No.	SV NAME	STUDENT NAME	NEW TITLE FROM SV AFTER MODERATION	Synopsis	ETAC	MODERATION REVIEW
1	TS. ASRI BIN DIN	MUHAMMAD ASHRAF BIN MOHD HASBI	DEVELOPMENT OF SMART ELECTRICAL FENCE POWERED BY PV SOLAR WITH IOT MONITORING.	This invention makes it easier for people to monitor and keep wild animals out of gardens, and gardeners who work away from home do not have to worry about their gardens since our voltage sensor would trigger and automatically send a warning message to us. The objectives are to generate energy from PV solar, to develop a systematic system for gardeners by using Arduino + Sensor and to apply energy consumption from solar to store battery. Design a smart electrical fence with combination of solar and voltage sensor will give a better benefit towards industries. It can reduce electricity of machine or equipment used in this project also reduce the time consume. Three important subsystems are renewable energy by solar panel, voltage sensor and IoT by Arduino, and electric fence to prevent from wild animal. The expected results are the solar panel will energizes the solar charger controller to store current in battery. Then, the current from battery will be power up the electric fence. The wild animals that touch the electrical fence could be detected using a voltage sensor and send a message to us via IoT.	Practice-oriented	Title and project synopsis are acceptable
2	TS. ASRI BIN DIN	ASHRAF FARHAN BIN SAFIEE	DEVELOPMENT OF PIEZOELECTRIC FOOTSTEP POWER GENERATOR SYSTEM WITH IOT MONITORING.	The footstep power generation technique through piezoelectric sensors produces electrical force by changing non-conventional energy of the development of individuals on the floor to electrical energy. The battery will be used in this device for the purpose of storing the power generated from pressure when the piezoelectric sensor is pressed repeatedly. The message will be sent to the phone 3 times to show the percentage value of the battery used, the first stage is 10-20%, the second stage is 50% and the third is when the battery reaches 100% by using the IoT system. The purpose is to monitor the percentage value of the battery used. When the battery percentage reaches 100%, the battery can be used to replace the existing electric. This device is created to save electricity consumption and it is suitable for use in public areas.The objectives of this project are to generate electrical energy by using piezoelectric cell, to monitor battery storage using system IoT and to analyze battery storage capacity.	Practice-oriented	Title and project synopsis are acceptable
3	TS. ASRI BIN DIN	MUHAMMAD HAZIQ BIN KHAIRIL AZRI	DEVELOPMENT OF SMART WATER DISPENSER USING PICOHYDRO WITH ARDUINO.	One of the most efficient way to produce electricity is by using water. Water is a renewable source, thus it is easier to achieve. It is basically calls hydropower. Hydropower systems convert this potential energy into kinetic energy in a turbine, which drives a generator to produce electricity. To achieve stable electricity, the power needs to be stored so that the electricity could be supply continuously. One of the ways is to apply a battery that can store electricity and it will continuously produce electricity. The output power will be analyzed, so that, the battery does not overload. The objectives for this project are to generate electricity by using a water source, to store energy in energy storage as a DC Voltage, to analyze the electricity produce by the water turbine to the rectifier load. A pico hydro generator will be developed to generate electricity. Then, the AC Voltage will be rectified to a DC Voltage. The voltage will store in a battery to heat the water continuously. Two type of water will release which is hot and warm water based on the consumer input.	Practice-oriented	Title and project synopsis are acceptable

4	TS. ZAIHASRAF BIN ZAKARIA	DOMINIC LAADE	Development of internet of things-based smart electricity home monitoring system using Arduino.	The existing utility system only provides feedback at the end of the month in the form of a bill or the recent energy meter in Malaysia, which displays power consumption over a period of time. This bill or unit on the meter, as the case may be, is usually from the electricity supplier such as Tenaga Nasional Berhad (TNB). A consumer has no way to track their power usage on a more immediate basis. To that effect, a smart home energy monitoring and automation system is therefore developed to provide a clear picture of a home's energy usage. The information obtainable from the proposed device can be used by the user to optimize their energy usage. In addition, it also helps user to control some home appliance usage by turning on and off home appliances based on their electricity consumption cost through a mobile app to reduce electricity consumption and minimize energy waste.	Practice-oriented	Title and project synopsis are acceptable
5	TS. ZAIHASRAF BIN ZAKARIA	PUTERI SYAIDATUL ELLYA BINTI MOHD ZAKI	Investigation of electrical energy consumption among the night market seller in Melaka using off grid solar power generator.	Night market is the most economic business opportunity for most people in Malaysia. Most of all night market need petrol or diesel to generate electricity. This project is to develop solar power generator which use 20 Watts photovoltaic panel. This solar power generator purpose is to help night market traders in power up their electrical appliances. This solar power generator is simple and easily operated. It's also in line with technological development and when it comes to maintenance its doesn't require high maintenance.	Practice-oriented	Title and project synopsis are acceptable
6	TS. ZAIHASRAF BIN ZAKARIA	MUHAMMAD SHUKRI BIN SAHARANI	Development of dual axis solar tracker with surface panel cleaning system using Arduino.	Nowadays in Malaysia, photovoltaic panel are start to install at the residential house area. Dual axis photovoltaic solar tracker is try to improve the quality and quantity energy absorb by the photovoltaic panel to be store in the battery by following the sun movement. Basically, it using two motor to control the movement of the panel using the sensor to detect the movement of sunlight and will give a signal to the controller. The efficiency of photovoltaic can be drop when the panel are effect by the shadow, air pollution and dust. The most problem of the photovoltaic panel efficiency faces is due to the dust. Sunlight will be block from entering the photovoltaic panel when the dust is occupied on top of photovoltaic panel and it will reduce the efficiency of the system. This project will develop a dual axis tracker embedded with surface cleaning system that will maximize the efficiency of the solar panel.	Practice-oriented	Title and project synopsis are acceptable

