

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
A1	33kV REMOTE CONTROL To supply and install		
I	On/ Off Disrepe	No.	
II	Multi Window Annunciator	Set	
III	Voltmeter 90 Deg. Deflection	No.	
IV	Ammeter 90 Deg. Deflection	No.	
V	Voltmeter Selector Switch	No.	
VI	Ammeter Selector Switch	No.	
VII	Attended/ Non-attended Selector Switch	No.	
VIII	Push Button - Lamp test, Acknowledge, Reset	No.	
IX	Semaphore Indicator	No.	
X	TAPCON230 Pro Voltage regulator controller for 33kV	Unit	
XI	Local/ Remote Selector Switch (K&Naimer - CA10)	No.	
XII	Trip/ Neutral/ Close Switch Circuit Breaker(QO) (K&Naimer-CA20)	No.	
XIII	Open/ Neutral/ Close Switch Circuit For Feeder Disconnecter(Q1) (K&Naimer-CA10)	No.	
XIV	Open/ Neutral/ Close Cable Feeder Earth SW(Q5) (K&Naimer-CA10)	No.	
XV	Open/ Neutral/ Close LH Bus Disconnecter(Q11) (K&Naimer-CA10)	No.	
XVI	Open/ Neutral/ Close RH Bus Earth SW(Q55) (K&Naimer-CA10)	No.	
XVII	Open/ Neutral/ Close Switch For RH Bus Disconnecter(Q12) (K&Naimer-CA10)	No.	
XVIII	Open/ Neutral/ Close LH Bus Earth SW(Q53)(K&Naimer-CA10)	No.	
XIX	Healthy Trip Test Illuminate Pushbutton (C.Hammer-E22 Series)	No.	
XX	Acknowledge Pushbottom (Black) (Telemecanique-ZB Series)	No.	
XXI	Reset Pushbottom (Black) (Telemecanique-ZB Series)	No.	
XXII	Lamp Test Key Switch (C.Hammer-91000T151-13)	No.	
XXIII	Semaphore Indicator (Gossen-ST2G)	No.	
XXIV	Auto Trip Counter (Omron-CSK-YKW)	No.	
XXV	Manual Trip Counter (Omron-CSK6-YKW)	No.	
XXVI	Multi Window Indicator (Fuji-BSR-11WS/1.5)	No.	
XXVII	Test Terminal Block (hino)	No.	

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BIL	KETERANGAN	UNIT	HARGA (RM)
XXVIII	Terminal Block For Current Transformers (Weidmuller-WTL-6/1)	No.	
XXIX	Terminal Block For Interlooping(Weidmuller-WTL-6/1)	No.	
XXX	Terminal Block For Outgoing Control Cable (Weidmuller-WTL-6/1)	No.	
XXXI	Terminal Block For DS & VCB (Weidmuller-WTL-6/1)	No.	
XXXII	Terminal Block For earth (Weidmuller-WTL-2.5)	No.	
XXXIII	Closing Coil	No.	
XXXIV	Tripping Coil	No.	
XXXV	Spring Charging Motor	No.	
XXXVI	BKR. Aux. Contact - N/ O (Fuji - BH-AUS1-05)	No.	
XXXVII	BKR. Aux. Contact - N/ C (Fuji - BH-AUS1-05)	No.	
XXXVIII	BKR. Aux. Contact - Earth Connection (Fuji - BH-AUS1-01)	No.	
XXXIX	Limit Switch	No.	
XL	Closing Coil (Tamco)	No.	
XLI	Tripping Coil (Tamco)	No.	
XLII	Spring Charging Motor	No.	
XLIII	Motor Spring Charged Relay (Izumi - RH4B-U)	No.	
XLIV	SF6 Pressure Gauge	No.	
XLV	SF6 Pressure Gauge (LHS)	No.	
XLVI	SF6 Pressure Gauge (RHS)	No.	
XLVII	CB On Aux Relay (Izumi - RH48-U)	No.	
XLVIII	CB Off Aux Relay (Izumi - RH48-U)	No.	
XLIX	Feeder Disconnecting Switch Aux Relay (Izumi - RH48-U)	No.	
L	Earth Switch Aux Relay (Izumi - RH48-U)	No.	
LI	LHB Disconnecting Switch Aux Relay (Izumi - RH48-U)	No.	
LII	RHB Earth Switch Aux Relay (Izumi - RH48-U)	No.	
LIII	RHB Disconnecting Switch Aux Relay (Izumi - RH48-U)	No.	
LIV	LHB Earth Switch Aux Relay (Izumi - RH48-U)	No.	
LV	Buchholz relay 33kV	No.	
2	Gas Insulated Switchgear (GIS) 33kV		

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Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
	a) Evacuation existing gas, inspec and clean internal compartment, vacuum compartment, refill Sulphur Hexafluoride (SF6) and carry out leak check	per/panel	
	b)Supply /install		
	i. Oring for CB / Cable and Busbar Compartment	No.	
	ii. Decican (dry agent)	No.	
	c)To check and inspect the SF6 leak gauge. The gas shall remain at 1.35kg/m2, refill if necessary	Lot.	
3	To supply, install, testing and comissioning of 33kV GIS Switchgear a)33kV GIS Switchgear 2000A 1 unit 2000A 33kV 25kA Vacuum Circuit Breaker 1 unit 2000A 33kV 25kA Disconnecting Switch 1 unit Overcurrent & Earth Fault Relay 1 unit Digital Power Meter C/W Comm. Port 3 unit 33kV/110V Class 0.5 100VA PT (Plug In) 3 unit 600/300/5A Class 5P20 15VA CT 3 unit 600/300/5A Class 0.2 15VA CT 3 unit 300/5A Class 0.2 15VA CT 2 unit Indicating light 1 unit Phase Indicator 1 unit Local / Remote Selector Switch 1 unit Open / Neutral / Close Selector Switch For cable ESW 1 unit Open / Neutral / Close Selector Switch For Disc. SW 1 unit Trip/ Neutral / Close Selector Switch For VCB 1 Set Control MCB and Cable 1 Set Control Relay and Ter. Block 1 unit Healthy Trip Light & Push Button 1 unit Mimic Diagram 1 unit Semaphore Indicator For VCB 1 unit Semaphore Indicator For Disc. SW 1 unit Cubicle Cable Termination Kits SF6 Gas Filling Equipment Current Test Plug & Voltage Test Plug Control Relay Panel By Other Plug-In Termination Kit And Dummy Plug Post insulator 33kV Reinstall cable for panel to remote control panel (RCP)	Lot	
B1	SWITCHGEAR To supply, install, test and commisioning of 11kV VCB components/ parts :-		
1.1	Voltage Transformer 11kV/Rt3/110V/Rt3 Class 0.5, 100VA	No.	
1.2	Ring Current Transformer 300/5A Class 5P10 15VA	No.	
1.3	Ring Current Transformer 300/5A Class 1.0 15VA	No.	
1.4	Ring Current Transformer 400/5A Class 5P10 15VA	No.	

