuit. • Build a complete electric circuit. • Build a parallel circuit. • Compare and contrast the arrangement of components in a series circuit and a parallel circuit.		
	1.6 Analyzing current, voltage and resistance in a series circuit.	Discuss the advantage and disadvantage of a series circuit.	A student is able to • Describe the current flowing through the components in a series circuit.		

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			• Describe the voltages across the components in a series circuit. • Describe the resistance in a series circuit. • Explain the advantages and disadvantages of a series circuit.		
18 (10 - 14/5)	1.7 Analyzing current, voltage and resistance in a parallel circuit.	Carry out activities to study the current, voltage and resistance in a parallel circuit. Discuss the following: a) Advantage and disadvantage of a parallel circuit. b) Similarities and differences between series and parallel circuits in terms of current, voltage and resistance.	A student is able to • Describe the current flowing through the components in a parallel circuit. • Describe the voltage across the components in a parallel circuit. • Describe the resistance in a parallel circuit. • Explain the advantage and the disadvantage of a parallel circuit. • Compare and contrast a series circuit and a parallel circuit in terms of current, voltage and resistance.	Simple calculation can be introduced. The differences between a series circuit and a parallel circuit should be demonstrated using meters and brightness of bulbs.	
	1.8 Understanding magnetism.	Carry the following activities: a) Use iron filings to study the magnetic field of a bar magnetism.	A student is able to: • Describe what a magnetic		Magnetic field – medan magnet Magnetism - kemagnetan

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		b) Use compass to plot the direction of the magnetism field. Discuss the following: a) Magnetic field. b) Relationship between magnetic field lines and strength of magnetic field.	field is. • Draw the magnetic field of a bar magnet. • Draw the direction of the magnetic bar. • Relate magnetic field lines and strength of magnetic field. • Explain the use of a magnet in a compass.		
	1.9 Understanding electromagnet-tism.	Study and discuss the use of magnet in a compass. Carry out an activity to study the magnetic field produced by a strength wire carrying electric current. Discuss the meaning of: a) Electromagnetism. b) Electromagnet.	A student is able to: • Relate the current flow trough a conductor with magnetism. • Describe what an electromagnet is.		Electromagnetism – keelektromagnetan.
19 20 (17 – 28/5)	MID YEAR EXAMINATION				
21 (31/5 –	LEARNING AREA 2: GENERATION	Explore websites or visit a power station to collect and interpret data on the following:	A student is able to: • List the various types of		Biomass – biojisim

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4/6)	OF ELECTRICITY. 2.1 Understanding the generation of electrical energy.	a) Various type of generators, i.e thermal, hydroelectric, diesel, nuclear and gas turbine. b) Generation of electrical energy in various types of power stations. c) Alternative sources of energy, e.g solar energy and biomass. Discuss the similarities and differences in the generation of electrical energy in various types of power stations. Carry out an activity on the utilization of solar energy using devices such as solar box or solar cell (photovoltaic cell). Build the simple transformer and study its physical structure.	generators. • Describe the generation of electrical energy in various types of power station. • Compare and contrast the generation of electrical energy in various types of power station. • Give examples of alternative sources of energy.		Photovoltaic – fotovolta
	2.2 Understanding transformer.	Carry out an activity to show the function of the simple transformer. Collect and interpret data on the	A student is able to: • Identify the different parts of a transformer. • Describe how a transformer		Step-down transformer – transformer injak turun Step-up

Week	Learning Objective	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
		working principle of a step-up transformer and a step-down transformer. Discuss step-up and step-down transformers in term of: a) Similarities and differences. b) Their uses in the transmission and distribution of electricity.	works. • Compare and contrast a step-up and step-down transformer. • Describe the roles of transformer in the transmission and distribution of electricity.		transformer – transformer injak naik Distribution – pengagihan Transmission – penghantaran
	2.3 Analyzing the electricity transmission and distribution system.	Observe a model or a chart and discuss the electrical transmission and distribution system, which includes the National Grid Network, transformer station, switch zone, main sub-station and its branches. Collect and interpret data on the National Grid Network in Malaysia.	A student is able to • Arrange in order the components in the electricity transmission and distribution system. • Describe the functions of the components in the electricity transmission and distribution system. • Describe how electricity is transmitted and distributed from power station to consumers.		National grid network – rangkaian grid nasional Switch zone - lapangan suis/
22 (21 – 25/6)	2.4 Understanding the electrical	Collect and interpret data on electrical energy supply at home.	A student is able to		Circuit breaker – pemutus litar Earth wire – dawai