7	TS. ZAIHASRAF BIN ZAKARIA	NASRUL AZIM BIN KAMARUDDIN	Investigation of power consumption for solar powered garbage collector cleaning tool on the beach using Arduino	Beach cleaning is one of the most needed aspects that must be implemented for clean future. Even though many organizations are involved in removing the garbage, the amount of garbage keeps on increasing day by day. This project is to design and fabricate a tool which capable of collecting the garbage's from the beach and that too with the simple design. Here the beach sand is cleaned by some mechanical equipment like conveyor, motor, gears which gives a fine outcome of the result. The Solar power is the main source of energy used in this machine. A monocrystalline solar panel is used for better results. The power from panel stores in a Lithium-Ion battery which then moves on to the motor which runs the conveyor and the machine	Practice-oriented	Title and project synopsis are acceptable
8	TS. MUHAMAD FALIHAN BIN BAHARI	ADDRIAN THANASUGANG ANAK DAUGLAS ANTON	Development of High Head PICO Hydro power system generation using PELTON type turbine in Domestic water flow.	The Pico hydro is a hydro power with maximum electrical output of five kilowatts (5kW). Hydro power systems of this size benefit in terms of cost and simplicity from different approaches in the design, planning and installation than those which are applied to larger hydro power. It also converting turbine kinetic energy into the electrical energy. Basically, this project is design to build inside the house as it only use domestic water flow to move the Pelton type turbine. The aim for this project is a back-up power supply in case there is any TNB power failure occurs. It also can be apply for those who live at isolated area or at a small farm. Instead of using solar power, they can use hydropower system generation. For water resources supply, it come from the water tank and the water that already go through the Pelton turbine will fall into the second water tank. The water in the second water tank will be pump up into the first water tank. In addition, this project design is to build it as on grid (load is direct from the power that generate by the turbine/bypass the battery) and off grid (use the power that store in the battery) from the project .	Practice-oriented	Title and project synopsis are acceptable
9	TS. MUHAMAD FALIHAN BIN BAHARI	MUHAMMAD AIMAN BIN ASPAR	Inverse Definite Minimum Time Overcurrent Relay Protection Discrimination Scheme Modelling For Power System Network Using PSCAD[EMTDC]	This project is to find a suit setting of inverse definite minimum time overcurrent relay of power system network. During power system failure or tripping condition occurs in power system, the system need to isolated by the nearest IDMT relay and not interupting others nearby power system network. The good IDMT relay discrimination scheme is the capabiltiy of all protection relay in power system to identify failure & isolated it in fast and nearest location. So, in this project, student will design and construct circuit in PSCAD software with complex drawing / data collected from industry and simulate into PSCAD software in order to find the best setting of protection relay supposedly. The aims is to use actual single line drawing from Campus Industry (UTeM Holding), Main Campus UTeM, and any TNB drawing given. For the fault test, it is propose to simulate for 10 types of failure which is phase Red to ground fault , phase Yellow to ground fault , phase Blue to ground fault, phase Red to Yellow to ground, phase Red to Blue to ground, phase Yellow to Blue to ground, phase Red to Yellow to Blue to ground, phase Red to Yellow, phase Red to Blue and phase Yellow to Blue. In addition, assesment will run comparison between normal inverse time overcurrent relay and very inverse time overcurrent relay to study the different in tripping time and others related parameter.	Industry-based	Title and project synopsis are acceptable