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Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
1.5	Ring Current Transformer 400/5A Class 1.0 15VA	No.	
1.6	Ring Current Transformer 600/5A Class 5P10 15VA	No.	
1.7	Ring Current Transformer 600/5A Class 1.0 15VA	No.	
1.8	Padlockable Local Remote Selector Switch 3 Pole	No.	
1.9	Padlockable Open neutral Close Selector Switch 2 Pole	No.	
1.1	Indicating Light 30Vdc c/w bulb	No.	
1.11	Indicating Light 110Vac c/w bulb	No.	
1.12	Indicating Light 240Vac c/w bulb	No.	
1.13	240V AC 60/80Watt Anti Condensation Heater	No.	
1.14	Thermostat	No.	
1.15	Voltmeter 90 Deg. Deflection	No.	
1.16	Ammeter 90 Deg. Deflection	No.	
1.17	Ammeter selector switch	No.	
1.18	Voltmeter selector switch	No.	
1.19	11kV - 3 phase,6A PT Fuse	No.	
1.2	Phase Indication Light for cable	No.	
1.21	12kV Voltage Detector Insulator	No.	
1.22	12kV Spout Bushing	No.	
1.23	12kV post Insulator	No.	
1.24	30/110Vdc Circuit Breaker Closing Coil	No.	
1.25	30/110Vdc Circuit Breaker Tripping Coil	No.	
1.26	30/110Vdc Motor Spring Charging for circuit breaker	No.	
1.27	Busbar extension for connection (12kV)	Meter	
1.28	Solid busbar (1250A /11kV)	Meter	
1.29	Digital Power Meter (DPM) Schneider or equivalent	Unit	
1.3	Spout cable 12kV	No.	
1.31	PDS		
	i) Short	No.	
	ii) Long	No.	

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Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
	iii) Protection PTC Sensor	No.	
1.32	Heater On Ind. Light (White)(Telemecanique - ZB Series)	No.	
1.33	Heater Switch (Telemecanique - ZB Series)	No.	
1.34	VCB On Indicator Light (RED) (Telemecanique - ZB Series)	No.	
1.35	VCB On Indicator Light (Green) (Telemecanique - ZB Series)	No.	
1.36	Alarm Cancel Pushbutton (Telemecanique - ZB Series)	No.	
1.37	Phase Indicating Light (Tamco - PV1 - 01T)	No.	
1.38	VT AUX. Relay (Omron - LY4)	No.	
1.39	Alarm Cancel Relay (240 AC)(Omron - MK-3P)	No.	
1.4	TX Tripping Relay (Miwa - EIT-BE4-30)	No.	
1.41	Spring Charging Motor (Tamco)	No.	
1.42	Closeing Coil (Tamco)	No.	
1.43	Limit Switch (Tamco)	No.	
1.44	Tripping Coil (Tamco)	No.	
1.45	Earthing Switch (Tamco)	No.	
1.46	Heater 80W	No.	
1.47	Terminal Block In Metering Compartment (Weidmuller-WTR2.5)	No.	
1.48	Terminal Block In Metering Compartment (Weidmuller-WDU4)	No.	
1.49	Terminal Block In Multi-Core Cable Box (Weidmuller-WDU4)	No.	
1.5	Buchholz relay 11kV	No.	
2	To carry out site testing of 11kV VCB Switchgear:		
a)	Power frequency test of 11kV VCB	No.	
b)	Insulation test of 11kV VCB	No.	
c)	Ratio test of current transformer	No.	
d)	Winding resistance test of current transformer	No.	
e)	Circuit breaker timing test	No.	
f)	Contact resistance test of circuit breaker contact	No.	
g)	Vacuum check	No.	
h)	Magnetization Curve test for current transformer	No.	

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Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
i)	Heater for 11kV Switch panel	No.	
3	Dismantle existing switchgear and deliver to site (in UiTM)	Per/ Panel	
4	Install existing switchgear at site	Per/Panel	
5	Local Remote Control Panel for 11kV a) Supply and install Local remote control panel weatherproof wall mounted type c/w accessories,lock , testing n commissioning : -		
i.	Local Remote -Control Panel 3 Ways	Set	
ii.	Local Remote -Control Panel 4 Ways	Set	
iii.	Local Remote -Control Panel 5 Ways	Set	
	b) Supply and install 7core x 2.5mm (multicore) for Local Remote Control Panel in conduit, trunking, cable tray or lay direct in the ground.	P/Mtr	
C1	BATTERY AND BATTERY CHARGER To supply and install battery & battery charger :-		
a)	30 VDC (Ni-Cad) - 40AH	Lot	
b)	30 VDC (Ni-Cad) - 30AH	Lot	
c)	30 VDC (Ni-Cad) - 20AH	Lot	
d)	30 VDC (Ni-Cad) - 10AH	Lot	
e)	110 VDC (Ni-Cad)	Lot	
2	To supply and install battery charger only :-		
a)	30 VDC	Lot	
b)	110 VDC	Lot	
3a)	To supply and install the following DC batteries only :- 30 VDC (Ni-Cad)		
i.	50AH	per/cell	
ii.	40AH	per/cell	
iii.	30AH	per/cell	
iv.	20AH	per/cell	
v.	10AH	per/cell	
b)	30 VDC (Dry Cell)		
i.	40AH	per/cell	
ii.	30AH	per/cell	

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Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
iii.	20AH	per/cell	
iv.	10AH	per/cell	
c)	110 Ni-Cad (100?105Ah) /Nominal Volt :1.2VDC/ Charge :1.43-1.5	per/cell	
4	To Supply and deliver battery water.		
i)	Deionised Water (NiCad)	per/liter	
ii)	Distilled Water (Lead Acid)	per/liter	
5	To dismantle the existing battery charger / batteries.	Lot	
6	To carry out 110/30VDC batteries discharge test c/w report.	per/bank	
7	To suply and install battery charge card only:-		
i.	110 VDC	No.	
ii.	30 VDC	No.	
iii.	24 VDC	No.	
D1	TRANSFORMER To supply, deliver, install, test and commission, 11 / 0.433 KV, DYN 11, 50Hz hermetically sealed, ONAN power transformer c/w transformer guard, alarm/trip circuit supervision and others accessories as following sizes :-		
a)	300 - 450KVA	No.	
b)	500KVA	No.	
c)	750KVA	No.	
d)	1000KVA	No.	
e)	1250kVA	No.	
f)	1500KVA	No.	
g)	2000KVA	No.	
h)	2500 KVA	No.	
2	To supply, deliver, install, test and commission , 11 / 0.433 KV, DYN11, 50Hz 3 phase Cast Resin Transformer HV Copper Vacuum Cast / LV Copper Vacuum Cast and others accessories.		
a)	1000KVA	No.	
b)	1500KVA	No.	
c)	2000KVA	No.	
d)	2500 KVA	No.	

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Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
3	To supply, install & commission of Transformer Guard Alarm at 11kV Oil Distribuiton Transformer ;-		
a)	Winding Temperature	No.	
b)	Oil Temperature	No.	
	To replace the existing faulty transformer's HV bushing c/w gasket		
a)	300 - 500KVA	No.	
b)	750KVA	No.	
c)	1000KVA	No.	
d)	1250KVA	No.	
e)	1500kVA	No.	
f)	2000KVA	No.	
g)	12/15 MVA	No.	
5	To replace the existing faulty transformer's LV bushing c/w gasket.		
a)	300 - 500KVA	No.	
b)	750KVA	No.	
c)	1000KVA	No.	
d)	1250kVA	No.	
e)	1500KVA	No.	
f)	2000KVA	No.	
6	To carry out Transformer Oil test comply with British Standard :-		
a)	Dielectric Breakdown	set	
b)	Moisture Content	set	
c)	Dissolved Gas Analysis (DGA)	set	
d)	Color	set	
e)	Acidity	set	
f)	Power Factor	set	
7	To replace the existing gasket transformer's at HV/LV bushing.		
a)	300 - 500KVA	No.	
b)	750KVA	No.	

