

CELEBRATING
COMMERCIALISATION
YEAR 2014

iiindex 2014

AN INTERNATIONAL EXPOSITION ON RESEARCH AND INNOVATION

invention
innovation
& design
exposition 2014

INNOVATEUR
wannabe!
2014

27th - 30th
APRIL 2014
DEWAN AGUNG TUANKU CANSELOR (DATC)
UNIVERSITI TEKNOLOGI MARA
MALAYSIA

*Bridging
the valley of death :
advancing the
commercialisation
of research*

RESEARCH BOOK

iiindex2014

AN INTERNATIONAL EXPOSITION ON RESEARCH AND INNOVATION

invention
innovation
& design
exposition 2014

Copyright©RIBU 2014

RESEARCH INNOVATION BUSINESS UNIT
UiTM-MTDC Technopreneur Centre, Universiti Teknologi MARA
40450 Shah Alam, Selangor Darul Ehsan, MALAYSIA
Tel : +603-5544 2747/2748/2750
Fax : +603-5544 2790

Web : www.iiindex.com.my
Email : iiindexuitm@gmail.com



FOREWORD

The Honourable Minister of Science, Technology and Innovation (MOSTI) has launched 2014 as Malaysia Commercialisation Year 2014 (MCY2014) with the theme Science Technology and Innovation (STI) for Wealth Creation. In line with this theme, Invention, Innovation, Design & Exposition 2014 (iidex2014) is an annual exposition organized by UiTM and is the ultimate platform to highlight and commercialise new inventions and innovations. Researchers and inventors will exhibit their products which cater to the needs and wants of the community and the country.

The iidex2014 creates a new dimension by fusing two competitive concepts, a competition among innovative products and a competition to invite Innovateur Wannabes to perform live pitching of their products to the audience. The iidex2014 focuses on comprehensive commercialization and creating opportunities for entrepreneurs to carry out R&D as well as to provide avenue to commercialise their products. Through expositions such as iidex2014, MOSTI hopes to inculcate the culture of commercialisation of new technology designed and created by Malaysians.

I wish to congratulate all the participants of the iidex2014 and this is the opportunity for all researchers to show their ideas and exhibits their products and creativity. Apart from showcasing their products, innovators will have the opportunity to provide a window to the industry for business matching during the exposition.