10	TS. MUHAMAD FALIHAN BIN BAHARI	MUHAMMAD NURSYAHMI BIN BAHARUDIN	DEVELOPMENT OF AUTO RECLOSURE CIRCUIT BREAKER AT MAIN DISTRIBUTION BOARD USING MICROCONTROLLER ESP32	This project is an auto reclosure of circuit breaker during nuinsance or unwanted tripping. This is normally occurs at residential main distribution board during thunderstrom and heavy rain. If the Residual Current Circuit Breaker switch is off condition during nuisance tripped, the limit switch will detect and give signal to ESP32 processor and servo motor will push it back to ON condition and if the event happens three times but the RCCB still tripped, it will stop pushing the RCCB ON and send out notification to the consumer by blynk server saying that the RCCB is malfunction or the power system failure. In addition, The project can also measure the power consumption, kWH by using the voltage and current sensor to measure the value of voltage and current flow through the Main distribution board and the value will be display by LCD. By Power consumption reading, consumer also is able to plan their own strategy in electricity usage in order to minimize cost.	Practice-oriented	Title and project synopsis are acceptable
11	ADAM BIN SAMSUDIN	AZRAEI NAZRIEN BIN AZALI	Development of Smart Energy Meter with Logger System	Problem Statement : 1) Lack of system expertise especially in Malaysia. 2)The lacking of required system such as logger system and digital problem data will be contributes to confusion and lack of services quality especially to first time users. 3) Cost - an electrical appliances facility is much higher than wiring services. Objective is to study the factor of components that developing modern technologies system, to identify the current practices of power meter logger usage and to identify the factors of data that enhances power meter logger. The focus for this project is on data result of the power meter logger and the improvement of a current electronic power meter as it can easily to use it.	Practice-oriented	Title and project synopsis are acceptable
12	ADAM BIN SAMSUDIN	MUHAMAD ATHIR BIN MOHD SIDEK	Development of a Mailbox Notification system with Solar Battery Charging based on IOT	The problems are they faced loss of important mails, bills, document and even missed the important deadline due to their carelessness and forgetful habit on checking their mailbox. This happens because of the residents do not have a new solution or updated technology that can solve the problem they experienced. It can be annoying if mails, documents and etcetera to turn up missing or it were stolen. Couriers lose time and money on repeated delivery attempts vendors must deal with angry customers or replacing stolen property and must cope with more delivery drivers on the road adding the traffic around the city. Objective : 1. To design a smart mailbox notification system. 2. To develop solar battery charging system 3. To analyse the efficiency of the notification system and solar battery charging.	Practice-oriented	Title and project synopsis are acceptable

13	ADAM BIN SAMSUDIN	NUR SHAHFIQAH NATASHA BINTI SAMSUDIN	Development of UV-C Based Germs Disinfecting Device USING Solar Battery Charging	Covid always infects without us being aware of where we found the virus from. Maybe, we get the virus from the stuff we always wear and hold like phones, wallets or even masks. This machine will help us to sanitize those things using Ultraviolet-C (UV-C) light technology. This technology has a specific wavelength to kills microorganisms by destroying nucleic acids and disrupting their DNA, so that they are unable to perform vital cell functions. This device applicable two sources of energy to fill the rechargeable battery which are using solar energy or direct current. The oObjectives of UV-C based germs disinfecting Device:. 1) To design a UV-C based germs disinfecting Device 2) To develope solar battery charging system on the disinfecting device an energy efficiency and low power consumption system 3) To analyse the efficiency of the disinfecting device	Practice-oriented	Title and project synopsis are acceptable
14	ADAM BIN SAMSUDIN	MUHAMMAD SYUKRI BIN SULIAMAN	DEVELOPMENT OF AUTOMATED EXHAUST FAN FOR MODERN KITCHEN WITH SAFETY FIRE DETECTION FEATURES	Living in a modern era with modern technology, daily usage of high heat output appliances in the kitchen are very common nowadays. However, the solution for this problem such as air conditioning and industrial ventilation will cost higher and doesn't meet most of the user budget for home application. This new automated system with exhaust fan application will secure the target of removing unwanted heat in the kitchen, so that a cooler room can be achieved after a massive cooking activity. As we know, daily cooking activity produce a lot of stains, which is ideal for exhaust fan application as it is easy to clean. In addition, with the approach of PWM method of the microcontroller and integrated relay system application will ensure a smart power input and lower cost consumption. Hope with cost friendly automated home ventilation system with safety fire detection features, more users can have a massive cooking session without worrying about hot kitchen and TNB bills. Objective of Smart Exhaust Fan : 1) To design a smart exhaust fan ventilation system 2) To develope an energy efficiency and low power consumption system	Practice-oriented	Title and project synopsis are acceptable
15	KAMILAH BINTI JAFFAR	MUHAMMAD RIDZWAN BIN AB RAOF	Development of Green Stove Portable Biomass Power Solution based on IoT	Nowadays, a lot of people love hiking and camping for days in jungle or mountain areas. They tend to bring their own power bank to charge their mobile devices. However, most power banks cannot last for a long time, and they only have one functionality which is to charge mobile devices. So, with the newly developed portable biomass power bank with additional features, everyone can gain more benefits from this device. In this project, we will develop a portable biomass power bank and analyze the performance and effciency as portable power supply. Moreover, the value of IoT will be added as additional features compared to a normal power bank and which can solve most problems. For example, we will add an LED light with a sensor that can be connected to a mobile phone and can detect surrounding environment and can also be used as a flashlight. At the same time, this device will connect with IoT system to monitor their battery level and also on and off the led light.	Practice-oriented	Title and project synopsis are acceptable