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Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
c)	1000KVA	No.	
d)	1250kVA	No.	
e)	1500KVA	No.	
f)	2000KVA	No.	
g)	12/15 MVA	No.	
8	Dry and filter transformer oil for transformer at temperature of not less than 70°C and pressure of not more than 5 Torr. Drying and filtering shall only be considered satisfactory from evidence shown on the usual resistance curve plotted during the process. The works will be carried on site.		
a)	300 - 350KVA	No.	
b)	500KVA	No.	
c)	750KVA	No.	
d)	1000KVA	No.	
e)	1250kVA	No.	
f)	1500KVA	No.	
g)	2000KVA	No.	
h)	12/15 MVA	No.	
9	Replacement of Transformer gasket for transformer including gasket of all parts of transformer except tap-charger.		
a)	300 - 350KVA	Set	
b)	500KVA	Set	
c)	750KVA	Set	
d)	1000KVA	Set	
e)	1250kVA	Set	
f)	1500KVA	Set	
g)	2000KVA	Set	
h)	12/15 MVA	Set	
10	To carry out site testing of 11/0.433kV Distribution Transformer:		
a)	Insulation resistance test	No.	
b)	Dielectric test	No.	
c)	Ratio test	No.	

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Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
d)	Winding resistance test	No.	
e)	Tangen Delta test	No.	
f)	Vector Group DYN11 test	No.	
g)	Polorization Index Test	No.	
h)	Alarm signal circuit (relay/temperature/ indicator/ oil level/ relays)	No.	
11	To carry out site testing of 33/11kV, 12/15 MVA Distribution Transformer:		
a)	Insulation resistance test	No.	
b)	Dielectric test	No.	
c)	Ratio test	No.	
d)	Winding resistance test	No.	
e)	Tangen Delta test	No.	
f)	Vector Group test	No.	
g)	Polorization Index Test	No.	
h)	Alarm signal circuit (relay/temperature/ indicator/ oil level/ relays)	No.	
12	To replace Transformer silica gel.	Kg.	
13	To supply and install cable bracket for Transformer Cable c/w accessories (HV/LV).	No.	
14	To supply and install an approved quality of transformer oil.		
a)	Per litre	per/litre	
b)	Per Drum (209 litre)	per/drum	
15	To supply, install, test and commisioning of 33kV Transformer components/ parts		
a)	Magnetic Oil Level Indicator	No.	
b)	Pressure Relief Device with Contact	No.	
c)	Oil Temperature Indicator With Contact	No.	
d)	Winding Temperature Indicator	No.	
e)	Buchholz	No.	
16	To service Power Transformer 33KV Tap Changer.		
i)	12/15 MVA, 33/11kV	L. Sum	

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Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
17	To overhaul the 33kV Tap Changer c/w:- i. Checking the moving contacts and make good if necessary. ii. Checking the fixed contacts and make good if necessary. Checking the ring, resistance and rotating gears. Cleaning the carbon deposits in the chamber.	L. Sum	
18	To replace part include all necessary test and commissioning:		
a)	To replace the existing faulty transformer's Linear Variable Reluctant Transducer (3 VA).	No	
b)	To replace the faulty Heat Shrinkable Busbar Insulation Cover	M run	
c)	To replace 33 Kv Transformer's OLTC Unit in-tank type	No	
d)	To replace 33 Kv Transformer's OLTC Unit Complete with Housing	No	
e)	To replace the existing faulty Auto Transfer Switch (ATS) complete with Busbar modification where needed.	No	
f)	To replace 'Transition Resistor ' for Tap Changer Transformer 33/11kV, c/w Ratio Test, Vector Group test and commissioning. for 1 no.	No	
19	To supply, deliver, install, test and commission, 33 / 11 KV, DYN 11, 50Hz hermetically sealed, ONAF power transformer c/w transformer guard, alarm/trip circuit supervision and others accessories as following sizes :-		
a)	12/15 MVA	No.	
20	Replacement of insulator Resistance:-		
a)	33 kV	No.	
b)	11 kV	No.	
21	Replacement of Raychem Termination :-		
a)	33 kV	Set.	
b)	11 kV	Set.	
c)	415v/240v	Set.	
22	Replacement of OLTC motor drive (33/11 kV)	No.	
23	Partial discharge test for transformer 33/11kV	No.	
24	Partial discharge test for transformer 11/0.433kV	No.	
25	Transformer Cast Resin		
	i) Transformer Temperature Controller Relay	No.	
	ii) Cast Resin Transformer Cooling Fan	No.	

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Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
	iii) Resistance Temperature Detector (RTD) for Cast Resin Transformer	No.	
26	Oil filtration transformer OLTC 12/15MVA	Lot	
27	Isolation valve		
i)	DN 25	No.	
ii)	DN 50	No.	
iii)	DN 80	No.	
28	Filter oil transformer all rating for 3 cycle	per/liter	
E1	33KV/ 11KV / LV CABLE WORK Cable fault		
a)	Cable fault locator for underground cable.	Lot	
b)	Cable route tracing for HT underground cable	Lot	
c)	Cable route tracing for LV underground cable	Lot	
d)	Excavation and back filling (Backhoe)	Lot	
e)	Straight through joint c/w jointing kits and accessories for 33KV cable for:		
i)	3 core 150mm ² Aluminium XLPE / SWA / PVC.	Lot	
ii)	3 core 240mm ² Aluminium XLPE / SWA / PVC.	Lot	
iii)	3 core 150mm ² Copper XLPE / SWA / PVC	Lot	
iv)	3 core 185mm ² Copper XLPE / SWA / PVC.	Lot	
v)	3 core 240mm ² Copper XLPE / SWA / PVC	Lot	
vi)	3 core 300mm ² Copper XLPE / SWA / PVC	Lot	
vii)	1 core 630mm ² XLPE/PVC 33kV Aluminium. Armoured	Lot	
ix)	1 core 300mm ² XLPE/PVC 33kV Aluminium. Armoured	Lot	
x)	1 core 240mm ² XLPE/PVC 33kV Aluminium. Armoured	Lot	
f)	Straight through joint c/w jointing kits and accessories for 11KV cable for:		
i)	3 core 150mm ² Aluminium XLPE / SWA / PVC.	Lot	
ii)	3 core 240mm ² Aluminium XLPE / SWA / PVC.	Lot	
iii)	3 core 150mm ² Copper XLPE / SWA / PVC	Lot	
iv)	3 core 185mm ² Copper XLPE / SWA / PVC.	Lot	
v)	3 core 240mm ² Copper XLPE / SWA / PVC	Lot	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
vi)	3 core 300mm ² Copper XLPE / SWA / PVC	Lot	
vii)	1 core 630mm ² XLPE/PVC 33kV Aluminium. Armoured	Lot	
ix)	1 core 300mm ² XLPE/PVC 33kV Aluminium. Armoured	Lot	
x)	1 core 240mm ² XLPE/PVC 33kV Aluminium. Armoured	Lot	
g)	Straight through joint c/w jointing kits and accessories for LV Copper cable.		
I	4c - 35 sq.mm	Lot	
II	4c - 50 sq.mm	Lot	
III	4c - 70 sq.mm	Lot	
IV	4c - 95 sq.mm	Lot	
V	4c - 120 sq.mm	Lot	
VI	4c - 150 sq.mm	Lot	
VII	4c - 185 sq.mm	Lot	
VIII	4c - 240 sq.mm	Lot	
IX	4c - 300 sq.mm	Lot	
X	1 core 630mm ² XLPE/PVC 11kV Copper. Armoured	Lot	
XI	1 core 500mm ² XLPE/PVC 11kV Copper. Armoured	Lot	
XII	1 core 300mm ² XLPE/PVC 11kV Copper. Armoured	Lot	
XIII	1 core 240mm ² XLPE/PVC 11kV Copper. Armoured	Lot	
XIV	3 core 300mm ² Aluminium XLPE/SWA/PVC	Lot	
XV	3 core 300mm ² Copper XLPE/SWA/PVC	Lot	
h)	To install :-		
	i. Corrugated Pipe	P/Mtr	
	ii. G.I Pipe	P/Mtr	
	iii. HT Cable Slab	No.	
	iv. LV Cable Slab	No.	
	v. Cable markers	No.	
	vi. Make good the excavation area.	L. Sum	
i)	To carry out testing (Insulation, Phasing and Pressure Test) and commissioning	L. Sum	
2	Cable Termination Kit c/w accessories		