Tan Sri Dato' Sri Sallehuddin Mohamed
Pro-Chancellor, Universiti Teknologi MARA

LIST OF PRODUCTS

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|--|------|
| 1 | A | 'REBANA UBI' COMPUTER SPEAKER : A CORPORATE GIFT WITH UNIQUE MALAYSIA HERITAGE ELEMENT | 1 |
| 2 | A | WALL CERAMIC DECO ARTS AS THERAPY | 1 |
| 3 | A | THE EFFECTS OF UNCONTROLLED DEFORESTATION AND DEVELOPMENT TO MALAYSIA'S ECOSYSTEM. | 2 |
| 4 | A | BONGKA (JAWI BOARD GAME) | 3 |
| 5 | A | NEW SUITE FOR POISONER IN THE AGRICULTURAL SECTOR | 3 |
| 6 | A | MULTI-ANGLE LADDER (MAL) | 4 |
| 7 | A | B-PLUG | 5 |
| 8 | A | NAILS BINDING IKAT TEXTILE DESIGN | 6 |
| 9 | A | THE TRAVELLING PRAYER MAT | 7 |
| 10 | A | INDIGENOUS SOFTWARE FOR SIZING LARGE SCALE ROOFTOP GRID-CONNECTED PHOTOVOLTAIC SYSTEMS IN MALAYSIA | 7 |
| 11 | A | APPLICATION OF ANN IN DISCRIMINATING THE AGARWOOD OIL QUALITY USING SIGNIFICANT CHEMICAL COMPOUNDS | 8 |
| 12 | A | EASILY DEPLOYABLE, MULTI-FUNCTIONAL LOW FREQUENCY FS RADAR NETWORK | 9 |
| 13 | A | PRESENT TIME TRACKER | 9 |
| 14 | A | A GENERALIZED FAULT LOCATION METHOD BASED ON VOLTAGE SAGS FOR DISTRIBUTION NETWORK | 10 |
| 15 | A | CMS: CONFERENCE MANAGEMENT SYSTEM | 10 |
| 16 | A | AUTOMATIC RABBIT FEEDING SYSTEM USING SCADA | 11 |
| 17 | A | ON-BOARD REAL TIME VISION BASED SENSOR IMPLEMENTATION ON UAV FOR FEATURES DETECTION TECHNIQUE OF LOW ALTITUDE MAPPING | 11 |
| 18 | A | A SELF-CONTAINED REAL-TIME ANGLE DEVIATION DETECTION AND MEASUREMENT TECHNIQUE FOR STRAIGHT LINE QUADROPTER NAVIGATION USING ACCELEROMETER | 12 |
| 19 | A | PORTABLE WIRELESS ITEMS IDENTIFICATION SYSTEM (PWIIS) | 12 |
| 20 | A | OOMPH! : FRUIT SNAX ENERGY BAR | 13 |
| 21 | A | HEALTH CARE PROVIDER (HCP) FRIENDLY PEN | 14 |
| 22 | A | THE MULTI-TASK TURNING TEST (THE MTT TEST) | 15 |
| 23 | A | 'USERS' IN-VIVO: REFERENCE TABLE ON EFFECTS OF ULTRASOUND DURING PREGNANCY | 16 |
| 24 | A | ANTIBACTERIAL SOAP FROM EXTRACTION OF ZINGIBER ZERUMBET SP AND WASTE COOKING OIL | 17 |
| 25 | A | INDIVIDUAL - MEDICATION SAFETY BOX (I-MEDS box) | 18 |
| 26 | A | D-EXERCISE FOR PATIENTS WITH CORONARY HEART DISEASE (CHD) | 19 |
| 27 | A | AMBER FILTER WITH SELF-ADMINISTERED NEAR VISION SCREENING CARD | 20 |
| 28 | A | MALAY READING CHART: READING SPEED TESTING INSTRUMENT | 21 |
| 29 | A | CP-TRUPEC | 22 |
| 30 | A | BUILDING MATERIALS INFORMATION (BUMI) FRAMEWORK FOR BUILDING ADAPTATION PROJECTS | 23 |
| 31 | A | MY-ALBEDO: AN ALTERNATIVE BASELINE RADIATION NETWORK | 24 |
| 32 | A | SPECTRO-GIS | 25 |
| 33 | A | ELICITING EXPERT OPINION VIA DELPHI SURVEY | 26 |
| 34 | A | WEB-BASED VRGIS PROPERTY MARKETING INFORMATION SYSTEM (VRGIS-PMIS) | 27 |
| 35 | A | E-PROCUREMENT BENEFITS FRAMEWORK FOR CONSTRUCTION INDUSTRY | 28 |
| 36 | A | UNIVERSAL DESIGN GUIDELINE FOR PUBLIC PARK RECREATIONAL FACILITIES | 29 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|--|------|
| 37 | A | GBI TOOLS FOR INTERIORS - SUSTAINABLE PLANNING & MANAGEMENT | 30 |
| 38 | A | SUSTAINABLE ABSORPTION PANELS FROM AGRICULTURAL WASTE | 31 |
| 39 | A | BREATHABLE & INTERLOCK-ABLE ROOF TILE: NATURAL VENTILATION IN TROPICAL HUMID ARCHITECTURE | 32 |
| 40 | A | PROPOSED INTERIOR DESIGN OF RADZUAN RADZIWILL BOUTIQUE AT LOT D STRATA MELAWATI, JALAN BANDAR 11, WANGSA MELAWATI 53300 SELANGOR FOR DATO RADZUAN MOHD RADZI | 33 |
| 41 | A | INTELLIGENT TREE INVENTORY DETECTOR | 34 |
| 42 | A | GEOFLOOD INFORMATION VISUALISOR (GFIV) | 35 |
| 43 | A | AQUAOS: SPATIAL AQUACULTURE DECISION SUPPORT SYSTEM USING MULTI INTEGRATED OPEN SOURCE GIS | 36 |
| 44 | A | FORMULATING [H+T] AFFORDABILITY INDEX FOR LOW-COST HOUSING DISTRIBUTION PROCEDURE | 37 |
| 45 | A | RECYCLE SHUTTLECOCKS AS PARTICLE BOARDS | 38 |
| 46 | A | THE RELATIONSHIP BETWEEN HOUSEHOLD EXPENDITURE AND HOME OWNERSHIP IN DETERMINING AFFORDABILITY | 39 |
| 47 | A | A CONSERVATION OF HERITAGE TIMBER BUILDING IN MALAYSIA - MASJID LAMA KAMPUNG KUALA DAL, KUALA KANGSAR, PERAK. | 40 |
| 48 | A | 23 CYCLE | 41 |
| 49 | A | ASSESSMENT ON RECREATION CARRYING CAPACITY AT SELANGOR FOREST RECREATION AREAS | 42 |
| 50 | A | THE SPEEDY LINGO GAME- MASTERING SYNONYMS, ANTONYMS AND HOMONYMS IN A FLASH | 43 |
| 51 | A | PRACTICUM EVALUATION SYSTEM (PES) | 43 |
| 52 | A | EXAM'S REPORT AUTOMATION (ERA) | 44 |
| 53 | A | THE CONSULATE | 44 |
| 54 | A | E-ESSENCE: ELECTRONIC EMOTIONAL AND SOCIAL SUPPORT FOR SPECIAL EDUCATIONAL NEEDS (SEN) LEARNERS' COMMUNITY IN HIGHER EDUCATION | 45 |
| 55 | A | LITERATURE REVIEW ANALYSIS SYSTEM (LIRAS) | 46 |
| 56 | A | ELECTRONIC MALAYSIAN CRITICAL THINKING TEST | 47 |
| 57 | A | STAD: STRATEGIZING TRAINING OF ADULT LEARNERS THROUGH DIVERSITY | 48 |
| 58 | A | INTELLECTUAL SCIENCE AND MATHEMATICS PROGRAM (I-SMP)- ENHANCING STUDENTS' LEARNING INTEREST FOR BETTER PERFORMANCE. | 49 |
| 59 | A | ONLINE SUBMISSION & ANALYSIS FOR FINAL YEAR PROJECT EVALUATION | 50 |
| 60 | A | CAMPUS LIFE SERVICES SYSTEM | 51 |
| 61 | A | INNOVATED COSMIC FUNCTIONAL SIZE MEASUREMENT CALCULATOR FOR MOBILE APPS DEVELOPMENT COST ESTIMATION | 52 |
| 62 | A | SPRINKLER ARRANGEMENT FOR STADIUM UiTM | 53 |
| 63 | A | THE DEVELOPMENT OF SECURE INTERFACE SYSTEM FOR WI-FI INTERNET ACCESS USING BLENDED APPROACH OF CAPTIVE PORTALS AND KEY VERIFICATION TECHNIQUES | 54 |
| 64 | A | MUSLIM CENTERED USER INTERFACE DESIGN PROTOTYPE | 55 |
| 65 | A | FORECASTING SHARE PRICES OF COMPANIES IN BURSA MALAYSIA USING GEOMETRIC BROWNIAN MOTION | 56 |
| 66 | A | MICRO SOURCING FRAMEWORK TO UPLIFT INCOME OF THE POOR | 57 |
| 67 | A | A USABLE MOBILE CALENDAR FOR ELDERLY | 58 |
| 68 | A | SURFACE RECONSTRUCTION ON MINI PARALLEL PROCESSING: GREEN TECHNOLOGY FOR IMAGE PROCESSING | 59 |
| 69 | A | RENA_ CA | 60 |
| 70 | A | CASSIA AURICULATA CAPSULES | 61 |
| 71 | A | ALL-IN-1 ADVERSE DRUG REACTION REPORTING SYSTEM | 62 |
| 72 | A | EASY TO DO FAMILY DIY REFLEXOLOGY KIT | 63 |
| 73 | A | GOLDEN-C: MANGO DRINK ENRICHED WITH ANTIOXIDANTS OF MAS COTEK | 64 |
| 74 | A | ASSESSMENT OF THE HALAL STATUS OF RESPIRATORY PHARMACEUTICAL PRODUCTS IN A HOSPITAL | 65 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|---|------|
| 75 | A | A RETROSPECTIVE COMPARISON OF THE MORTALITY OF CRITICALLY ILL PATIENTS RECEIVING PROLONGED AND STANDARD INFUSION OF MEROPENEM | 66 |
| 76 | A | ELDERLY MEDICATION AND SAFETY (EMAS) EDUCATION PROGRAM | 67 |
| 77 | A | ORALEC ANTIINFLAMMATORY MOUTHWASH | 68 |
| 78 | A | HOTEL RODENTIA | 69 |
| 79 | A | PORTABLE JACKET | 70 |
| 80 | A | GLOW IN THE DARK (GITD) EMERGENCY LANE | 70 |
| 81 | A | PARKING MARKER | 71 |
| 82 | A | MULTIPURPOSE TOILETRIES | 72 |
| 83 | A | SMART WIPEBOARD | 73 |
| 84 | A | MAGNETIC LAMP | 74 |
| 85 | A | CATUR PILIHAN | 75 |
| 86 | A | CUZIBAG | 76 |
| 87 | A | 4 IN 1 HEATCOOK | 76 |
| 88 | A | 3D PHONOGRAMS BOOK | 77 |
| 89 | A | FACIAL EXPRESION AND THE MASKS | 78 |
| 90 | A | ADAPTIVE CLOTHING FOR PARAPLEGIC INDIVIDUALS | 79 |
| 91 | A | AN INNOVATION BACKPACK JACKET : FOR KIDS | 80 |
| 92 | A | SMART PENCIL CASE | 81 |
| 93 | A | CORATELLA | 81 |
| 94 | A | AN INNOVATION OF INTELLIGENT FOOD COVER HEATER | 82 |
| 95 | A | HYDRO ELECTRICIA | 82 |
| 96 | A | TYRE RESCUE KIT | 83 |
| 97 | A | R2R | 83 |
| 98 | A | SAFETY STOPPER | 84 |
| 99 | A | MARKER DUSTER | 84 |
| 100 | A | IC TRAQUER (IDENTIFICATION CARD TRACKER) | 85 |
| 101 | A | NEO BOTTLE | 85 |
| 102 | A | INFOMEDIA FOR FACTORS CONTRIBUTING TO INTERNET ABUSE IN THE WORKPLACE | 86 |
| 103 | A | AUTOMATIC PET FEEDER WITH 7-TIMER TECHNOLOGY (PEFED-7) | 87 |
| 104 | A | AUTOMATIC DATABASE OF ROBUST NEURAL NETWORK FORECASTING | 88 |
| 105 | A | SYSTEM OF PORTABLE FIREARM ANALYSIS DEVICE (PAFAD) | 89 |
| 106 | A | PERSONALIZED INTELLIGENT FITNESS CALORIE (IFITCAL) ADVISOR | 90 |
| 107 | A | INTERACTIVE FACEBOOK SEMANTIC ANALYZER | 90 |
| 108 | A | PADDY DEFECT DETECTION INTELLIGENT KIT (PADDI KIT) | 91 |
| 109 | A | GEOGRAPHICAL INFORMATION SYSTEM (GIS) DEVELOPMENT FOR LICENSING AND ENFORCEMENT DEPARTMENT (LED) OF MBSA (GIS-LED) USING SPATIAL DATA ANALYSIS. | 91 |
| 110 | A | BIKE RECOMMENDER SYSTEM | 92 |
| 111 | A | PDE-BASED DENOISING TOOL FOR DIGITAL RADIOGRAPHIC IMAGE OF WELDING DEFECT | 93 |
| 112 | A | NANOPARTICLE TECHNOLOGY IN AQUEOUS CARBON DIOXIDE (CO ₂) FOAM FOR ENHANCED OIL RECOVERY (EOR) | 94 |
| 113 | A | BIODEGRADABLE POLYMER FROM TERRESTRIAL EDIBLE MUSHROOM FOR ENHANCED OIL RECOVERY (EOR) | 95 |