16	CHE WAN MOHD FAIZAL BIN CHE WAN MOHD ZALANI	NURUL ATHIRAH BINTI MAZLAN	Assessment of wind energy reliability for small lighting purpose	Malaysia is generally known to experience a low wind speed area as compared to other countries. As Malaysia's mean annual wind speed is low at no more than 2 m/s, wind energy has not been successfully harnessed since most of wind turbines need a minimum speed of 4 m/s for electricity generation. The objective of the project is to assess the wind energy reliability in Malaysia by analyse the minimum requirement of wind energy for small lighting purpose. The wind energy is assessed at several possible high wind power location such as coastal area. The generated energy from wind power will be tested and simulate to supply the small lighting and analysed to evaluate its reliability and practicality in Malaysia. The modelling of the project will be involved of suitable programming or simulation software etc.	Practice-oriented	Title and project synopsis are acceptable
17	CHE WAN MOHD FAIZAL BIN CHE WAN MOHD ZALANI	MUHAMAD AMIR SYAHIR BIN JAMAL ABANA	Assessment of earth electrode resistance in residential building by using 3 pole method test	Earth electrode resistance is the resistance offered by the earth electrode to the current flow into the ground which also known as earth resistance or resistance to earth. Earth resistance in residential building need to comply with local or country legal and regulations to provide safety, protection system and over voltage limitation. This project focus on the assessment of earth electrode resistance in residential building which to investigate and analyse the existing earth resistance by using 3 pole method test. The assessment of earth electrode resistance will be involved of earthing test equipment usage such as earth electrode, earth tester etc.	Practice-oriented	Title and project synopsis are acceptable
18	CHE WAN MOHD FAIZAL BIN CHE WAN MOHD ZALANI	HASIF BIN MOHAMAD	Investigation of NEM and SELCO Solar PV Power Generation Integration onto Central Grid Technology In Malaysia	The introduction of solar PV energy generation as part of energy generation mix had few glaring issues that need to be address. Transmission and distribution of electricity in Malaysia is transmitted through central grid line which transmitted electricity using HVAC before stepped down to accommodate distribution grid and consumer loads and demand. To efficiently transmitted the energy Malaysian grid was optimized for AC voltage. In contrast, solar PV generation are generating DC voltage. Hence to accommodate the grid, DC voltage generated through solar PV are converted to AC voltage using inverter before stepped up. Conversion of DC voltage to AC voltage might produce instability as the harmonics, voltage level, and quality of the conversion might differ. The objective of this project is to investigate frequent power quality problem caused by integration of solar PV generation focus to NEM and SELCO customer in Malaysia and to analyse the implementation of solution used in managing solar PV generation integration to Malaysian central grid in terms of technologies and policy. The project investigation and analysis will be involved of suitable simulation software.	Practice-oriented	Title and project synopsis are acceptable

19	KAMILAH BINTI JAFFAR	MUHAMMAD AKMAL ARIF BIN MOHD ADAM	Development of energy management based on Smart Intelligent Home	Nowadays all thing has been optimized to be smart in term of efficiency, control and update to make sure our daily life easier. There has many new smart technology which we can control it just by our phone or an application. Sometimes we have problem such as we are forgot to switch off lights, fan, our house safety or even a woman who want to park in the garage in night which are dark she can turn on the garage light by her smartphone to ensure it is save to enter the house. The objective project are I would like to make our daily life are more practical in term of we can control everything in the house system even we are away from home. In this project, this is an invention a way of convenience which we can controlled by our phone a house system such as lighting, fan, security system, power consumed by the house and also solar power being harvested to be used as hybrid power to smart home controlled device. At the end, this project will give many benefit to user and also environment friendly which using solar power as power source.	Practice-oriented	Title and project synopsis are acceptable
20	KAMILAH BINTI JAFFAR	HARITH IZZUDDIN BIN ROSDI	Development of solar lighting system based on IOT	There are a few issues looked by the solar power system to keep the usage of electricity at full efficient .The issues that regulary happen when the primary electricity source having a high cost for support all the consumer needs. It happens when the consumer have a habits which is doing a waste energy of electricity for every single days. If these keep repeating the primary source of electricity will have a big problem in future which is the common problem is the rate of electric bills will increase. The second problem is related to energy saving which is to prevent the consumers pay a high electricity bills cause of over energy usage. It is a way to prevent all these happen by using solar power system. It may having a high cost for built a renewable energy at the first place but for a long term it will show the effeciency of energy saving. This system are only for lighting saving which is the saving of electrical use from off grid. For this project will observe on the best way to enhance the assembling process to receive a very low cost for built a solar power system. The main objective of this project is to design and development of smart home system integrated with pv solar. This system will be connected to IoT system (blynk application) for monitoring process.	Practice-oriented	Title and project synopsis are acceptable
21	DR. KHAIRUL ANWAR BIN IBRAHIM	MUHAMMAD GHAZALI BIN HAMZAH	Design and Development of a Home Automation System for Promoting Energy Saving and Efficiency	This project will attempt to develop a prototype home automation system with integrated control system for supporting efficient energy usage. The objective of the project is To analyze the efficiency and cost reduction of the system in regular modern kitchen usage. The method will implement IoT technology and system integration using wireless technology.	Practice-oriented	Title and project synopsis are acceptable