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
a)	3c - 240mm	Set	
b)	3c - 630mm	Set	
c)	4c - 95 sq.mm	Set	
d)	4c - 120 sq.mm	Set	
e)	4c - 150 sq.mm	Set	
f)	4c - 185 sq.mm	Set	
g)	4c - 240 sq.mm	Set	
h)	4c - 300 sq.mm	Set	
i)	1c - 240mm ²	Set	
j)	1c - 300mm ²	Set	
k)	1c - 630mm ²	Set	
3	Heat Shrink		
a)	Busbar Insulation Tube	No.	
b)	Heat Shrink Sleeves / Tubing	Set	
c)	Cable/Pipe End Cap	Set	
F1	SERVICES, TESTING AND CALIBRATION To service :-		
a)	Transformer (all sizes)	No.	
b)	11kV VCB Truck	No.	
c)	MSB(all range sizes)	No.	
d)	ACB (all range Amp)	No.	
e)	MCCB (all range Amp)	No.	
f)	Battery (all range)	No.	
g)	Capacitor bank(all range)	No.	
h)	TAPCON230 Pro Voltage regulator controller for 33kV	No.	
2	To carry out a 3 phase 1st trip 33/11kV breaker profile.	No.	
3	Calibration and setting of HV protection Relay.	No	
4	Calibration and setting of LV protection Relay.	No	
5	To carry out the Partial Discharge Test on HV panels c/w report.	per/panel	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
6	To scan HV / LV equipments in substation using Infrared Thermography Cam. and endorsed by Service Engineer c/w report:-		
1.1	Switchgear 33KV.	per/panel	
1.2	Switchgear 11KV.	per/panel	
1.3	Transformer 33KV	per/panel	
1.4	Transformer 11KV	per/panel	
1.5	Main Switch Board(MSB).	per/panel	
1.6	Busduct di Pencawang Elektrik.	per/panel	
1.7	Sub Switch Board(SSB)	per/panel	
1.8	Fedeer Pillar	per/panel	
7	To scan HV equipments in substation using Ultrasonic Sound services on HV panels c/w report.and endorsed by Service Engineer c/w report	per/panel	
G1	PROTECTION DEVICES To supply, install, test and commissioning the following HV and LV protection relay c/w associated assessories as follows :-		
i.	ABB - OC/EF (SPAJ 140C or equivalent)	No.	
ii.	ABB - OC or equivalent	No.	
iii.	ABB - EF or equivalent	No.	
iv.	ABB - ELR or equivalent	No.	
v.	Differential Protection - SPAD 346C1 or equivalent	No.	
vi.	SEL-551 - OC/ EF or equivalent	No.	
vii	Delab - EF or equivalent	No.	
viii	Delab - OC or equivalent	No.	
ix	Delab - OC/ EF or equivalent	No.	
x	Delab - ELR or equivalent	No.	
xiv	Mikro - EF or equivalent	No.	
xv	Mikro - OC or equivalent	No.	
xvi	Mikro - OC/ EF or equivalent	No.	
xvii	Mikro - ELR or equivalent	No.	
xviii	Trip Supervision - SPER 1A1 or equivalent	No.	
xix	Auxiliary Relay - BC9 or equivalent	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
xx	Alarm Flickering Auxiliary	No.	
xxi	Miniature Power Relay	No.	
xxii	Feeder protection relay SEL751-A (11kV)	No.	
22.1	AIR CIRCUIT BREAKER To supply , install, test and commissioning Air Circuit Breaker (50 -65kA) 415V at the Main Switch Board or Sub-Switchboard.		
a)	i. 630A TPN	No.	
	ii. 630A 4 Pole N	No.	
b)	i. 800A TPN	No.	
	ii. 800A 4 Pole N	No.	
c)	i. 1000A TPN	No.	
	ii. 1000A 4 Pole N	No.	
d)	i. 1250A TPN	No.	
	ii. 1250A 4 Pole N	No.	
e)	i. 1600A TPN	No.	
	ii. 1600A 4 Pole N	No.	
f)	i. 2000A TPN	No.	
	ii. 2000A 4 Pole N	No.	
g)	i. 2500A TPN	No.	
	ii. 2500A 4 Pole N	No.	
h)	i. 3000A TPN	No.	
	ii. 3000A 4 Pole N	No.	
i)	i. 3500A TPN	No.	
	ii. 3500A 4 Pole N	No.	
j)	i. 4000A TPN	No.	
	ii. 4000A 4 Pole N	No.	
2.2	To supply , install, test and commissioning Air Circuit Breaker (80-85kA) 415V at the Main Switch Board or Sub-Switchboard.		
a)	i. 1000A TPN	No.	
	ii. 1000A 4 Pole N	No.	
b)	i. 1250A TPN	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)



Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
	ii. 1250A 4 Pole N	No.	
c)	i. 1600A TPN	No.	
	ii. 1600A 4 Pole N	No.	
d)	i. 2000A TPN	No.	
	ii. 2000A 4 Pole N	No.	
e)	i. 2500A TPN	No.	
	ii. 2500A 4 Pole N	No.	
h)	i. 3000A TPN	No.	
	ii. 3000A 4 Pole N	No.	
i)	i. 3500A TPN	No.	
	ii. 3500A 4 Pole N	No.	
j)	i. 4000A TPN	No.	
	ii. 4000A 4 Pole N	No.	
2.3	To supply , install, test and commissioning Air Circuit Breaker (100kA) 415V at the Main Switch Board or Sub-Switchboard.		
a)	i. 1000A TPN	No.	
	ii. 1000A 4 Pole N	No.	
b)	i. 1250A TPN	No.	
	ii. 1250A 4 Pole N	No.	
c)	i. 1600A TPN	No.	
	ii. 1600A 4 Pole N	No.	
d)	i. 2000A TPN	No.	
	ii. 2000A 4 Pole N	No.	
e)	i. 2500A TPN	No.	
	ii. 2500A 4 Pole N	No.	
h)	i. 3000A TPN	No.	
	ii. 3000A 4 Pole N	No.	
i)	i. 3500A TPN	No.	
	ii. 3500A 4 Pole N	No.	
j)	i. 4000A TPN	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
	ii. 4000A 4 Pole N	No.	
33.1	MOULDED CASE CIRCUIT BREAKERS (MCCB) To supply , install, test and commissioning Moulded Case Circuit Breakers (MCCB) of appropriate ratings for installation in Main Switchboard or Sub-Switchboard or Distribution Board. Kutub tunggal dan neutral dengan beban memutus 25kA I/d shunt trip.		
a)	20 A	No.	
b)	30 A	No.	
c)	40 A	No.	
d)	50 A	No.	
e)	60 A	No.	
f)	100 A	No.	
3.2	Tiga Kutub dan neutral dengan beban memutus 35kA I/d shunt trip		
a)	30A	No.	
b)	40A	No.	
c)	50A	No.	
d)	60A	No.	
e)	100A	No.	
f)	150A	No.	
g)	200A	No.	
h)	250A	No.	
i)	300A	No.	
j)	350A	No.	
k)	400A	No.	
l)	500A	No.	
m)	600A	No.	
n)	800A	No.	
o)	1000A	No.	
p)	1250A	No.	
q)	1500A	No.	
3.3	Empat Kutub dengan beban memutus 35kA I/d shunt trip		