| 114 | A | GREEN TiO ₂ /ENR/PVC NANOCOMPOSITES WITH IMPROVED TENSILE STRENGTH FOR CABLE INSULATOR | 96 |
| 115 | A | ECO-FRIENDLY EPOXIDE AS GREEN CHEMICALS PRECURSOR | 97 |
| 116 | A | PRODUCTION OF NEW GROWING MEDIA FOR ALGAE IN BIODIESEL PRODUCTION | 98 |
| 117 | A | PRODUCTION OF XYLANASE BY XYLANOLYTIC MICROORGANISM USING OIL PALM LEAF AS SUBSTRATE | 99 |
| 118 | A | ECO-FRIENDLY BAKER'S YEAST FOR MICROBIAL ENHANCED OIL RECOVERY (MEOR) | 100 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|--|------|
| 119 | A | ONLINE MONITORING SYSTEM OF RESPIRATION (OXYGEN TRANSFER RATE) OF MICROORGANISMS IN AEROBIC FERMENTATION | 101 |
| 120 | A | TANNIN EXTRACTION FROM MANGOSTEEN PEEL FOR VISCOSIFIER AND FLUID LOSS ADDITIVE IN DRILLING FLUID | 102 |
| 121 | A | ELAIS GUINEENSIS (PALM) LIGNOCELLULOSIC BIOMASS DISSOLUTION WITH AQUEOUS IONIC LIQUID FOR BIOFUEL PRODUCTION | 103 |
| 122 | A | AN INNOVATION OF CORDIAL LIQUID INTO CORDIAL CAPSULE | 104 |
| 123 | A | “USING THE “GLASS CEILING” INDICATOR TO MEASURE THE EXTENT OF ITS EXISTENCE IN THE MALAYSIAN CORPORATE SECTOR” | 105 |
| 124 | A | PORTABLE FLIP KEYS | 106 |
| 125 | A | BIKE SHARING SYSTEM | 106 |
| 126 | A | INSTITUTIONAL AND FAMILY SUPPORT AS AN INDICATOR TO MEASURE WOMEN'S DECISION TO REMAIN IN THE LABOUR FORCE | 107 |
| 127 | A | CACOONEY | 108 |
| 128 | A | AN ALTERNATIVE MODEL OF SELF-CONGRUITY FOR ISLAMIC BANKING CUSTOMERS: A MULTI-DIMENSIONAL APPROACH | 109 |
| 129 | A | INCORPORATING RISK MANAGEMENT AS PART OF SHARIAH GOVERNANCE FRAMEWORK IN ISLAMIC INSTITUTION | 110 |
| 130 | A | A PROPOSAL FOR A NEW MODEL OF SHARIAH COMPLIANT HOTELS | 111 |
| 131 | A | A NOVEL 3D QUANTIFICATION TECHNIQUE FOR MUCOSA THICKNESS | 111 |
| 132 | A | INNOVATION IN APPLICATION OF HIYAL (LEGAL DEVICE) ON IJARAH BASED CONTRACT IN MALAYSIA | 112 |
| 133 | A | PROTECTIVE THERMOFORMING PALATAL COVER | 113 |
| 134 | A | A NOVEL INTRA-ORAL LUBRICATING DEVICE FOR DRY MOUTH PATIENTS | 113 |
| 135 | A | PUBLIC DENTAL EDUCATION: AN ENTERTAINING APPROACH | 114 |
| 136 | A | UTILISATION OF CARIOGRAM SOFTWARE TO EDUCATE PATIENTS ON CARIES RISK ASSESSMENT | 114 |
| 137 | A | PORTABLE HUMAN HBV DNA DETECTION AND QUANTIFICATION USING INVERTASE-BASED SYSTEM | 115 |
| 138 | A | THREE DIMENSIONAL BIODEGRADABLE HYDROGEL FOR THE TREATMENT OF GUM DISEASES | 115 |
| 139 | A | DEVELOPMENT OF DIAGNOSTIC KIT FOR HUMAN ORAL SQUAMOUS CELL CARCINOMA | 116 |
| 140 | A | MANDIBULAR OVERDENTURES USING SHORT IMPLANTS: NEOTERIC TREATMENT MODALITY TO REDUCE RESIDUAL RIDGE RESORPTION | 116 |
| 141 | A | DISCRIMINATION OF FICUS DELTOIDEA VARIETIES USING HPLC-PDA-TOF-MS | 117 |
| 142 | A | NEUROPROTECTIVE POTENTIAL OF THE PENTACYCLIC OXINDOLE ALKALOIDS FROM MALAYSIAN UNCARIA LONGIFLORA VAR. PTEROPODA AGAINST HYDROGEN PEROXIDE-INDUCED SH-SY5Y CELLS | 118 |
| 143 | A | RECYCLING PREPARATIVE HPLC FOR ISOLATION OF STYRYL-LACTONES FROM GONIOTHALAMUS LANCEOLATUS | 119 |
| 144 | A | ISOLATION AND CHARACTERIZATION OF MARINE FUNGI IN MALAYSIA | 120 |
| 145 | A | EFFECT OF EPIGENETIC REGULATORS ON THE SECONDARY METABOLITES PRODUCTION OF ASPERGILLUS LONGIVESICA. | 121 |
| 146 | A | DETERMINATION OF ABSOLUTE CONFIGURATION OF CLERODANE-TYPE DITERPENES USING EXPERIMENTAL AND THEORETICAL ELECTRONIC CIRCULAR DICHROISM TECHNIQUES | 122 |
| 147 | A | MODIFICATION OF STREOIDAL COMPOUNDS BY BIOTRANSFORMATION AS A GREEN SYNTHETIC TOOL | 123 |
| 148 | A | MUSHROOM ENDOPHYTIC FUNGI AS A SOURCE OF BIOACTIVE METABOLITES | 124 |
| 149 | A | BIOACTIVE METABOLITES FROM ENDOPHYTES ASSOCIATED WITH RUBIACEOUS PLANTS FROM UITM PUNCAK ALAM BIOLOGICAL RESERVE | 125 |
| 150 | A | MOLECULAR RELATIONSHIP AND BIOSYNTHETIC POTENTIAL OF ENDOPHYTIC BACTERIA | 126 |
| 151 | A | STUDY THE EFFECT OF PMMA-SEEDED SUBSTRATE TO THE ZNO NANOSTRUCTURES | 127 |
| 152 | A | THE EFFECT OF AU-SEEDED THICKNESS TO THE GAS SENSING PROPERTIES OF ZNO NANOSTRUCTURES OBTAINED BY MIST-ATOMIZATION ON HEATED SUBSTRATES | 128 |
| 153 | A | AIR-TIGHT RADON CHAMBER FOR DETERMINATION OF SUPPORTED RADON CONCENTRATION IN WATER | 129 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|---|------|
| 154 | A | COBALT POOR AND RICH $\text{Li}_x\text{Ni}_{1-y}\text{Co}_y\text{O}_2$ LAYERED MATERIALS FOR LI-ION BATTERY APPLICATION | 130 |
| 155 | A | $\text{Zn}(1-x)\text{Cu}_x\text{O}$ AND $\text{Zn}(1-x)\text{Fe}_x\text{O}$ AND ZNO NANOSTRUCTURES FOR PHOTOVOLTAIC APPLICATIONS | 131 |
| 156 | A | CONDUCTIVITY IMPROVEMENT OF CR DOPED Al_2O_3 MATERIALS | 132 |
| 157 | A | $\text{Li}_2\text{Mg}(1-x)\text{O}$ LIGHT ABSORPTION PROPERTIES FOR SEMICONDUCTOR APPLICATIONS | 133 |
| 158 | A | STABLE MGO NANOPARTICLES FOR CATALYTIC AND PHARMACEUTICAL APPLICATIONS | 134 |
| 159 | A | COMBATING BACTERIA VIA SILVER-DAMMAR COATING | 135 |
| 160 | A | GREEN SOLID ELECTROLYTE FOR ELECTROCHEMICAL DEVICES | 136 |
| 161 | A | FORMULATION OF ISOPROPYL LAURATE (IPL) DRILLING FLUID | 137 |
| 162 | A | ELECTROSPRAY DRYING FOR PRODUCING ACTIVE PHARMACEUTICAL INGREDIENTS (API) NANOPARTICLES | 138 |
| 163 | A | KHAYA SENEGELANSIS : A NATURAL OIL ADSORBENT FOR PRODUCED WATER TREATMENT | 139 |
| 164 | A | LEMONGRASS FIBRE AS LOST CIRCULATION MATERIAL IN DRILLING FLUID | 140 |
| 165 | A | EDIBLE-BASED AND NON-TOXIC CORROSION INHIBITOR | 141 |
| 166 | A | SPECIAL FORMULATION FIBER-ENRICHED MILK POWDER FOR CONSTIPATION | 142 |
| 167 | A | APPLYING INTERACTIVE MULTIMEDIA INSTRUCTIONAL SYSTEM DESIGN (ISD) IN A LANGUAGE PROFICIENCY COURSE: A LOOK INTO LEARNER'S LEARNING STYLES | 143 |
| 168 | A | FINDS: FRAUD DIGITAL FORENSIC TOOL | 144 |
| 169 | A | REUSABILITY OF IRON SLUDGE BY SOLAR PHOTO-FENTON OXIDATION IN TREATMENT OF PALM OIL MILL SECONDARY EFFLUENT (POMSE) | 145 |
| 170 | A | USING PULVERIZED FUEL ASH (PFA) AS AN ALTERNATIVE CONSTRUCTION MATERIAL | 146 |
| 171 | A | LITTE KIDDO BOTTLE | 147 |
| 172 | A | WASTE FROM COCONUT PLANTATION-COCONUT HUSK FOR MAKING BIODEGRADABLE COMPOSITE | 147 |
| 173 | A | BULUH BETONG FOR THE PRODUCTION OF PEELED BAMBOO-FIBERGLASS COMPOSITE (PBFC) | 148 |
| 174 | A | RAPID PRODUCTION OF BIOGAS BY HIGH FREQUENCY SONICAL WAVE CHAMBER | 149 |
| 175 | A | NEW ADVANCED IRRADIATED RUBBER TOUGHENED POYAMIDE 6/HIGH DENSITY POLYETHYLENE FOR ENGINEERING APPLICATION | 150 |
| 176 | A | GASIFICATION OF OIL PALM BIOMASS TO PRODUCE CLEAN PRODUCER GAS FOR HEAT AND POWER GENERATION | 151 |
| 177 | A | ANTHROPOMETER CHAIR- A GOOD ERGONOMIC DESIGN FOR ELEMENTARY SCHOOL STUDENTS | 152 |
| 178 | A | ORGANIC-INORGANIC LAYERED DOUBLE HYDROXIDE ADSORBENT: | 153 |
| 179 | A | ULTRASONIC WAVE AND PH ENHANCED THE FORMATION OF TiO_2 NANOTUBE STRUCTURE | 154 |
| 180 | A | BLOWFLY MAGGOTS AS THE PHYSICAL EVIDENCE FOR FORENSIC CASES | 155 |
| 181 | A | ASH: FROM WASTE TO CRIMINAL INVESTIGATION TOOL | 156 |
| 182 | A | MOLECULAR PHYLOGENY OF SOCIAL VESPID WASPS INFERRED FROM DATA SEQUENCE DATA OF CO1 GENE | 157 |
| 183 | A | MOULDED ROVBAM (ROTARY VENEER FROM BAMBOO) CHAIR | 158 |
| 184 | A | CORROSION INHIBITION STUDIES ON NEWLY SYNTHESIZED 1,3-BIS(N'-2,3,4-METHYLBENZOYLTHIOUREIDO)-1,3-METHYLBENZENE | 159 |
| 185 | A | HYBRID LAMINATED BAMBOO VENEER BOARD FOR FURNITURE COMPONENT | 160 |
| 186 | A | SEDIMENT AS POLLUTANTS MARKER ACCUMULATOR | 161 |
| 187 | A | INNOVATIVE BIOCOMPOSITE FOR FUTURE APPLICATIONS | 162 |
| 188 | A | TAXONOMIC STUDY OF CHLOROPHYTA IN SELECTED ISLANDS AND COASTAL AREAS IN LANGKAWI | 163 |
| 189 | A | ORGANIC POOR-CONDUCTOR BRICK | 164 |
| 190 | B | GARDEN NURSERY PAPER POT | 164 |
| 191 | A | CAPTURING THE PATTERNS & COLOURS OF CHEMICAL SUBSTANCES REACTIONS THROUGH PHOTOGRAPHY RESEMBLING PSYCHEDELIC ART FOR SURFACE DESIGN | 165 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|---|------|
| 192 | A | MY UBBL (MOBILE APPLICATION) | 166 |
| 193 | A | KOMUNIKAY | 167 |
| 194 | A | ADJUNCT TEACHING & LEARNING TOOLS FOR UNDERGRADUATE DENTAL EDUCATION IMPROVEMENT | 168 |
| 195 | A | BONE FORMATION WITH THE COMBINATION OF ELLAGIC ACID AND ROSUVASTATIN AFTER TOOTH EXTRACTION IN DIABETIC RAT | 169 |
| 196 | A | EXCEL ACCOUNTING SPREADSHEET (EAS) FOR MICRO BUSINESS | 170 |
| 197 | A | CHEAP CATALYST PRODUCED FROM INDUSTRIAL WASTEWATER AND AGRICULTURAL WASTE | 171 |
| 198 | A | INJECTION MOULDING OF NEW SYNTHESIZED METHOD FOR HYDROXYAPATITE SCAFFOLD FROM STEARIN BASED BINDER SYSTEM | 172 |
| 199 | A | NOVEL PDM-CEZRO2 NANOCATALYST FOR REDUCING AUTOMOTIVE EMISSIONS | 173 |