22	TS. MUSTAFA BIN MANAP	MUHAMMAD KHAIROOL AIDEED BIN KAMARUDDIN	Development of Wireless Charger using Solar Energy	This project is used to design a wireless charger based on solar energy. For that, a small solar panel can be arranged on the mobile phone to charge independently without wires. Once the mobile phone is exposed to sunlight then it starts charging. The main advantages of this project are, it doesn't use any wire for charging and energy can be conserved. This energy is very famous because of the abundance as well as free energy. So customer's electricity bills, as well as money, will be saved. This energy is very clean as well as generates no dangerous waste similar to other resources of power generation.	Practice-oriented	Title and project synopsis are acceptable
23	TS. MUSTAFA BIN MANAP	MOHAMAD ZUL FADZLI BIN MOHAMAD RADZI	Design of a Solar Powered Smart Load Meter	This project details the design of solar powered meter that reads the signals of any load plugged into an outlet and displays cost readings that may potentially reduce power consumption. A unique aspect of the meter is that it displayscost per hour, day, and year. Displaying the cost per unit of time creates awareness for customers,potentially causing them to use less energy to power or charge their devices.	Practice-oriented	Title and project synopsis are acceptable
24	TS. MUSTAFA BIN MANAP	MUHAMAD TAUFIK BIN MD ISA	Development of electrical power generation using speed breaker	The main idea of this project is to convert the wasted energy into electricity. The goal of this project is to transform energy wasted by vehicles passing a speed breaker into electricity that can be used to power street lights and etc. The concept is to apply a speed breaker component that is connected to a gear and a flywheel that turns when a vehicle crosses. To power up the load, the flywheel is connected to a generator. This can conserve energy that could have been used to power up the load by repurposing energy that would otherwise be wasted.	Practiced Oriented	Title and project synopsis are acceptable

25	MOHD HATTA BIN JOPRI	JAISWARAAN A/L KUNASEGARAN	DEVELOPMENT OF MOBILE CHARGER WITH HAND CRACK GENERATOR	Summary: New method of charging a mobile phone with the help of hand crank generator, and solar panel is being presented in this paper. Solar panel is useful during daylight and hand crank generator can be used at night. So this is a dual mode charger which is operated in either way and both ways do not consume system power. This type of mobile charger is very useful when traveling because it uses solar panel to convert renewable source light into electricity. Mechanical hand crank generator is used which converts mechanical energy into electrical energy and then charges the mobile. No electrical sources are needed for it. Our design uses a compound gear train for transformation of the mechanical energy generated from the hand crank to the generator. For that reason it is convenient as well as economical to use such kind of mobile charger for our mobile phone. Objectives: 1. To convert hand crack energy into electrical energy with the usage of transducer. 2. To develop a real-time system with IOT that able to control and monitor the generator. 3. To analyse the significant difference on an output voltage with variation of time interval of generator rotor..	Practice-oriented	Title and project synopsis are acceptable
26	MOHD HATTA BIN JOPRI	MUHAMMAD SYAHMI BIN TAQIYUDDIN	DEVELOPMENT OF SOLAR PHOTOVOLTAIC WATER PUMPING SYSTEM	SUMMARY: All this while, the two most common sources of power for water pumps used in irrigation and domestic applications are diesel and grid electricity. With the continuous uses of fossil fuels and their negative environmental consequences, some researches have been discovered to switch over to renewable sources such as solar, wind, and biogas energy to power the water pumping system. A benefit of using solar energy to power agricultural water pump systems is that increased water requirements for livestock and irrigation tend to coincide with the seasonal increase of incoming solar energy. When properly designed, these PV systems can also result in significant long-term cost savings and a smaller environmental footprint compared to conventional power systems. A prototype of this PV water pumping system will be demonstrated through this project and some features will be added to ease the inspection of the water tank volume from time to time. Objectives: 1. To design cost economical and efficient photovoltaic water pumping for water storage system. 2. To develop real-time monitoring sytem for photovoltaic water pumping system. 3. To analyse the available solar energy based on the geographical factor.	Practice-oriented	Title and project synopsis are acceptable
27	MOHD HATTA BIN JOPRI	AZIZI AIMAN BIN ALI	DEVELOPMENT OF SOLAR WATER HEATER SYSTEM	Summary: Solar water heating (SWH) is the process of heating water using sunlight and a solar thermal collector. To provide solutions in different climates and latitudes, a variety of configurations are available at varying costs. SWHs are commonly used in residential and some industrial settings. A solar collector heats a working fluid, which is then stored in a system for later use. It is a device that converts the light emitted by the sun into heat energy that is transferred to the required medium. This project will help the users using the hot water without using any electrical supply from power grid. Hence, will reduce their electrical monthly cost. Objectives: 1.To design cost economical and efficient solar water heater system. 2.To develop harvesting system of solar radiance for solar water heater. 3.To analyse the capacity heat energy, solar radiation and hot water temperature of system.	Practice-oriented	Title and project synopsis are acceptable