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
a)	30A	No.	
b)	40A	No.	
c)	50A	No.	
d)	60A	No.	
e)	100A	No.	
f)	150A	No.	
g)	200A	No.	
h)	250A	No.	
i)	300A	No.	
j)	350A	No.	
k)	400A	No.	
l)	500A	No.	
m)	600A	No.	
n)	800A	No.	
o)	1000A	No.	
p)	1250A	No.	
q)	1500A	No.	
3.4	Tiga Kutub dan neutral dengan beban memutus 50kA I/d shunt trip		
a)	30A	No.	
b)	40A	No.	
c)	50A	No.	
d)	60A	No.	
e)	100A	No.	
f)	150A	No.	
g)	200A	No.	
h)	250A	No.	
i)	300A	No.	
j)	350A	No.	
k)	400A	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)



Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
l)	500A	No.	
m)	600A	No.	
n)	800A	No.	
o)	1000A	No.	
p)	1250A	No.	
q)	1500A	No.	
3.5	Empat Kutub dengan beban memutus 50kA I/d shunt trip		
a)	30A	No.	
b)	40A	No.	
c)	50A	No.	
d)	60A	No.	
e)	100A	No.	
f)	150A	No.	
g)	200A	No.	
h)	250A	No.	
i)	300A	No.	
j)	350A	No.	
k)	400A	No.	
l)	500A	No.	
m)	600A	No.	
n)	800A	No.	
o)	1000A	No.	
p)	1250A	No.	
q)	1500A	No.	
r)	300 A	No.	
s)	400 A	No.	
t)	600 A	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
4	ISOLATOR To supply and install one (1) metalcald isolator to BBS 861: Pt.1: 1955 or BSS 2510: 1954 for termination of single-phase or 3-phase 415 V, 4 wirepower point, including provision of all necessary M.S. framework for installing the isolator in position, for each of the following ratings.		
a)	60A TPN	No.	
b)	100A TPN	No.	
c)	150A TPN	No.	
d)	200A TPN	No.	
e)	250A TPN	No.	
f)	300A TPN	No.	
g)	400A TPN	No.	
5	MINIATURE CIRCUIT BREAKERS (MCB) To supply Miniature Circuit Breaker (MCB) of appropriate ratings for installation in sub-switchboard or distribution board.		
a)	6A S.P 2.5KA	No.	
b)	10A S.P 2.5KA	No.	
c)	5A S.P 4.5KA	No.	
d)	20A S.P 4.5KA	No.	
e)	32A S.P 6KA	No.	
f)	60A S.P 6KA	No.	
6	RESIDUAL CURRENT CIRCUIT BREAKER (RCCB)		
a)	40Amp, 100mA, 240 volt	No.	
b)	63Amp, 100mA, 240 volt	No.	
c)	100Amp, 100mA, 240 volt	No.	
d)	40Amp, 30mA, 240 volt	No.	
e)	63Amp, 30mA, 240 volt	No.	
f)	100Amp, 30mA, 240 volt	No.	
g)	40Amp, 100mA, 415 volt	No.	
h)	63Amp, 100mA, 415 volt	No.	
i)	100Amp, 100mA, 415 volt	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
j)	40Amp, 30mA, 415 volt	No.	
k)	63Amp, 30mA, 415 volt	No.	
l)	100Amp, 30mA, 415 volt	No.	
7	CONTACTOR 10kA		
a)	DP 20A AC 3	No.	
b)	DP 30A AC 3	No.	
c)	DP 60A AC 3	No.	
d)	DP 100A AC 3	No.	
e)	DP 150A AC 3	No.	
f)	DP 180A AC 3 - Fuji	No.	
g)	DP 200A AC 3	No.	
h)	TP 30A AC 3	No.	
i)	TP 60A AC 3	No.	
j)	TP 100A AC 3	No.	
k)	TP 150A AC 3	No.	
l)	TP 200A AC 3	No.	
m)	TP 400A AC 3	No.	
n)	TP 600A AC 3	No.	
o)	LS Contactor, AC3 - 65A	No.	
p)	LS Contactor, AC3 - 80A	No.	
q)	LS Contactor, AC3 - 85A	No.	
r)	LS Contactor, AC3 - 125A	No.	
s)	LS Contactor, AC3 - 135A	No.	
8	CONTACTOR 18kA To supply and install including provision of all related equipment		
a)	DP 20A AC 3	No.	
b)	DP 30A AC 3	No.	
c)	DP 60A AC 3	No.	
d)	DP 100A AC 3	No.	
e)	DP 150A AC 3	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
f)	DP 200A AC 3	No.	
g)	TP 30A AC 3	No.	
h)	TP 60A AC 3	No.	
i)	TP 100A AC 3	No.	
j)	TP 150A AC 3	No.	
k)	TP 200A AC 3	No.	
l)	TP 400A AC 3 - Fuji	No.	
m)	TP 600A AC 3	No.	
n)	LS Contactor, AC3 - 65A	No.	
o)	LS Contactor, AC3 - 80A	No.	
p)	LS Contactor, AC3 - 85A	No.	
q)	LS Contactor, AC3 - 125A	No.	
r)	LS Contactor, AC3 - 135A	No.	
H	TP & N DISTRIBUTION BOARD C/W INCOMING MCCB & ELCB		
a)	30A 6 - way	No.	
b)	30A 8 - way	No.	
c)	30A 10 - way	No.	
d)	30A 12 - way	No.	
e)	60A 8 - way	No.	
f)	60A 10 - way	No.	
g)	60A 12 - way	No.	
h)	Add/deduct each unit way	No.	
l1	CAPACITOR BANK To supply and install the following :- Capacitor (440V)		
a)	5 KVAR	No.	
b)	10 KVAR	No.	
c)	15 KVAR	No.	
d)	20 KVAR	No.	
e)	25 KVAR	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
f)	30 KVAR	No.	
g)	40 KVAR	No.	
h)	50 KVAR	No.	
i	70 KVAR	No.	
j)	90 KVAR	No.	
k)	100 KVAR	No.	
2	Capacitor (525V)		
a)	5 KVAR	No.	
b)	10 KVAR	No.	
c)	15 KVAR	No.	
d)	20 KVAR	No.	
e)	25 KVAR	No.	
f)	30 KVAR	No.	
g)	40 KVAR	No.	
h	50 KVAR	No.	
i)	70 KVAR	No.	
j)	90 KVAR	No.	
k)	100 KVAR	No.	
3	Power Factor Regulator		
a)	4 - STEP	No.	
a)	6 - STEP	No.	
b)	8 - STEP	No.	
c)	12 - STEP	No.	
d)	14 - STEP	No.	
J	AMF BOARD / MSB / SSB / H.V PANEL To supply and install :-		
I	Amps Meter	No.	
II	Voltmeter	No.	
III	Frequency Meter	No.	
IV	KWH Meter	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)



Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
V	HR Meter	No.	
VI	Selector Switch	No.	
VII	Indicator Light	No.	
VIII	Push Button	No.	
IX	Emergency Stop Button	No.	
X	Time Relay Switch	No.	
XI	Automatic Changeover Contactor 100A	No.	
XII	Ring Current Transformer 30/5A.15VA	No.	
XIII	Ring Current Transformer 60/5A.15VA	No.	
XIV	Ring Current Transformer 100/5A.15VA	No.	
XV	Ring Current Transformer 150/5A.15VA	No.	
XVI	Ring Current Transformer 200/5A.15VA	No.	
XVII	Ring Current Transformer 250/5A.15VA	No.	
XVIII	Ring Current Transformer 300/5A.15VA	No.	
XIX	Ring Current Transformer 350/5A.15VA	No.	
XX	Ring Current Transformer 400/5A.15VA	No.	
XXI	Ring Current Transformer 500/5A.15VA	No.	
XXII	Ring Current Transformer 600/5A.15VA	No.	
XXIII	Ring Current Transformer 800/5A.15VA	No.	
XXIV	Ring Current Transformer 1000/5A.15VA	No.	
XXV	Ring Current Transformer 1200/5A.15VA	No.	
XXVI	Ring Current Transformer 1250/5A.15VA	No.	
XXVII	Ring Current Transformer 1500/5A.15VA	No.	
XXVIII	Ring Current Transformer 1600/5A.15VA	No.	
XXIX	Ring Current Transformer 1800/5A.15VA	No.	
XXX	Ring Current Transformer 2000/5A.15VA	No.	
XXXI	Ring Current Transformer 2500/5A.15VA	No.	
XXXII	Ring Current Transformer 3000/5A.15VA	No.	
XXXIII	Ring Current Transformer 3150/5A.15VA	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
XXXIV	Ring Current Transformer 3500/5A.15VA	No.	
XXXV	Ring Current Transformer 4000/5A.15VA	No.	
XXXVI	Power Factor Meter	No.	
XXXVII	Digital Power Meter Delab or equivalent	No.	
XXXVIII	Timer Switch 24 hours	No.	
XXXIX	Metalclad board (standard size for TPN 30A - TPN 100A)	No.	
XL	Metalclad board (standard size for TPN 150A - TPN 300A)	No.	
XLI	Voltage Indicator light HT	No.	
XLII	Transformers 11kW	No.	
XLIII	Transformers 30kW	No.	
XLIV	ZCT's	No.	
XLV	To replace the existing faulty Automatic Transfer Switch (ATS) complete with Busbar modification where needed		
	i) 300A	Lot	
	ii) 400A	Lot	
	iii) 500A	Lot	
	iv) 800A	Lot	
	v) 1000A	Lot	
	vi) 1250A	Lot	
	vii) 2000A	Lot	
	viii) 2500A	Lot	
	To replace the existing faulty Motorized Change-Over Switch complete with Busbar modification where needed		
XLVI	i) 3150A	Lot	
XLVII	Ion meter (Power Logic)		
	i) Ion 7330	Lot	
	ii) Ion 7650	Lot	
	iii) Ion 7500	Lot	
	iv) Ion 7550	Lot	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
XLVIII	To supply and install three phase KWh meter c/w wiring, trunking, CTs, control wiring, MCB, metal clad box and others for a complete installation at MSB/ SSB (include modification of MSB cubical and bar section where needed. Location of installation and wiring distance within 10 meter from MSB)	Lot	
K	LIGHTNING PROTECTION ACCESSORIES To supply, install and commission the following items of equipment and accessories as specified:-		
a)	25mm x 3mm copper tape - gred A.	meter	
b)	25mm x 3mm copper tape in concealed 38mm dia. PVC conduit	meter	
c)	Air terminal, 15mm dia.	No.	
d)	Air termination saddle	No.	
e)	Junction Clamp	No.	
f)	Penyambungan Ujian(Test Joint)	No.	
g)	Ruang pemeriksaan konkrit pratuang dengan penutup boleh tanggal/pasang jenis tahan lasak (heavy duty)	No.	
L	EARTHING To supply, install and connect-up the following items of equipment and materials to be utilized in earth electrode systems for electrical and lightning prevented systems, complete with all necessary accessories to effect complete installation and connection in each case :-		
a)	Bare, copper earth-continuity tape, 25mm x 3mm (1 inci x 1/8 inci) cross section, surface-run on all or steelwork, per metre run c/w accessories.	/meter	
b)	As per item (a) above, but installed in G.I conduit and buried to a depth of 600mm (2 inci) below finished ground level, per metre run	/meter	
c)	20mm (5/8 inci) dia. Copper(gred A) or steel cored copper, extensible earth electrode of specified type, c/w brass or copper connection clamp, brass sleeve coupling for extending depth of electrode to achieve less 3 ohm.	No.	
d)	R.C. Inspection Chamber with removable cover for earth electrode connection point, each (12 inci x 12 inci x 8 inci)	No.	
e)	As per item (d), but Inspection Chamber and cover made from mil-steel plate, each (12 inci x 12 inci X 8 inci)	No.	
f)	Termination of cooper tape and earth electrode by using Cadweld method.	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
M1	MISCELLANEOUS MATERIALS & EQUIPMENT ROAD CROSSING CABLE DUCT Rates shall also include for the trenching across the road and under roadside drains to lay ducts the reinstatement of bitumen road surface, the provision of cable draw-wire through and the sealing of ducts after cables are laid, g.i.pipe (class B):-		
a)	100mm dia G.I pipe ducts	Per Meter	
b)	150mm dia G.I pipe ducts	Per Meter	
c)	200mm dia G.I pipe ducts	Per Meter	
d)	250mm dia G.I pipe ducts	Per Meter	
e)	300mm dia G.I pipe ducts	Per Meter	
f)	350mm dia G.I pipe ducts	Per Meter	
g)	400mm dia G.I pipe ducts	Per Meter	
2	To supply and install the following items :-		
a)	LED T8 1200mm 12- 20 W	No.	
b)	13Amp socket outlet (metaclad)	No.	
c)	Exhaust fan :-		
	i) 12 inchi	No.	
	ii) 16 inchi	No.	
	iii) 20 inchi	No.	
	iv) 24 inchi	No.	