| 200 | A | SURFACE MODIFICATION OF TIO2 FOR PHOTOCATALYTIC DEGRADATION OF HAZARDOUS POLLUTANTS UNDER ORDINARY VISIBLE LIGHT | 174 |
| 201 | A | ECO-FRIENDLY LIGHTWEIGHT CEMENT | 175 |
| 202 | A | IMPROVED PROCESS FOR PRODUCING DIHYDROXYSTEARIC ACID FROM EPOXIDIZED CRUDE OLEIC ACID FOR COSMETICS | 176 |
| 203 | A | BIO OIL PRODUCTION FROM FAST PYROLYSIS OF OIL PALM BIOMASS | 177 |
| 204 | A | NEW BIOMATERIALS FOR BIOETHANOL PRODUCTION | 178 |
| 205 | A | INNOVATION CAPITAL EVALUATOR (INNCE) | 179 |
| 206 | A | GREEN INTELLECTUAL CAPITAL APPRAISER (GICA) | 180 |
| 207 | A | VIRTUAL SCHEMA PACKAGE | 181 |
| 208 | A | DEVELOPMENT OF E-WEDDING SYSTEM | 182 |
| 209 | A | STUDENT REPORT CARD SYSTEM (SRCS) | 183 |
| 210 | A | EVENTUS: AN EVENT RECOMMENDER SYSTEM | 184 |
| 211 | A | INDOOR SMART GYM DESIGN FOR ADVENTURE SEEKERS | 185 |
| 212 | A | SISTEM PERMOHONAN SURAT PELAJAR | 186 |
| 213 | A | NEW MUSYARAKAH MODEL FOR MULTIPLE CAPITAL PROVIDERS WITH MULTIPLE PROFIT SHARING RATIOS | 187 |
| 214 | A | PEDESTRIAN CROSSING RISK ASSESSMENT (PEDCRA) MODEL FOR SIGNALISED INTERSECTIONS | 188 |
| 215 | A | TORREFACTION OF BIOMASS INTO VALUE-ADDED SOLID FUELS | 189 |
| 216 | A | HIGH STRENGTH CELLULAR ALUMINIUM FOAM (HIS-CAF) | 190 |
| 217 | A | PRIORITY SYSTEM FOR DISABLE PEOLPE (PS TAG) | 191 |
| 218 | A | CONCEPTUAL DESIGN AND ARCHITECTURE OF E-AGRICULTURE SYSTEM | 192 |
| 219 | A | GINGER TORCH FLOWER PASTE (GTFP) | 193 |
| 220 | A | IN-SENSE: INTELLIGENT SENSORY GUESTROOM EXPERIENCE | 194 |
| 221 | A | ISLAMIC QUALITY STANDARD (IQS) E-AUDIT FOR HOTEL | 195 |
| 222 | A | AMPLIFYING AIRPORT NON-AVIATION REVENUE THROUGH MICE EVENT | 196 |
| 223 | A | LEDANG SUSTAINABLE TRAIL DEVELOPMENT (LSTD): A NEW JOHOR TOURISM PRODUCT WITH BOTH SUSTAINABILITY AND DEVELOPMENT RATIONALE | 197 |
| 224 | A | JACKFRUIT SEED FETTUCCINE | 198 |
| 225 | A | MUNCHY BLACK SOY WASTE SNACK | 199 |
| 226 | A | CORN SILK BREADSTICK | 200 |
| 227 | A | BUILDING ENTREPRENEURIAL MINDSETS AND SKILLS ACROSS DISCIPLINES: THE CLASSROOM EXPERIENCE | 201 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|--|------|
| 228 | A | HENCO | 202 |
| 229 | A | IV DRIP AUTO OFF | 203 |
| 230 | A | PNF-INDEPENDENT MOVEMENT (PNF-INDEMO) | 204 |
| 231 | A | E-POWER GEAR | 205 |
| 232 | A | BIOLARVICIDAL POTENTIAL OF ELETARIOPSIS SMITHIAE (POKOK KESING) EXTRACTS AGAINST DENGUE FEVER MOSQUITO, AEDES AEGYPTI AND AEDES ALBOPICTUS | 206 |
| 233 | A | SMART CANE | 207 |
| 234 | A | SOLARIZED FUEL CELL TRAINER KIT | 208 |
| 235 | A | SHARIAH COMPLIANCE USED QURAN PAPER DISPOSAL SYSTEM | 208 |
| 236 | A | AN APPARATUS FOR DISPENSING A ROLLED MATERIAL AND A METHOD THEREOF | 209 |
| 237 | A | ALTERNATIVE LOUDSPEAKER ENCLOSURE | 210 |
| 238 | A | DUAL FUNCTION MOUTH SPACER | 211 |
| 239 | A | SWISH CAR JACK: SWIRLING, SAFE AND HANDY | 212 |
| 240 | A | ENERGY EFFICIENT DESIGN OF FUEL CELL ELECTRIC VEHICLE POWER PLANT SYSTEM | 213 |
| 241 | A | HMEI (HUMAN-MACHINE-ENVIRONMENT-INTERFACE) DESIGN LAYOUT OF POSTURA MOTERGO TEST RIG | 214 |
| 242 | A | POSTURA MOTERGO: NEW REVOLUTIONARY MOTORCYCLE TEST RIG | 215 |
| 243 | A | INTEGRATED MOTORCYCLE PROTECTION | 216 |
| 244 | A | ALL-IN-ONE OPTO LAB COAT | 217 |
| 245 | A | SARCOCYSTIS THERMOSTABLE PCR DETECTION KIT | 218 |
| 246 | A | RAPID HAND PUMP INFUSER DISPOSABLE (RAHPID) | 219 |
| 247 | A | IGS TRATO: INSTITUTE OF GRADUATE STUDIES THESIS TRACKING SYSTEM | 220 |
| 248 | A | ALTERNATIVE ORGANIZATIONAL STRUCTURE DEVELOPMENT IN A SMALL/MEDIUM CONSTRUCTION COMPANY | 221 |
| 249 | A | IOS LABORATORY SAFETY CHECKLIST | 222 |
| 250 | A | A 15-MINUTE EXERCISE REGIME FOR OFFICE WORKERS | 223 |
| 251 | A | LOW DIFFUSE REFLECTION MARKER FOR MOTION ANALYSIS APPLICATION | 224 |
| 252 | A | ST-1 SHOES | 225 |
| 253 | A | MYFITNESS CALCULATOR | 226 |
| 254 | A | BE CLEAR IN RECREATION: BE RECREATED | 227 |
| 255 | A | FLEXI FLEXI | 228 |
| 256 | A | ONLINE ACCIDENT REPORTING SYSTEM | 229 |
| 257 | A | APPLICATION OF ANN IN DIFFERENTIATING GROUP STROKE LEVEL USING EEG SIGNAL | 230 |
| 258 | A | IQ CLASSIFIER USING BRAINWAVE FEATURES AND ANN | 231 |
| 259 | A | DIVERSITY AND DISTRIBUTION OF CLASS INSECTA IN PADDY FIELD OF SUNGAI BURONG, SELANGOR | 232 |
| 260 | A | SODIUM ION BATTERY USING ORGANIC - INORGANIC SOLID ELECTROLYTE | 233 |
| 261 | A | PHLEGM DISPOSAL | 234 |
| 262 | A | AVANT GARDE ABLUTION TUB | 235 |
| 263 | A | INDOOR CREATIVE FURNITURE : ARTISTIC BENCHES | 236 |
| 264 | B | PIOM (PROJECT INFO ON MOBILE) | 237 |
| 265 | B | CREATIVE CERAMIC ART : 'TOUCHING HEART' PROJECT | 238 |
| 266 | B | CREATIVE AUTISTIC LEARNING SYSTEM (CAL5) | 239 |
| 267 | B | CRAYON FROM WASTE WAX | 240 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|---|------|
| 268 | B | ORIGAMI 'SAMPUL RAYA' (ENVELOP) | 241 |
| 269 | B | FRYING COOKER FOR THE VISUALLY IMPAIRED | 242 |
| 270 | B | THE MODIFICATION OF PAINTBALL SPORTWEAR IN FULFILLING THE SAFETY REQUIREMENT | 243 |
| 271 | B | ZAFFIN : THE IDIOSYNCRATIC ASPECT OF MALAYS DESIGN FURNITURE | 244 |
| 272 | B | VISUALIZING MALAY CULTURAL BELIEFS IN THE FORM OF VISUAL-TACTILE DESIGN | 245 |
| 273 | B | CONTEMPORARY JEWELLERY DESIGN OF BIOSPHERE MATERIAL | 246 |
| 274 | B | KAPTEN BHUMI - PERMAINAN PAPAN PENDIDIKAN (EDUCATIONAL BOARD GAME) UNTUK PENDIDIKAN ASAS SAINS ASTRONOMI. | 247 |
| 275 | B | EFFECTIVE MONETIZATION TECHNIQUES IN MOBILE GAME APPS | 248 |
| 276 | B | DURABILITY OF ARECA CATCHU AS AN ALTERNATIVE BIOMATERIAL IN JEWELLERY | 249 |
| 277 | B | POKER CARD GAME: A CHATTING BOOSTER TO ASSIST ESL STUDENTS IN GROUP DISCUSSION | 250 |
| 278 | B | I - CORPORATE SOCIAL RESPONSIBILITY REPORTING MODEL OF SHARIAH-COMPLIANT COMPANIES | 251 |
| 279 | B | I - ETHICAL IDENTITY MODEL OF SHARIAH-COMPLIANT COMPANIES | 252 |
| 280 | B | PERSONAL SENSOR DETECTOR SAFETY DEVICES FOR OUTDOOR ACTIVITY | 253 |
| 281 | B | SANG KANCHIL: MALAY FOLKTALE ANIMATION WITH WAYANG KULIT CONCEPT | 254 |
| 282 | B | LOST AND FOUND PORTAL | 255 |
| 283 | B | COMPARING THE EFFICIENCY MODEL FOR MARITAL DISSOLUTION - SURVIVAL ANALYSIS APPROACH | 255 |
| 284 | B | I-CSR EFFICIENCY RANKING OF ISLAMIC BANKS | 256 |
| 285 | B | SBMA CREW | 257 |
| 286 | B | NOUDI SOFA'S | 258 |
| 287 | B | DESIGN REBRANDING: INFLOW FROZEN FOOD | 259 |
| 288 | B | WALKY WALKER FOR KIDS (DISABLE) | 259 |
| 289 | B | DESIGN REBRANDING: SUMAI SUITE HOTEL | 260 |
| 290 | B | OBJECT-BASED LEARNING APPROACH AS STIMULI TO POETRY PRODUCTION: AN INNOVATION IN RESEARCH METHODOLOGY AND IN THE TEACHING OF LITERATURE | 261 |
| 291 | B | TEACHING KIT FOR ART TEACHERS: IMPASTO (T-KAT: IMPASTO) | 262 |
| 292 | B | HANDYBOOK FOR REPORTING YOUR STATISTICAL FINDINGS | 263 |
| 293 | B | DEVELOPING ENTREPRENEURIAL SKILLS AMONG UNIVERSITY STUDENTS: THE GRADE FORECASTING TOOL | 264 |
| 294 | B | E-CTM CREATIVE DEVELOPMENT (MOTIF) FOR CRAFT TRADITIONAL MODULE BASED ON THE STRUCTURE OF MALAY WOODCARVING MOTIFS - BLENDED LEARNING | 265 |
| 295 | B | ICDM INSTRUCTIONAL CREATIVE DESIGN MATERIALS FOR VISUAL ART EDUCATION FOR SECONDARY SCHOOL | 266 |
| 296 | B | SUPERB INO TECH WATER HEATER | 267 |
| 297 | B | EASY ABC MACHINE | 267 |
| 298 | B | LISTEN LISTEN LISTEN - AN ONLINE LISTENING TOOL | 268 |
| 299 | B | ZAKAT PERFORMANCE INDEX | 269 |
| 300 | B | THE SLURPPER: GAS OPERATED SUPER SUCTION & SPRAY DEVICE (GOS ³ D) | 270 |
| 301 | B | MODELING AIR POLLUTION MEASUREMENT USING DISTANCE-BASED RANKING FUZZY NUMBERS APPROACH | 271 |
| 302 | B | T-BRICK | 272 |
| 303 | B | SAY NO TO PLYWOOD. UTILIZATION OF RECYCLED HDPE BOTTLE+ PINEAPPLE LEAVES FIBRE AS ECO-PLYFIBRE | 272 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|---|------|
| 304 | B | APPLICATION OF BAYESIAN FUZZY REGRESSION ANALYSIS AND MODEL SELECTION ON HEDONIC PRICING STRATEGY | 273 |
| 305 | B | WASTED DIAPERS AS PLANT WATER RETAINER AND BIO-FERTILIZER | 274 |
| 306 | B | INDUSTRY-BASED LEARNING MODULE | 275 |
| 307 | B | THE POTENTIAL OF CASSAVA STARCH IN MAKING BIODEGRADABLE PLASTIC AND ENVIRONMENTAL-FRIENDLY PRODUCT | 276 |
| 308 | B | ISLAMIC STUDENT LOAN BACKED SECURITIZATION | 276 |
| 309 | B | THE POTENTIAL OF HAIR AS PROTECTIVE COAT FOR PLANT FROM ACID RAIN | 277 |
| 310 | B | SYSTEMATIC SYSTEM COLLECTION ON TEXT BOOK REVENUE (YESMART) | 277 |
| 311 | B | PRODUCTION OF BIOETHANOL FROM BANANA PEELS BY FERMENTATION OF YEAST | 278 |