Week	Learning Objective	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
	supply and wiring system at home. 2.5 Analyzing the cost of electrical energy usage.	Study and discuss the following: a) Electrical wiring system of home including fuse box, meters switch, circuit breaker, live wire neural wire, earth wire and electric meter. b) International colour code. Carry out an activity to a) Study the structure and design of a 3-pin plug. b) Complete the wiring of 3-pin plug. Examine various home appliances to collect and interpret data on the power, voltage and current rating. Calculate the amount of current flowing through home electrical appliance. Discuss the relationship between electrical energy usage, power and time. Carry out a home electrical	• State the value of the main voltage. • State the type of current. • Identify the type of electric current supplied to homes. • State the type of electric wiring. • Identify the parts in an electrical wiring system. • Describe the function of the parts of an electrical wiring system. • Describe the wiring in a 3-pin plug. A student is able to • State the power and voltage rating of home electrical appliances • Calculate the amount of current flowing through an electrical appliance. • Recall the relationship between electrical energy usage, power and time. • Solve problem by calculating	Types of wiring include single-phase and tree-phase wiring. Explain briefly when tree-phase wiring is required. Introducing the following formulae: Power = Voltage x Current P = V x I Energy (kWh) = Power (kW) x Time (h)	Bumi Mains switch – suis sesalur Appliance – peralatan Power – kuasa

Week	Learning Objective	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
		energy usage audit to determine the coast of electrical energy use per month. Discuss the following: a) Type of fuses. b) Ratings of fuses c) Function of fuse in electrical wiring system. d) The role of earth wire in electrical wiring system. Carry out an activity to study the occurrence of a short circuit, Carry out activities to determine the suitable ratings of fuses for different electrical appliances.	the coast of electricity used. A student is able to • Identify the types of fuses. • State the rating of fuses. • Determine the function of fuse in electrical wiring system. • Determine the suitable rating of a fuse for an electrical appliance. • Describe the role of earth wire in electrical wiring system.		Short circuit – litar pintas
23 (28/6 - 2/7)	2.7 Evaluating the importance of safety precaution in the use of electricity.	Collect and interpret data on the following: a) Causes of electrical accidents b) Steps to be taken if electrical accidents occur. c) Safety features at home to prevent electrical accidents. Discuss the need to take safety precautions when using electricity.	A student is able to • State the safety measures to be taken when using electricity. • Describe the steps to be taken when accidents involving electricity occur. • Justify the need for having safety precaution and safety features at home to prevent	Maintain the following safety features: i. Miniature Circuit Breaker (MCB). ii. Earth leakage Circuit Breaker (ELCB)	Safety precaution – langkah-langkah keselamatan.

Week	Learning Objective	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
	2.8 Evaluating the importance of conserving electricity.	Collect and interpret data about activities that cause electricity wastage. Discuss the ways to conserve electricity. Discuss and justify the needs for conserving electricity. Brainstorm the problems faced by the country if there was a storage of electricity,	electrical accidents. A student is able to • Identify the activities that cause electricity wastage. • Describe ways to conserve electricity. • Justify the needs for conserving electricity. • Predict problems our country would face if there was a shortage of electricity.	Introduce energy labeling of appliances to improve energy efficiency	Wastage – pembaziran Energy efficiency – kecekapan tenaga
24 (5 – 9/7)	THEME: ASTRONOMY AND SPACE EXPLORATION LEARNING AREA 1: STARS AND GALAXIES 1.1 Analyzing the Sun.	Collect and interpret data on the following: a) Characteristics of the Sun, i.e. size, mass, density relative to the Earth and surface temperature. b) Structures of the Sun, i.e. the corona, chromosphere and photosphere. c) Phenomena occurring at the surface of the sun, i.e. prominences, flares and sunspots. d) Effect of the phenomena on	A student is able to • Describe the characteristics of the Sun. • Identify the structures of the Sun. • Identify the phenomena occurring on the surface of the Sun. • Explain the effects of the phenomena on the surface of the Sun on the Earth. • State how energy is generated by the Sun.	Aurorae frequently associated with flares should be introduced.	Aurorae – aurora Chromosphere – kromosfera Corona – korona Density – ketumpatan Flare – nyata Photosphere – fotosfera Prominence – prominen\ Sunspot – tompok matahari