d)	Wall mounted Industrial fan 24 inchi	No.	
e)	Emergency light (LED)		
	i) 3 - 10 W	No.	
	ii) 12 - 20 W	No.	
f)	Wiring c/w metal trunking /conduit and accessories		
	i) 1.5mm ² PVC cables + ecc.	meter	
	ii) 2 x 1.5mm ² PVC cables + ecc.	meter	
	ii) 2.5mm ² PVC cables + ecc.	meter	
	ii) 2 x 2.5mm ² PVC cables + ecc.	meter	
g)	Cable Ladder 24 inchi	lot	
h)	Celling Rose	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
i)	Contactor 9A	No.	
j)	Thermal Overload Relay	No.	
3	To supply and install, one (1) of each of the following time switches for lighting points or control circuits:-		
a)	10A, D.P., time switch with spring reserve as specified, for installation in panel or switchboard	No.	
b)	20A, D.P., time switch with spring reserve as specified, for installation in panel or switchboard	No.	
c)	30A, D.P., time switch with spring reserve as specified, for installation in panel or switchboard	No.	
4	To supply and install the following :		
a)	To display ?Single Line Diagram? with Aluminum frame	No.	
b)	Regulation-type,- DILARANG MASUK- notice plate each.	No.	
c)	Regulation-type, - BAHAYA - plate each	No.	
d)	Regulation-type, - CPR Board each c/w Aluminium frame	No.	
e)	Regulation-type, - NO SMOKING- plate each	No.	
f)	Regulation-type, - UTAMAKAN KESELAMATAN & SAFETY FIRST - plate each	No.	
g)	Substation/MSB Room/Genset Room/Transformer Room signage	No.	
h)	Insulating Rubber Mat IEC 61111		
	i. Class O (10 meter)	per /roll	
	ii. Class 3 (6 meter)	per /roll	
	iii. Class 4 (6 meter)	per /roll	
5	Re-draw / update schematic drawing for substation c/w endorsed by competent person (PEPC) c/w softcopy Autocad.	per drawing	
6	To produce layout drawing for substation.	per drawing	
7	To supply earth loop impedance tester	No.	
8	To supply elcb tester	No.	
9	To supply multi-pocket high visibility safety reflector vest with wording - UNIT ELEKTRIK PPF-	No.	
10	To supply and back fill sand at trenches (include transportation, labour etc)	No.	
11	To Supply Three Phase Power Recorder FLUKE 1750 c/w: 4 x 1000A Flexible Current Transformer 24 Inch, 5 nos Test Leads And Clips, SD Memory Card, Fluke View And Analyze Software, AC Power Cord And Ethernet Cable And Soft Carrying Bag.	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
12	To supply Isolation Transformer c/w lockable bracket and padlock :		
i)	500 va	No.	
ii)	1 kva	No.	
iii)	2 kva	No.	
13	To supply, install, test and commissioning the following HV and LV protection relay c/w associated accessories as follows :-		
a)	Rekeyable & heavy duty lock R50-CRL padlock	No.	
b)	Labelling panel switch board and control	No.	
c)	Ion meter (Power Logic)		
	i) Ion 7330	No.	
	ii) Ion 7650	No.	
	iii) Ion 7500	No.	
	iv) Ion 7550	No.	
14	To supply and install metal clad boxes or panel following the demension below:		
i	Height: 407mm - 559mm Width : 305mm - 356mm Depth : 203mm - 305mm	No.	
ii	Height: 610mm - 813mm Width : 406mm - 610mm Depth : 203mm - 305mm	No.	
15	To remove existing faulty transformer and reinstall with UiTM's transformer, c/w manpower and transport:		
a)	300 - 500KVA	L.S	
b)	750 - 1000KVA	L.S	
c)	1000 - 1250KVA	L.S	
d)	1250 - 2500kVA	L.S	
N1	ENERGY METER TO SUPPLY,INSTALL,TESTING AND COMMISSIONING ENERGY METER		
i	To supply and install Energy Meter complete with all necessary accessories	Qty	
ii	To supply and install cellular communication Moderm	Qty	
iii	To provide and setting up interface and and reporting format with cloud monitoring system	Qty	
iv	To provide yearly cloud subscription	Qty	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
v	To provide yearly cellular data services	Qty	
O1	SURGE PROTECTION DEVICE(SPD) To supply, install and commission the following items of equipment and accessories as specified:-		
a)	Transient voltage and lightning protection surge arrester/ type 1 max, 255V, 50 - 125kA	No.	
b)	Type 1 surge arrester / N-PE max. 280 V, 50 kA / V 50-B series.	No.	
c)	Type 2 surge arrester max. 150 V, 20kA / V 20 - C series.	No.	
d)	Type 2 surge arrester / compact 150 - 385 V, 10kA / V 10 series.	No.	
e)	Type 3 surge arrester / plug - in.	No.	
f)	Transient voltage and lightning protection surge arrester/ type 3 12 - 255 V/VF series.	No.	
g)	Type 1 surge arrester/ for photovoltaic application 600 - 1000V, 12.5 - 50 kA / V 50 series.	No.	
h)	Electronic Surge Protective Device	No.	
i)	Surge Protective Device	No.	
P1	RELAY RELAY 240VAC		
	Relay 240VAC - 8 pins (250VAC, 10 A) c/w base	No.	
	Relay 240VAC - 11 pins (250VAC, 10 A) c/w base	No.	
	Relay 240VAC - 14 pins (250VAC, 10 A) c/w base	No.	
2	RELAY 24VDC		
	Relay 24VDC - 8 pins (24VDC, 10 A) c/w base	No.	
	Relay 24VDC - 11 pins (24VDC, 10 A) c/w base	No.	
	Relay 24VDC - 14 pins (24VDC, 10 A) c/w base	No.	
3	RELAY 12VDC		
	Relay 12VDC - 8 pins (12VDC, 10 A) c/w base	No.	
	Relay 12VDC - 11 pins (12VDC, 10 A) c/w base	No.	
	Relay 12VDC - 14 pins (12VDC, 10 A) c/w base	No.	
4	RELAY 110VDC		
	Relay 110VDC - 8 pins (110VDC, 10 A) c/w base	No.	
	Relay 110VDC - 12 pins (110VDC, 10 A) c/w base	No.	
	Relay 110VDC - 14 pins (110VDC, 10 A) c/w base	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