| 312 | B | TRIAXIAL TEMPLATE FOR TUDUNG SAJI WEAVING | 279 |
| 313 | B | USING MNEMONICS TO TEACH PRONOUNS (USED AS SUBJECT) IN BASIC SENTENCE | 280 |
| 314 | B | TAX WHEEL -YOUR COMPANY TAX ALERT | 281 |
| 315 | B | "MESOCARP BRICK" INVENTION TOWARDS GREEN BUILDING MATERIALS | 282 |
| 316 | B | PRESERVATION FOR THE LAST SINGGORA | 283 |
| 317 | B | SCULPTURAL SIGNAGE FOR THE MAH MERI INDIGENOUS COMMUNITY | 284 |
| 318 | B | A NEW DIRECTION IN STUDY AND APPLICATION OF TRONG CLAY AND SRAL2O4:EU2+, DY3+ PERSISTENT PHOSPHOR | 285 |
| 319 | B | ARTABLEWARE TOWARDS NEW LIFESTYLE | 286 |
| 320 | B | M-PERAK DISCOVERY | 287 |
| 321 | B | EXAMINATION SEATING SYSTEM | 287 |
| 322 | B | "A" MATHS POTENTIAL PROGRAM: A TECHNOLOGY-BASED T&L APPROACH | 288 |
| 323 | B | O' BENCH | 288 |
| 324 | B | LANGKASUKA COFFEE TABLE | 289 |
| 325 | B | RICE WEEVILS' TRAP | 290 |
| 326 | B | THE AWQAF HOTEL i-PORTFOLIO | 291 |
| 327 | B | METAMORPHOSIS (TRANSFORMATION TRADITIONAL MALAY MALE ATTIRE) | 292 |
| 328 | B | METAL EMBELLISHMENT | 293 |
| 329 | B | EASYATTENDANCE - STUDENT ATTENDANCE DATA MANAGEMENT SYSTEM | 294 |
| 330 | B | IMMUNECARE | 295 |
| 331 | B | S2 REVITALISING SERUM | 296 |
| 332 | B | STAY HEALTHY, STAY RHO-BUZZ! | 297 |
| 333 | B | PANDANACEAE | 298 |
| 334 | B | DERMATX® : A NOVEL TOPICAL ANTIDERMATOPHYTOSIS | 299 |
| 335 | B | LEARNING THE CHEMISTRY OF TEA | 300 |
| 336 | B | ELIX_ORL®: ADJUVANT THERAPY FOR ORAL CANCER | 301 |
| 337 | B | CYTOMIN® DIETARY SUPPLEMENT | 302 |
| 338 | B | B'STEM BAR® AND B'STEM PLUS®: BANANA PSEUDOSTEM DERIVED-ENERGY BAR AND CHEWABLE SUPPLEMENT FOR BETTER QUALITY OF LIFE | 303 |
| 339 | B | SUMATRANA PROGLUCO-TOLERANCE® ADJUVANT THERAPY FOR DIABETES | 304 |
| 340 | B | SONGKET DESIGN: REVIVING THE NEW MATERIAL FROM CORN HUSK FIBER TO COMMERCIAL CRAFTS | 305 |
| 341 | B | THE 'IMARAH ISLAMIAH' LIGHTING DESIGN | 306 |
| 342 | B | CONFERENCE INFORMATION MANAGEMENT SYSTEM (CIMS) | 307 |
| 343 | B | FOLDABLE CONTAINER DESIGN INSPIRED BY ORIGAMI | 308 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|--|------|
| 344 | B | JEWELLERY ENHANCEMENT: IMPLEMENTING ELECTRONIC TECHNOLOGY DEVICES | 309 |
| 345 | B | NEW PAMOR PATTERNS: MATERIAL FOR JEWELLERY | 310 |
| 346 | B | CREATIVE APPROACH IN TRANSFORMING WASTE PLASTIC BAGS INTO FASHIONABLE FOOTWEAR | 311 |
| 347 | B | WILL MANAGEMENT AND TRACKING SYSTEM BASED ON SYARIAH CONCEPT | 312 |
| 348 | B | BIOMETRIC SOLUTION FOR SECURING ELECTRONIC HEALTH RECORDS SHARING | 313 |
| 349 | B | WHERE R U (WRU) - SISTEM KEBERADAAN KAKITANGAN | 314 |
| 350 | B | ACCOUNTING RACE VERSION 1.0: ACCOUNTING FIGHTER FOR FINANCE BATTLE (FOR NON-ACCOUNTING STUDENT EDITION) | 315 |
| 351 | B | HALAL UNIQUE INSIGNIA (HAL-UI) FOR SMALL AND MEDIUM ENTERPRISE (SME) | 316 |
| 352 | B | AMAZACC RACE: THE ACCOUNTING CYCLE | 317 |
| 353 | B | WASTE TO WOOD: PARTICLEBOARD FROM OIL PALM TRUNK (ELAEIS GUINEENSIS) AND RESAM (DICRANOPTERIS LINEARIS) | 318 |
| 354 | B | PREMIUM QUALITY OF PARTICLEBOARD FROM LEUCAENA AND RUBBERWOOD | 318 |
| 355 | B | MALAYSIA iNDIGENOUS HERBS KNOWLEDGE MANAGEMENT SYSTEM | 319 |
| 356 | B | AUGMENTED REALITY WITH SPATIAL CONTIGUITY PRINCIPLE IN LEARNING SIGHT WORDS | 320 |
| 357 | B | PEER ASSISTED LEARNING STRATEGIES (PALS) FOR PREPARATORY STUDENTS IN MATHEMATICS | 321 |
| 358 | B | INTERACTIVE TIME TRAVEL | 321 |
| 359 | B | A NOVEL FABRICATION OF AZO NANOROD ARRAYS BASED ORDERED BULK HETEROJUNCTION HYBRID SOLAR CELLS | 322 |
| 360 | B | ENERGY SAVING OUTLET SOCKET | 323 |
| 361 | B | LIGHTWEIGHT CRYPTOGRAPHIC COMPUTATION FOR SMART DEVICES | 323 |
| 362 | B | EASY ACCESS ATTENDANCE MANAGEMENT SYSTEM (EAMS) | 324 |
| 363 | B | RECONFIGURABLE BACK-TO-BACK TRUNCATED RHOMBUS-LIKE SLOTTED ANTENNA FOR 5.3GHZ/5.9GHZ BAND APPLICATIONS | 325 |
| 364 | B | A SMART FLUORESCENT ANTENNA WITH 3G /3.75G /4G ROUTER FOR WIFI APPLICATION | 326 |
| 365 | B | CLUSTER IDENTIFICATION OF STATIC VAR COMPENSATOR (SVC) INSTALLATION IN BULK POWER SYSTEM FOR LOSS MINIMIZATION CONSIDERING VOLTAGE PROFILE AND COST FUNCTION USING EVOLUTIONARY PARTICLE SWARM OPTIMIZATION (EPSO) TECHNIQUE | 327 |
| 366 | B | DIFFERENTIAL EVOLUTION IMMUNIZED ANT COLONY OPTIMIZATION (DEIANT) FOR SOLVING EMISSION DISPATCH PROBLEM | 328 |
| 367 | B | POTENTIAL CHEMICAL DEFENCE (SECONDARY METABOLITES) IN BRINJAL (SOLANUM MELONGENA) PRODUCED BY EARLY INFESTATION OF PEST (WHITEFLY, BEMISIA TABACI) AS BIO-PESTICIDE FOR CONTROLLING HERBIVOROUS PESTS | 329 |
| 368 | B | KITCHEN WASTE COMPOST | 330 |
| 369 | B | OPDC NATURAL POLYMER COMPOSITE FROM PALM BIOMASS | 331 |
| 370 | B | BIO ORGANIC PLANT TISSUE CULTURE MEDIA FROM AGRICULTURAL WASTE | 332 |
| 371 | B | A SIMPLE AND COST-EFFECTIVE EQUIPMENT FOR INSECTS SAMPLING ON PINEAPPLE CULTIVATION | 333 |
| 372 | B | ASYMMETRY EFFECT OF INTERCROPPING NON HOST CROPS BETWEEN CABBAGE AND CLIMATIC FACTOR ON THE POPULATION OF THE DIAMONDBACK MOTH (PLUTELLA XYLOSTELLA L.) AND YIELD | 334 |
| 373 | B | POMICS: A SIMULATION DISEASE MODEL FOR MANAGING POWDERY MILDEW OF CUCURBITS | 335 |
| 374 | B | ENHANCEMENT OF BETA-CAROTENE IN SWEET POTATO THROUGH EFB COMPOST APPLICATION AN AGRICULTURAL WASTE PRODUCT | 336 |
| 375 | B | DIVERSITY AND DISTRIBUTION OF CLASS INSECTA IN PADDY FIELD OF SUNGAI BURONG, SELANGOR | 337 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|---|------|
| 376 | B | ETHYL FORMATE AS METHYL BROMIDE REPLACEMENT FOR PHYTOSANITARY ON URBAN PEST CONTROL | 338 |
| 377 | B | THE EFFICIENCY OF ZAKAT COLLECTION AND DISTRIBUTION: EVIDENCE FROM TWO STAGE ANALYSIS | 339 |
| 378 | B | SCA V2 | 340 |
| 379 | B | PARKING CARD | 341 |
| 380 | B | INTELLIGENT EVENT COSTING SYSTEM (ICOS) | 342 |
| 381 | B | VENDING PHOTOCOPY MACHINE | 343 |
| 382 | B | MEERA (MALAYSIAN ECO-FRIENDLY & ECONOMICAL RAINWATER ACCUMULATOR) | 343 |
| 383 | B | TRACKING CUSTOMER BEHAVIOR PATTERN VIA CUSTOMER LOYALTY INDICATOR (CLI) | 344 |
| 384 | B | GREEN EVENT ATTENDEES' BEHAVIOR KEY INDICATOR TOWARDS SUSTAINABLE EVENTS | 345 |
| 385 | B | RADARSAT RAIN WATCH | 346 |
| 386 | B | SBI FOR SUB-BASE IMPROVER | 347 |
| 387 | B | THE SECRET: ENHANCED MECHANICAL PERFORMANCE OF STONE MASTIC ASPHALT (SMA14) USING PROCESSED BOTTOM ASH | 347 |
| 388 | B | C+W MIX DESIGN | 348 |
| 389 | B | THE INNOVATION AND DEVELOPMENT OF USED COOKING OIL AS FOAMING AGENT IN THE APPLICATION OF CIVIL ENGINEERING MATERIALS | 349 |
| 390 | B | GREEN MATERIAL FOR ROAD PAVEMENT: LOW ENERGY, WARM MIX ASPHALT WITH HIGH RECYCLED MATERIAL CONTENT | 350 |
| 391 | B | ECO-POTTERY PRODUCT FROM WATER TREATMENT SLUDGE | 351 |
| 392 | B | HALF-LAP TCC JOINT | 352 |
| 393 | B | LITE PAVER | 353 |
| 394 | B | INTEGRATED ACCOUNTABILITY SYSTEM | 354 |
| 395 | B | COMPOSITE INTEGRITY INDEX (CII) FOR PUBLIC AND PRIVATE SECTORS ORGANIZATIONS : THE NEW FRONTIER | 355 |
| 396 | B | ISLAMIC CORPORATE SOCIAL RESPONSIBILITY STATEMENT OF RECOMMENDED PRACTICE (ICSR SORP) | 356 |
| 397 | B | I-TRITS (INDIVIDUAL TAX RETURN INTEGRITY & TRANSPARENCY SYSTEM) | 357 |
| 398 | B | FINANCIAL HEALTH CHECK-UP KIT FOR LOCAL AUTHORITIES TOWARDS BETTER GOVERNANCE | 358 |
| 399 | B | APLS | 359 |
| 400 | B | SELF-GOVERNANCE ASSESSMENT TOOL FOR SOCIAL ENTREPRENEURS | 360 |
| 401 | B | RISK MANAGEMENT ASSESSMENT TOOL FOR SOCIAL ENTREPRENEURS | 361 |
| 402 | B | SRQ-REFORM | 362 |
| 403 | B | SOCIAL COLLATERAL ANALYSER (SCA) | 363 |
| 404 | B | TES FOR SIMPLIFYING GRAMMAR | 364 |
| 405 | B | THE DIAMOND MODEL AND MOVIE | 365 |
| 406 | B | AL-FUKAAHAH: ILUSTRASI & CERITA HUMOR BAHASA ARAB | 366 |
| 407 | B | E-COPA: CHARITY ORGANISATIONS PERFORMANCE ANALYSIS | 367 |
| 408 | B | COMPUTATION OF INDIVIDUAL TAX DESIGN (CINTA DESIGN) | 368 |
| 409 | B | I-TRACKS A SOLUTION TO TRAVEL SAFETY | 369 |
| 410 | B | COMMERCIALIZATION OF PITHECELLOBIUM JIRINGA | 369 |
| 411 | B | RISK PREDICTION FOR MICRO ENTERPRESIS (RPM-I) | 370 |
| 412 | B | CLIENT-SERVER ARCHITECTURE FOR COORDINATING INTERNSHIP PLACEMENT USING CLOUD COMPUTING SERVICES | 371 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|--|------|
| 413 | B | INTEGRATED DOCUMENT MANAGEMENT FOR ACADEMIC QUALITY ASSURANCE SYSTEM - IDMQA | 372 |
| 414 | B | EF-HEALING-PESTICIDE | 373 |
| 415 | B | GREEN-MIX CONCRETE | 374 |
| 416 | B | AXIOMATIC-BASED HSC DESIGN METHODOLOGY | 375 |
| 417 | B | ECO-FRIENDLY ENGINEERED SOIL | 376 |
| 418 | B | PZT-AD5933 BASED COMPACTION MONITORING SYSTEM | 377 |