28	MOHD HATTA BIN JOPRI	HADIRAH BINTI ZAHARUDDIN	DEVELOPMENT OF REAL-TIME ENERGY BILLING SYSTEM	The use of online energy billing system may offer faster billing, instant payments, enhanced security, budgeting purposes, and accessibility from anywhere. Technology such as IoT has made all the data needed in real-time acquisition and analysis are possible now. The proposed project offer adaptation to the ISO 50.001 standards, the democratization of information using IR 4.0 technology, and invoice analysis. Objectives: 1. To design a real-time energy billing system using real-time data acquisition and IoT technology. 2. To develop and integrate real-time measurement and database systems. 3. To analyze energy usage, and load profiles of the system	Practice-oriented	Title and project synopsis are acceptable
29	TS. DR. ZIKRI ABADI BIN BAHARUDIN	MUHAMMAD EDZHAM BIN AHAMAD	POWER QUALITY – MITIGATION OF NEUTRAL TO EARTH VOLTAGE (NEV) CAUSING DAMAGE TO EQUIPMENT	Typically, the damages of electrical equipment are due to lightning and surges. However, the voltage generated at neutral to earth (NEV) can also cause damage to electrical equipment. This is because the value of this voltage is low and will not cause the whole system to be affected. Several reports of faults that have been identified as having problems with frequent faulty lights but no response to circuit breakers even that are in good and normal condition. It might happen on new wiring systems. The objectives of this proposal are: 1. To analyse the Neutral to Earth voltage profile that causes damage to the electrical equipment. 2. To identify causes other than workmanship 3. To evaluate the best solution for this problem To complete this project, all the data will be recorded on the existing wiring system using Yokogawa DL850. This method will be performed on a new system (less than 10 years) and also old system (more than 10 years). In this project, 3 things are very important: 1. Data collection using a data logger installed on the system. 2. Analysing the data above. 3. Site visits to identify the root cause of the problem.	Practice-oriented	Title and project synopsis are acceptable
30	TS. DR. ZIKRI ABADI BIN BAHARUDIN	MUHAMMAD OZIER BIN HASRI	Assessment of Electromagnetic Interference related common and differential mode noise in Power System Technology Lab, FTKEE	AC line transients, such as line surges due to lightning strikes, power switching from motor controls, circuit breakers or relays actuating, can cause both differential and common mode disturbances on the AC mains that propagate through the power supply to the electronics or is coupled across conductors and result in malfunctions or damage to the electronics. The main idea of this project is to mitigate the profile of ac line transients either compose the differential mode or disturbance mode that might be coupled in certain terminals. The project will be conducted in Power System Technology lab in FTKEE. The high-speed transient LeCroyHDO4000 and Yokogawa DL850 will be used to measure the property of either common or differential mode signal at the power supply terminal. Finally, it is expected that the student will produce a suitable filter for compensating the transient issue as mentioned above.	Practice-oriented	Title and project synopsis are acceptable

31	TS. DR. ZIKRI ABADI BIN BAHARUDIN	MOHAMMED ABDULLAH NASSER SHARAFALDEEN	Mitigation of Negative and Positive Lightning Ground Flash Based on Laplace Wavelet	It is important to distinguish and analyse positive and negative ground flash events with appropriate data processing algorithms. In this study, the real fine structures of lightning electromagnetic pulse of ground flash (positive or negative) measured from 2015 to 2019 using high speed transient LeCroy HDO4000 will be analysed by using Laplace wavelet. The main characteristics of field waveforms such as, the correlation coefficient, the time of arrival and the dominant frequency of the initial peak field, the energy and the frequency of the power spectrum peak will present. It is expected that the instantaneous initial peak field pulse can be located by the value of the correlation coefficient.	Practice-oriented	Title and project synopsis are acceptable
32	TS. DR. ZIKRI ABADI BIN BAHARUDIN	MUHAMMAD ADLIE BIN ABD MALIK	Assessment of Real Lightning Electromagnetic Pulses in The Cloud Based on Laplace Wavelet	It is important to distinguish and analyse different lightning events with appropriate data processing algorithms. In this study, the real fine structures of lightning electromagnetic pulse in the cloud measured from 2015 to 2019 using high speed transient LeCroy HDO4000 will be analysed by using Laplace wavelet. The main characteristics of field waveforms such as, the correlation coefficient, the time of arrival and the dominant frequency of the initial peak field, the energy and the frequency of the power spectrum peak will present. It is expected that the instantaneous initial peak field pulse can be located by the value of the correlation coefficient.	Practice-oriented	Title and project synopsis are acceptable
33	IR. DR. MOHD FARRIZ BIN HJ MD BASAR	DJUEMYLLA BINTI YUSUP	Development of an Innovative Learning Kit via Pico Hydro Generation System for STEM Application	The project develops an inexpensive and appropriate learning kit for STEM. Through this kit, users, especially students, will more easily learn about renewable energy, especially in the field of pico hydropower power.	Practice-oriented	Title and project synopsis are acceptable