Week	Learning Objective	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
		the surface of the Sun on earth. e) Generation of energy by the Sun.			
25 (12 – 16/7)	1.2 Understanding the stars and the galaxies in the Universe.	Discuss the following: a) the definition of star b) the Sun as a star. Visit the National Planetarium or National Science Center to collect and interpret data on the following: a) Bright star as the Sirlus and Rigel. b) The Sun as a star. c) Various types of stars based on temperature, size and brightness. d) Formation of stars. e) Death of stars leaving behind the white dwarf, neutron star and the black hold. f) Types of galaxies, i.e. elliptical, spiral and irregular. g) The Milky Way. h) The Universe. Take part in star gazing activities.	A student is able to • Define what a star is. • Identify the Sun as a star. • Identify the bright stars in the sky. • Compare and contrast the stars based on certain characteristics. • Describe the formation of stars. • Describe the death of stars. • State the types of galaxies. • Describe the Milky way. • Describe the Universe. • State the position of the Solar System in the Universe/ `		Black hole – lohong hitam Brightness – kecerahan Constollation – buruj Star – bintang Elliptical – bujur Irregular – tak teratur Light year – tahun cahaya Milky Way – Bima Sakti Solat system – system suria Spiral – lingkaran Universe – alam semesta White dwarf – kerdil putih

Week	Learning Objective	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
	1.3 Thankful for the existence of the Universe as a gift from god.	View computer software or videos to gather information about the topics in this learning area. Write a poem or haiku about the uniqueness, orderliness, beauty and harmony of the Universe as a sign of the glory of God. Discuss the following: a) The expense of the Universe. b) All the exists in the Universe is not permanent. c) The importance of the thin and the Moon to life on Earth.	A student is able to • Appreciate the uniqueness, orderliness, beauty and harmony in the Universe as a sign of the glory of God. • Describe the expense of the Universe compared to Earth. • State that all that exists in the Universe is not permanent. • Explain the importance of the Sun and the Moon to life in Earth.	Haiku is a Japanese poem that comprise of three lines.	
26 (19 - 23/7)	REVISION EXERCISES CLINIC				
27 (26 - 30/7)	REVISION EXERCISES CLINIC				
28 (2 - 6/8)	**PMR TRIAL EXAMINATION (SBP)**				
29 (9 - 13/8)	POST MORTEN EXERCISES CLINIC				
30 (16 -	EXERCISES CLINIC				

Week	Learning Objective	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
20/8)					
31 (23 - 27/8)	EXERCISES CLINIC				
32 (30/8 - 3/9)	EXERCISES CLINIC				
33 (13 - 17/9	EXERCISES CLINIC				
34 (20 - 24/9	**PMR TRIAL EXAMINATION (NEGERI)**				
35 (27/9 - 1/10)	EXERCISES CLINIC				
36 (4 - 8/10)	EXERCISES CLINIC				
37 (11 – 15/10)	**PMR**				
38 (18 – 22/10)	PASCA PMR				
39 (25 - 29/10)	PASCA PMR				

Week	Learning Objective	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
40 (1 - 5/11)	PASCA PMR				
41 (8 - 12/11)	PASCA PMR				
42 (15 - 19/11)	PASCA PMR				