| 419 | B | AEROPONIC PRODUCTION UNIT FOR PRODUCTION OF MYCORRHIZAL INOCULANTS | 378 |
| 420 | B | BAMBOO DEODORIZING KRAFT PAPER | 379 |
| 421 | B | PCAR RELATIONSHIP OF GREEN ANNOUCEMENT AND FIRM VALUE: CASE OF MALAYSIAN LISTED FIRMS | 380 |
| 422 | B | ENHANCEMENT OF TERENGGANU BRASSWARE CRAFT DESIGN AND MANUFACTURING PROCESS: THE WAX PATTERN INNOVATION | 380 |
| 423 | B | PERFORMANCE OF REAL TIME LIP SYNC ANIMATION ON VISEME BASED HUMAN SPEECH | 381 |
| 424 | B | SAGO WASTE MODIFIED AS OF ALTERNATIVES IN BATIK BLOCK | 382 |
| 425 | B | REVOLUTION OF LEAN SIX SIGMA PERFORMANCE IMPROVEMENT (RLSSPI): EDUCATION SIMULATION AND BUSINESS ASSESSMENT TOOL | 383 |
| 426 | B | CHECKERS SPORT | 384 |
| 427 | B | PIXEL VALUE GRAPHICAL PASSWORD SCHEME | 384 |
| 428 | B | MYU-TECH: A MODEL ON UBIQUITOUS TECHNOLOGY UTILISATION | 385 |
| 429 | B | RICE HUSK CHAR FOR HEAVY METAL ADSORPTION | 386 |
| 430 | B | D.I.Y. FIRE RETARDANT PAINT | 387 |
| 431 | B | THE POTENTIAL OF DISPOSED BANANA TRUNKS AS THE MEDIUM OF THE NEW PLANTATION | 388 |
| 432 | B | MOTORCYCLE TIRE REPAIRING KITS | 388 |
| 433 | B | DESIGN OF ANGLE JIG WELDING | 389 |
| 434 | B | BLACK AIR GUN | 389 |
| 435 | B | SMART TRAP | 390 |
| 436 | B | SUPER GREEN PORTABLE HYDRO GENERATOR | 390 |
| 437 | B | VEIN VIEWER | 391 |
| 438 | B | ECO INSULATOR USING IMPERATA CYLINDRICA AND CALCIUM CARBONATE | 392 |
| 439 | B | GREEN BRICK | 393 |
| 440 | B | TWO LIVES SEAT BELT | 393 |
| 441 | B | MOBILE WELDING FUMES EXTRACTOR | 394 |
| 442 | B | FIND THE RIGHT WAY | 395 |
| 443 | B | ECO-AIR PURIFIER 2.0 | 396 |
| 444 | B | ECO-RAIN | 396 |
| 445 | B | AUTOMATED WATERING SYSTEM (AWaS) | 397 |
| 446 | B | C.A.P ALARM | 398 |
| 447 | B | MIRACLE ROSELLE- BIOACTIVE CHEMICALS OF HIBISCUS SABDARIFFA (ROSELLE) AS POTENTIAL NATURAL ANTIOXIDANT FOR BIODIESEL | 398 |
| 448 | B | ROAR & RUN: AN ALTERNATIVE WAY TO GET RID OF MONKEYS | 399 |
| 449 | B | SOLAR-GEN | 400 |
| 450 | B | IBUSSTOP | 401 |
| 451 | B | Q-AUTO FLIP | 402 |
| 452 | B | IN VITRO EFFICACY OF THE ANTIFUNGAL ACTIVITY OF KAEMPFERIA GALANGA LINN | 403 |
| 453 | B | 'PALF' AS ALTERNATIVE IN NOVELTY COMPOSITE | 404 |
| 454 | B | REUSE WASTE AND SAVE THE WORLD: FIBER REINFORCED 'CB' MADE FROM EMPTY FRUIT BUNCH (EFB) | 405 |
| 455 | B | SUSTAINABLE PINAPULP FROM AGRICULTURAL WASTE | 406 |
| 456 | B | FROM WASTE TO WEALTH: 'PARBO' FROM BIOMASS WASTE OF PALM OIL | 407 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|---|------|
| 457 | B | REENGINEERING DATA MANAGEMENT FOR MULTI LOCATION BUSINESS | 408 |
| 458 | B | LOYALTY PROGRAM SMART INDICATOR | 409 |
| 459 | B | "FOLDABLE CONTAINER DESIGN INSPIRED BY ORIGAMI" | 410 |
| 460 | B | INTELLIGENT CAREER RECOMMENDATION SYSTEM (I-CAREER) | 411 |
| 461 | B | EMBEDDED WIRELESS MOTION DETECTOR DEVICE ON CONVENTIONAL INSECT TRAP FOR ANALYSIS PURPOSE | 412 |
| 462 | B | PLASTIC: TRANSFORMATION WOVEN TECHNIQUE TO PRODUCT DESIGN | 413 |
| 463 | B | THE UNIQUENESS GLASS PRODUCE ARTISTIC LAMP (UGAL) | 414 |
| 464 | B | A DEVELOPMENT OF MICROTAKAFUL PRODUCT : A CASE STUDY IN MALAYSIA | 415 |
| 465 | B | E-FHB CHECKLIST & CALCULATOR | 416 |
| 466 | B | DIVERSITY AND DISTRIBUTION OF INSECTS IN PADDY FIELD OF SUNGAI BURONG, SELANGOR | 417 |
| 467 | B | SCHOOLBOARD: SCHOOL EXECUTIVE INFORMATION SYSTEM | 418 |
| 468 | B | GREEN CARBON: A NOVEL HYDRO FILTER | 419 |
| 469 | B | EASY HYDRAULIC JACK EXTRUDER (EHJE) | 420 |
| 470 | B | BIO-INSPIRED ARTIFICIAL HAIR CELL (AHC) MEMS | 421 |
| 471 | B | PALAPES MILITHRILL BASICOMBAT | 422 |
| 472 | B | BREAD SUBSTITUTED WITH MANGOSTEEN PERICARP FLOUR | 423 |
| 473 | B | TAKOB AKOB SPARKLING JUICE | 424 |
| 474 | B | ESSENTIAL OIL OF TUHAU | 425 |
| 475 | B | UiTM VEHICLE BOOKING SYSTEM (UVEBS) | 426 |
| 476 | B | ACCOUNTING CIRCUS: CLOWNS GETTING INTO THE ACT! | 427 |
| 477 | B | MINI FOLDABLE SLIM MOBILE PROJECTOR INNOVATION | 428 |
| 478 | B | LYLEEN WHANGIE VERSION 1.0 | 429 |
| 479 | B | E-PES VERSION 1.0 | 430 |
| 480 | B | PERSPEX MODULAR DISPLAY AND TEXT STAND FOR ARTIFACT DISPLAY SHOWCASE IN MUSEUM | 431 |
| 481 | B | AKUSTIKASTOOL | 432 |
| 482 | B | KITTY'S COMFORT SEAT | 433 |
| 483 | B | TASBIH TAG VERSION 2.0 | 434 |
| 484 | B | SURVEYOR BACKPACK TOOL BAG | 435 |
| 485 | B | M1S 'LEARN' | 436 |
| 486 | B | TRAVELMATE BACKPACK | 437 |
| 487 | B | CUTIE DRY SMART TRAVEL KIDS | 438 |
| 488 | B | ALTERNATIVE MATERIAL (MANIHOT ESCULENTA CRANTZ) IN PRODUCING CRAFT PAPER | 438 |
| 489 | B | SMART TRAP | 439 |
| 490 | B | SOCIAL COLLATERAL ANALYSER (SCA) | 440 |
| 491 | B | SONGKET DESIGN: REVIVING THE NEW MATERIAL FROM CORN HUSK FIBER TO COMMERCIAL CRAFTS | 441 |
| 492 | B | SOLAR-GEN | 442 |
| 493 | B | SRQ-REFORM | 443 |
| 494 | B | STAY HEALTHY, STAY RHO-BUZZ! | 444 |
| 495 | B | SUPER GREEN PORTABLE HYDRO GENERATOR | 445 |
| 496 | B | SUPERB INO TECH WATER HEATER | 445 |
| 497 | B | SURVEYOR BACKPACK TOOL BAG | 446 |
| 498 | B | SUSTAINABLE PINAPULP FROM AGRICULTURAL WASTE | 447 |
| 499 | B | POSTURA MOTERGO: NEW REVOLUTIONARY MOTORCYCLE TEST RIG | 448 |
| 500 | B | TAKOB AKOB SPARKLING JUICE | 449 |
| 501 | B | TASBIH TAG VERSION 2.0 | 450 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|---|------|
| 502 | B | TAX WHEEL -YOUR COMPANY TAX ALERT | 451 |
| 503 | B | T-BRICK | 452 |
| 504 | B | TEACHING KIT FOR ART TEACHERS: IMPASTO (T-KAT: IMPASTO) | 453 |
| 505 | B | TES FOR SIMPLIFYING GRAMMAR | 454 |
| 506 | B | THE DIAMOND MODEL AND MOVIE | 455 |
| 507 | B | THE EFFICIENCY OF ZAKAT COLLECTION AND DISTRIBUTION: EVIDENCE FROM TWO STAGE ANALYSIS | 456 |
| 508 | B | THE INNOVATION AND DEVELOPMENT OF USED COOKING OIL AS FOAMING AGENT IN THE APPLICATION OF CIVIL ENGINEERING MATERIALS | 457 |
| 509 | B | THE MODIFICATION OF PAINTBALL SPORTWEAR IN FULFILLING THE SAFETY REQUIREMENT | 458 |
| 510 | B | THE POTENTIAL OF CASSAVA STARCH IN MAKING BIODEGRADABLE PLASTIC AND ENVIRONMENTAL-FRIENDLY PRODUCT | 459 |
| 511 | B | THE POTENTIAL OF DISPOSED BANANA TRUNKS AS THE MEDIUM OF THE NEW PLANTATION | 459 |
| 512 | B | THE POTENTIAL OF HAIR AS PROTECTIVE COAT FOR PLANT FROM ACID RAIN | 460 |
| 513 | B | THE SECRET: ENHANCED MECHANICAL PERFORMANCE OF STONE MASTIC ASPHALT (SMA14) USING PROCESSED BOTTOM ASH | 460 |
| 514 | B | THE SLURPPER: GAS OPERATED SUPER SUCTION & SPRAY DEVICE (GOSÂ°D) | 461 |
| 515 | B | THE UNIQUENESS GLASS PRODUCE ARTISTIC LAMP (uGAL) | 462 |
| 516 | B | TRACKING CUSTOMER BEHAVIOR PATTERN VIA CUSTOMER LOYALTY INDICATOR (CLI) | 463 |
| 517 | B | TRAVELMATE BACKPACK | 464 |
| 518 | B | TRIAxIAL TEMPLATE FOR TUDUNG SAJI WEAVING | 465 |
| 519 | B | TWO LIVES SEAT BELT | 466 |
| 520 | B | UiTM VEHICLE BOOKING SYSTEM (UVEBS) | 467 |
| 521 | B | USING MNEMONICS TO TEACH PRONOUNS (USED AS SUBJECT) IN BASIC SENTENCE | 468 |
| 522 | B | VEIN VIEWER | 469 |
| 523 | B | VENDING PHOTOCOPY MACHINE | 470 |
| 524 | B | WALKY WALKER FOR KIDS (DISABLE) | 471 |
| 525 | B | WASTE TO WOOD: PARTICLEBOARD FROM OIL PALM TRUNK (ELAEIS GUINEENSIS) AND RESAM (DICRANOPTERIS LINEARIS) | 471 |
| 526 | B | WASTED DIAPERS AS PLANT WATER RETAINER AND BIO-FERTILIZER | 472 |
| 527 | B | WHERE R U (WRU) - SISTEM KEBERADAAN KAKITANGAN | 473 |
| 528 | B | WILL MANAGEMENT AND TRACKING SYSTEM BASED ON SYARIAH CONCEPT | 474 |
| 529 | B | ZAFFIN : THE IDIOSYNCRATIC ASPECT OF MALAYS DESIGN FURNITURE | 475 |
| 530 | B | ZAKAT PERFORMANCE INDEX | 476 |
| 531 | B | THE AWQAF HOTEL i-PORTFOLIO | 477 |
| 535 | B | RELATIONSHIP OF GREEN ANNOUNCEMENT AND FIRM VALUE: CASE OF MALAYSIAN LISTED FIRMS | 478 |
| 536 | B | ENHANCEMENT OF TERENGGANU BRASSWARE CRAFT DESIGN AND MANUFACTURING PROCESS: THE WAX PATTERN INNOVATION | 479 |
| 537 | B | VISUALIZING MALAY CULTURAL BELIEFS IN THE FORM OF VISUAL-TACTILE DESIGN | 480 |
| 535 | A | POSTMAN COMPARTMENT VEST | 481 |
| 536 | A | PEMBANGUNAN MODUL PEDAGOGI RESPONSIF BUDAYA KRAF TRADISIONAL PENDIDIKAN SENI VISUAL | 482 |
| 537 | A | D3D PROJECT | 483 |
| 538 | B | WARNA DAN JALINAN: SIRI DATA VISUAL DARI EKPLORASI ALAM | 484 |
| 539 | B | DARS SARI': PEMBELAJARAN PENULISAN SENI KHAT SECARA PANTAS & EFEKTIF (DARS SARI': FAST & EFFECTIVE LEARNING IN KHAT WRITING METHOD) | 485 |
| 540 | B | INSTRUMENT KEUSAHAWANAN - PROGRAM PEMBORONGAN | 486 |
| 541 | B | DURIAN PEELER MECHANISME | 487 |
| 542 | B | Q-BELT | 488 |
| 543 | B | VIBRATING BRACELET WITH LED | 489 |