34	IR. DR. MOHD FARRIZ BIN HJ MD BASAR	ADIB ZIKRY BIN ABDUL KASIMIN	Development of traditional pastry dough dispenser via electrical machine with low power consumption	The project developed an inexpensive and suitable dough dispenser machine for traditional pastry or known as bahulu. By using smart controller system, users will find it easier to cook traditional bahulu pastry with perfect quality as well as saving the energy consumption.	Practice-oriented	Title and project synopsis are acceptable
35	IR. DR. MOHD FARRIZ BIN HJ MD BASAR	MUHAMMAD ZHAHIR BIN ZAINAL ABIDIN	Development of portable and automatic ablution machine powered by solar energy	The project develops an ablution machine that is portable and can save water consumption. This machine operates completely automatically. This project will analyze the effectiveness of power supply from the solar energy to distribute a significant amount of energy for saving as well as water saving.	Practice-oriented	Title and project synopsis are acceptable
36	IR. DR. MOHD FARRIZ BIN HJ MD BASAR	MUHAMMAD BIN ABD RAHMAN	Development of an innovative wind turbine generation system using a low wind resources.	The project develops an electrical power generation system using an innovative wind turbine. Uniquely, this system is able to generate electricity using low wind resources.	Practice-oriented	Title and project synopsis are acceptable

37	TS. SYAHRUL HISHAM BIN MOHAMAD @ ABD RAHMAN	NUR ASMA SALSABILA BINTI MD NAWI	Development of Single Phase Active Power Filter using Adaptive Notch Filter for Harmonics reduction	Power quality problem, especially regarding harmonics contamination, has much affected the overall power system stability. To overcome this problem, the utilization of Active Power Filter (APF) are considered to be one of the compelling methods. This paper presents the implementation of Shunt APF with an improved adaptive notch filter known as Extended Fryze Adaptive Notch Filter (EFANF) for fundamental signal extraction. The adaptive notch filter has improved the utilization from a single phase for direct fundamental signal extraction. The study will involve on simulation of the ANF-APF with DC link control for variation of nonlinear load. Based on the simulation, It can be seen the effectiveness of the proposed topology to improve harmonics mitigation.	Practice-oriented	Title and project synopsis are acceptable
38	TS. SYAHRUL HISHAM BIN MOHAMAD @ ABD RAHMAN	MUHAMMED ADAM BARI' BIN YUSPALIZA	Development of Power generation using PV array and generator for smart farm.	Agriculture is one most important sector in the world. However usually in terms of agriculture lacks of self-sustaining in terms of power consumption due to the location of the farms. This project objective is to reduce the dependencies of the rural farms power consumption toward the grid and increase the dependencies of self-generating power by using PV array. This project scope will involve of PV generation and monitoring for smart farm application.	practice oriented	Title and project synopsis are acceptable
39	ARMAN HADI BIN AZAHAR	VENOSHA A/P RAMAN	Development of Smart Wireless Battery Charging With Charge Monitor System	The project is a device to transfer power wirelessly instead of using conventional copper cables and current carrying wires and also measure battery charge. It also charges the battery using wireless power transfer concept till it reaches 100% capacity. This power is made to be transferred within a small range only for example charging rechargeable batteries etc. For demonstration purposes we have a battery that operates by using wireless power. This requires an electronic circuit for conversion of AC 230V 50Hz to AC 12V, high frequency and this is then fed to a primary coil of an air core transformer. The secondary coil of the transformer develops 12V high frequency. The system also measures the charge in the battery and charges it until it reaches a 100% capacity. For this purpose we use an Avr family microcontroller that constantly measures battery charges and charges battery automatically until it reaches 100% capacity and stops charging the battery as soon as the charge reaches 100%. Therefore by this way the power gets transferred through primary coil to secondary coil that are separated by certain distance around 4cm. The range may be increased by increasing coil size accordingly. Here the primary coil acts as transmitter and secondary coil receives the power to run a load. This project can be used to charge batteries of a various devices and applications such as battery charged scooters and vehicles without plugging in as well as measure their charge.	Practice-oriented	Title and project synopsis are acceptable

40	ARMAN HADI BIN AZAHAR	SHAHANEEZ ALISA BINTI MOHD SABRI	DESIGN & IMPLEMENTATION UNDERGROUND CABLE FAULT DISTANCE LOCATOR USING IOT AND WIFI	Fault detection in underground cable is difficult compared over head.Even the improving of the cable increase, but still may cause cable to fail during operation. The repairing related to that particular cable is difficult not knowing the exact the location of cable fault. The repairmen know exactly which part has fault and only that area is to be dug to detect the fault source. Most Underground Faults are located by unearthing the entire length of cable to enable visual inspection to be carried out. In case where visual inspection is not helpful then the entire length of cable is replaced. This manual method is not only expensive but also results in heavy loss of revenue to the power distribution company.	Industry-based	Title and project synopsis are acceptable
41	ARMAN HADI BIN AZAHAR	HAIDA SYAHIDA BINTI HARON	Development of a fuzzy logic DC link control for Adaptive notch filter based active power filter	During floods, usually the affected residential areas will be cut off from electricity supply or blackouts. This matter brought fear to the flood victims as they had to live in darkness without light. Therefore, the rain drop harvester to be as an alternative to supplying a source of electricity.	Practice-oriented	Title and project synopsis are acceptable
42	TS. SYAHRUL HISHAM BIN MOHAMAD @ ABD RAHMAN	ABDULLAH HAKIM BIN AMIR RADZUANUDDIN	Development of a fuzzy logic DC link control for Adaptive notch filter based active power filter	Study on the design of a fuzzy logic controller for DC link controller to be integrated with adaptive notch filter for harmonics mitigation by using shunt active power filter.	Practice-oriented	Title and project synopsis are acceptable