| NO. | SESSION | PRODUCT TITLE | PAGE |
|-----|---------|---|------|
| 544 | B | RESISTOR EDUCATIONAL KIT | 490 |
| 545 | B | PORTABLE CAR VOLTAGE STABILIZER | 491 |
| 546 | B | MOM'S DIARY | 492 |
| 547 | B | SISTEM INTEGRASI PENGURUSAN PENYERTAAN INOVASI | 493 |
| 548 | B | HEALING WALL : PORTABLE ERGONOMETRIC MURAL | 494 |
| 549 | B | AROWANA | 495 |
| 550 | B | SCRAP METAL CAPRA | 495 |
| 551 | B | APLIKASI MOTIF BATIK SARUNG DALAM REKAAN JUBIN | 496 |
| 552 | B | MIRACLE HAND WASH GEL | 497 |
| 553 | B | BAJA BIO ORGANIK GETAH | 498 |
| 554 | B | PENAWAR GOUT | 499 |
| 555 | B | MY TRIGONA BEE HONEY (MyTBHoney) | 500 |
| 556 | B | LIBRARY SERVICES RESERVATION SYSTEM (LiReS) | 501 |
| 557 | B | TEKNIK INOVASI VIDEO ILMIAH DALAM PENGAJARAN FUNDAMENTAL PROGRAMMING | 502 |
| 558 | B | REKACADANG ARCA AWAM 'BERAT LAGI BAHU MEMIKUL' | 503 |
| 559 | B | MEMERTABATKAN DAN MENKOMERSILKAN REKACORAK TEKSTIL MACHANG (REKA CORAK TEKSTIL YANG MENCERMINKAN IDENTITI DAERAH MACHANG, KELANTAN) | 504 |
| 560 | B | KRAF: PERSPEKTIF BARU SENI LOGAM DAN BATIK | 505 |
| 561 | B | SISTEM PENGURUSAN MAKLUMAT WAKAF POKOK: KAEDAH PENJANAAN MODAL DALAM PEMBANGUNAN EKONOMI WAKAF DI MALAYSIA DALAM SEKTOR PERLADANGAN | 506 |
| 562 | B | ONE BOOK, ONE SMART BOOKMARK | 507 |
| 563 | B | PINGO (PLAY IT 'N' GET OUTCOME) | 507 |
| 564 | B | SISTEM MENANGKAP GAMBAR PENGGUNA PALSU TELEFON BIMBIT | 508 |
| 565 | B | WIRING FAULT TESTER | 509 |
| 566 | B | AL-QURAN PORTABLE DISPOSAL MACHINE AS AN EFFICIENT ALTERNATIVE TO DISPOSE AL-QURAN | 509 |
| 567 | B | GREEN TECH HIGH CAPACITY BIN | 510 |
| 568 | B | MULTI FUNCTION DESK-FLIP MOUNTING BOARD FOR PRIMARY SCHOOL | 511 |
| 569 | B | FUNBAG SCHOOL BAG | 512 |
| 570 | B | PARKET TEMPURUNG-PETAJ BELALANG | 513 |
| 571 | B | MOM'S CHOICE: FRUITY PUREE ICE CREAM | 514 |
| 572 | B | SMART D'CASE | 514 |
| 573 | B | BUTTERFLY MONARCH | 515 |
| 574 | B | KALLIGHT : CALLIGRAPHY ART FOR CREATIVE DECORATION AND EDUCATION | 515 |
| 575 | B | 5S TRAINING METHOD TOOL: VISUAL INTERACTIF (V1-5S) | 516 |
| 576 | B | SMART SAFETY SIGNAGE | 517 |
| 577 | B | TEKNIK INOVASI VIDEO ILMIAH DALAM PENGAJARAN FUNDAMENTAL PROGRAMMING | 518 |
| 578 | B | THO RESTING CHAIR | 519 |
| 579 | B | TST CLEANER | 520 |

GREEN TiO₂/ENR/PVC NANOCOMPOSITES WITH IMPROVED TENSILE STRENGTH FOR CABLE INSULATOR

Nur Azrini Binti Ramlee, Noor Azreena Kamaluddin, Nurhashimah Alias,
Nor Sharliza Mohd Safaai, Siti Noor Adeib Idris
Faculty of Chemical Engineering, UiTM Shah Alam, Selangor.
Email: azrini@salam.uitm.edu.my

Addition of inorganic fillers is seen as an emerging alternative method in polymer engineering area and it practice benefits to a contribution of advancement in material development. In cable insulator application, exposure to the conditions of high temperature, heat, oxygen and sunlight caused performance of conventional polyvinyl alcohol (PVC) cable insulator to become limited due to the acceleration of ageing. Application of titanium dioxide (TiO₂) nanofillers has brought a new approach in cable insulator processing field since it has excellent characteristics including non-toxicity, long term stability and UV light discoloration resistance and they offer attractive potential for diversification and application of traditional polymeric materials. Green titanium dioxide, epoxidized natural rubber/polyvinyl chloride (TiO₂/ENR/PVC) nanocomposites were prepared via direct melt-blending technique in which the approach is compatible with the current industrial process. The composites were then being exposed to the environmental friendly and sustainable electron beam irradiation prior to the polymer crosslinking. Result shows that the applied irradiation dose rate and TiO₂ nanofillers loading have contributed to the overall tensile strength (Ts) performance of the green TiO₂/ENR/PVC nanocomposites. In accordance to the specification for pvc insulation and electric cables (BS6746) tensile strength measurement, results have shown that at all level of irradiation dose rate from 0-200 kGy, Ts values of the TiO₂/ENR/PVC nanocomposites at 6 wt % of TiO₂ nanofillers loading are higher than the unmodified blends. Moreover, addition of 6 wt% of TiO₂ nanofillers has shown the highest tensile strength with 6.85 MPa at 50 kGy of exposed dose rate. This result has contributed to 25.9%, which significantly higher than the unmodified blends.. In comparison to the green TiO₂/ENR/PVC nanocomposites with 6 wt% of TiO₂ loadings, higher degree of crosslinking were obtained due to the presence of nanoparticles in the formation of crosslink in ENR/PVC blends matrix. Good distribution of TiO₂ nanofillers was also observed using transmission electron microscope (TEM) at high magnification of 20000x and 40000x. This is apparently an evidence to support that the preparation of these green (TiO₂/ENR/PVC) nanocomposites by melt blending technique has offered good dispersion of TiO₂ in the ENR/PVC blends matrices. Based on all outcomes, it is well justify that the factors including preparation via melt blending, addition of TiO₂ nanofillers at low loadings, and exposure to low dose rate of crosslinking were seemed feasible to the development of an economical, green and sustainable PVC cable insulator in future.