43	DR. KHAIRUL ANWAR BIN IBRAHIM	ISMAIL BIN HUSIN	DEVELOPMENT OF A GAS LEAKAGE DETECTOR FOR DOMESTIC SAFETY AND HEALTH APPLICATION	Gas leakage is one of the major cause of fire incident. Early detection of any gas leakage could help prevent this incident from happening. This project aims to develop a a gas leakage detector for domestic safety and health application. It will inve the use of solar energy as power supply, gas leakage sensors and Arduino controller to cut off the main gas supply in case of leakage gas occurrance.	Practice-oriented	Title and project synopsis acceptable
44	DR. KHAIRUL ANWAR BIN IBRAHIM	MUHAMAD ZULHAIRIE BIN AZMI	DEVELOPMENT OF A SOLAR POWERED AUTOMATIC CLOTHESLINE RETRIEVAL SYSTEM	Solar powered system has been identified as one of the key green technology and it has been used to provide power to run household appliances. One of the key advantage of having a solar power is that it reduces electricity cost and also helps to reduce green house gas emission from using power coming from traditional power plant. Thus, to support the use of solar energy, this project aims to develop a solar powered automatic clothsline retreival system.Automatic clothesline is a system that allows users to hang their clothes every day when not at home or when busy working. The system works by removing the clothesline during the day and inserting the clothesline during the rainy season or at night. This system is programmed using PLC as controller and a simple mechanical retraction system.	Practice-oriented	Title and project synopsis are acceptable
45	TS. DR. MUHAMMAD SHARIL BIN YAHAYA	MOHAMMAD ASWA	Development of solar tracker system with IoT based monitoring using Arduino.	Student is required to develop a solar tracker system which control by Arduino. The input and output will be monitored based on IoT by using Arduino. Student will develop the small scale solar system which is one of common renewable energy system for power generation. The efficiency of power generated is aim to be improved with the tracker system. The electrical parameters such as current, voltage and power generated will be recorded and monitored by using Arduino.	Practice-oriented	Title and project synopsis are acceptable

46	TS. MUSTAFA BIN MANAP	NUR IESHAH BINTI MOHD YUNUS	DEVELOPMENT OF MINI WIND TURBINE FOR ELECTRIC POWER GENERATION	This project is focusing on the design and development of a mini sustainable wind energy conversion system to be employed as a stand-alone electrical energy generator for isolated communities. Although it cannot produce power to the same scale as coalor gas fuelled power stations, but they do however offer the ability to operate as stand-alone power generation systems, reducing the need for long distance power transmission lines.	Practice-oriented	Title and project synopsis are acceptable
47	NURBAHIRAH BINTI NORDDIN	MUHAMAD KHALIS L	Development of Electrical Energy Load Survey for housing area	The main objective of this project is to calculate the electrical energy required by a load through push-button switches by entering the unit cost relation as per the energy tariff. With this system, one can avoid hours of waiting for a load survey assistant.	Practice-oriented	Title and project synopsis are acceptable
48	NURBAHIRAH BINTI NORDDIN	IKRAM HAMZAH BIN RAJ MOHAMED	Development of Password base circuit breaker	This project is based on one of the most important asset of an electrical line the circuit breaker. The circuit breaker is connected to a password that is coded into its display keypad wich allows us to override the circuit breaker on emergency situations that demands us to on and off the circuit breaker. The password is mainly to protect the power that are flowing at the line through the circuit breaker which requires password to override the circuit breaker or to make changes on the current flow at the line.	Practice-oriented	Title and project synopsis are acceptable

49	NURBAHIRAH BINTI NORDDIN	MARK MAXSTEIN BIN EDWIN	Fault Analysis in transmission line by using MATLAB Simulation Software.	This project is about analysis of two fault locations occur inside the transmission line. In the Transmission line system consists of significant aspect design and have high force tension transmission limit and they are inclined to infirmity of bigger sizes. In various phenomena, different type of fault happened throughout the transmission lines. Protection device such as protection relay are one of the most important roles to remain the transmission line in a secure condition. The studies are including measure of fault current, current value in RMS and Power Factor of the both location of the transmission line. The main purposes of the protection device to trespass the fault section from the phase to ground concurrently of the fault may cause accidently flashover unto the electrical equipment. One of the protection equipment is distance relay and it is commonly utilized in transmission line. Some of the time these relays are used for backup protection. This are the methods to deal with the MATLAB software in which transmission line model is planned and different issue tool stash.	Practice-oriented	Title and project synopsis are acceptable