Q1	CABLE AND CABLE TERMINATION Supply and install the following types off cables either in conduit, trunking, cable tray or lay direct in the ground. (Note: Rates to include all necessary cable cleats, saddles and accessories but EXCLUDING CONDUIT, TRUNKING, CABLE TRAY AND TRECHING, WHICH SHALL BEMEASURED SEPERATELY). Cable termination shall include provision of cable lugs, termination glands or cable end boxes. PVC Cable (0.6/1kV). Copper.		
a)	1 x 1.5 sq.mm	P/Mtr	
b)	1 x 2.5 sq.mm	P/Mtr	
c)	1 x 4 sq.mm	P/Mtr	
d)	1 x 6 sq.mm	P/Mtr	
e)	1 x 10 sq.mm	P/Mtr	
f)	1 x 16 sq.mm	P/Mtr	
g)	1 x 25 sq.mm	P/Mtr	
d)	1 x 35 sq.mm	P/Mtr	
e)	1 x 50 sq.mm	P/Mtr	
f)	1 x 70 sq.mm	P/Mtr	
g)	1 x 95 sq.mm	P/Mtr	
h)	1 x 120 sq.mm	P/Mtr	
i)	1 x 150 sq.mm	P/Mtr	
j)	1 x 185 sq.mm	P/Mtr	
k)	1 x 240 sq.mm	P/Mtr	
2	PVC / PVC Cables (0.6/1kV). Copper		
a)	1 x 25 sq.mm	P/Mtr	
b)	1 x 35 sq.mm	P/Mtr	
c)	1 x 50 sq.mm	P/Mtr	
d)	1 x 70 sq.mm	P/Mtr	
e)	1 x 95 sq.mm	P/Mtr	
f)	1 x 120 sq.mm	P/Mtr	
g)	1 x 150 sq.mm	P/Mtr	
h)	1 x 185 sq.mm	P/Mtr	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
i)	1 x 240 sq.mm	P/Mtr	
j)	4 x 25 sq.mm	P/Mtr	
k)	4 x 35 sq.mm	P/Mtr	
l)	4 x 50 sq.mm	P/Mtr	
m)	4 x 70 sq.mm	P/Mtr	
n)	4 x 95 sq.mm	P/Mtr	
o)	4 x 120 sq.mm	P/Mtr	
p)	4 x 150 sq.mm	P/Mtr	
q)	4 x 185 sq.mm	P/Mtr	
r)	4 x 240 sq.mm	P/Mtr	
3	XLPE / PVC (0.6 / 1 kV) Copper		
a)	1 x 25 sq.mm	P/Mtr	
b)	1 x 35 sq.mm	P/Mtr	
c)	1 x 50 sq.mm	P/Mtr	
d)	1 x 70 sq.mm	P/Mtr	
e)	1 x 95 sq.mm	P/Mtr	
f)	1 x 120 sq.mm	P/Mtr	
g)	1 x 150 sq.mm	P/Mtr	
h)	1 x 185 sq.mm	P/Mtr	
i)	1 x 240 sq.mm	P/Mtr	
j)	1 x 300 sq.mm	P/Mtr	
j)	4 x 25 sq.mm	P/Mtr	
k)	4 x 35 sq.mm	P/Mtr	
l)	4 x 50 sq.mm	P/Mtr	
m)	4 x 70 sq.mm	P/Mtr	
n)	4 x 95 sq.mm	P/Mtr	
o)	4 x 120 sq.mm	P/Mtr	
p)	4 x 150 sq.mm	P/Mtr	
q)	4 x 185 sq.mm	P/Mtr	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
r)	4 x 240 sq.mm	P/Mtr	
s)	4 x 300 sq.mm	P/Mtr	
4	PVC /SWA/PVC Cables (0.6 / 1 kV) Copper		
a)	4c - 25 sq.mm each	P/Mtr	
b)	4c - 35 sq.mm each	P/Mtr	
c)	4c - 50 sq.mm each	P/Mtr	
d)	4c - 70 sq.mm each	P/Mtr	
e)	4c - 95 sq.mm each	P/Mtr	
f)	4c - 120 sq.mm each	P/Mtr	
g)	4c - 150 sq.mm each	P/Mtr	
h)	4c - 185 sq.mm each	P/Mtr	
i)	4c - 240 sq.mm each	P/Mtr	
j)	4c - 300 sq.mm each	P/Mtr	
5	XLPE / SWA / PVC (0.6 / 1 kV) Copper		
a)	4c - 25 sq.mm each	P/Mtr	
b)	4c - 35 sq.mm each	P/Mtr	
c)	4c-50 sq.mm each	P/Mtr	
d)	4c - 70 sq.mm each	P/Mtr	
e)	4c - 95 sq.mm each	P/Mtr	
f)	4c - 120 sq.mm each	P/Mtr	
g)	4c - 150 sq.mm each	P/Mtr	
h)	4c - 185 sq.mm each	P/Mtr	
i)	4c - 240 sq.mm each	P/Mtr	
j)	4c - 300 sq.mm each	P/Mtr	
6	XLPE / AWA / PVC (0.6 / 1 kV) Copper		
a)	1c x 185 sq. mm	P/Mtr	
b)	1c x 240 sq. mm	P/Mtr	
c)	1c x 300 sq. mm	P/Mtr	
d)	1c x 500 sq. mm	P/Mtr	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
e)	1c x 630 sq. mm	P/Mtr	
f)	4c - 150 sq.mm each	P/Mtr	
g)	4c - 185 sq.mm each	P/Mtr	
h)	4c - 240 sq.mm each	P/Mtr	
i)	4c - 300 sq. mm each	P/Mtr	
j)	4c - 500 sq. mm each	P/Mtr	
k)	4c - 630 sq. mm each	P/Mtr	
7	XLPE / SWA / PVC (6.35 / 11 kV) Copper		
a)	1c x 185 sq. mm	P/Mtr	
b)	1c x 240 sq. mm	P/Mtr	
c)	1c x 300 sq. mm	P/Mtr	
d)	1c x 500 sq. mm	P/Mtr	
e)	1c x 630 sq. mm	P/Mtr	
f)	3c - 150 sq.mm each	P/Mtr	
g)	3c - 185 sq.mm each	P/Mtr	
h)	3c-240 sq.mm each	P/Mtr	
i)	3c - 300 sq. mm each	P/Mtr	
j)	3c - 500 sq. mm each	P/Mtr	
k)	3c - 630 sq. mm each	P/Mtr	
8	XLPE / SWA / PVC (6.35 / 11 kV) Aluminium		
a)	1c x 185 sq. mm	P/Mtr	
b)	1c x 240 sq. mm	P/Mtr	
c)	1c x 300 sq. mm	P/Mtr	
d)	1c x 500 sq. mm	P/Mtr	
e)	1c x 630 sq. mm	P/Mtr	
f)	3c - 150 sq.mm each	P/Mtr	
g)	3c - 185 sq.mm each	P/Mtr	
h)	3c - 240 sq.mm each	P/Mtr	
i)	3c - 300 sq. mm each	P/Mtr	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
j)	3c - 500 sq. mm each	P/Mtr	
k)	3c - 630 sq. mm each	P/Mtr	
9	PVC/ SWA/ PVC Copper (11kV)		
a)	1c x 185 sq. mm	P/Mtr	
b)	1c x 240 sq. mm	P/Mtr	
c)	1c x 300 sq. mm	P/Mtr	
d)	1c x 500 sq. mm	P/Mtr	
e)	1c x 630 sq. mm	P/Mtr	
f)	3c - 150 sq.mm each	P/Mtr	
g)	3c - 185 sq.mm each	P/Mtr	
h)	3c - 240 sq.mm each	P/Mtr	
i)	3c - 300 sq. mm each	P/Mtr	
j)	3c - 500 sq. mm each	P/Mtr	
k)	3c - 630 sq. mm each	P/Mtr	
10	XLPE/ SCT/ SWA/ PE Copper (11kV)		
a)	3c - 185 sq.mm each	P/Mtr	
b)	3c - 240 sq.mm each	P/Mtr	
c)	3c - 300 sq. mm each	P/Mtr	
d)	3c - 500 sq. mm each	P/Mtr	
e)	3c - 630 sq. mm each	P/Mtr	
11	XLPE/ SCT/ PE Copper (11kV)		
a)	3c - 185 sq.mm each	P/Mtr	
b)	3c - 240 sq.mm each	P/Mtr	
c)	3c - 300 sq. mm each	P/Mtr	
d)	3c - 500 sq. mm each	P/Mtr	
e)	3c - 630 sq. mm each	P/Mtr	
12	BUSBAR SIZE FOR SWITCHBOARD		
i)	Copper Busbar 1m x 3mm x 25mm, 60A - 125A	P/Mtr	
ii)	Copper Busbar 1m x 6mm x 30mm, 250A	P/Mtr	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
iii)	Copper Busbar 1m x 10mm x 30mm, 400A	P/Mtr	
iv)	Copper Busbar 1m x 10mm x 55mm, 800A	P/Mtr	
v)	Copper Busbar 1m x 10mm x 65mm, 1000A	P/Mtr	
vi)	Copper Busbar 1m x 10mm x 80mm, 1200A	P/Mtr	
vii)	Copper Busbar 1m x 10mm x 80mm, 1250A	P/Mtr	
viii)	Copper Busbar 1m x 10mm x 100mm, 1600A	P/Mtr	
ix)	Copper Earth Busbar 1m x 6mm, 800A - 1600A	P/Mtr	
x)	Detuned Reactor Transformer (Copper Type)	P/Mtr	
xi)	Detuned Reactor 13% (Copper Winding)	P/Mtr	
13	XLPE/SWA/PVC 8C Cable		
a)	1.5m ²	P/Mtr	
b)	2.5m ²	P/Mtr	
c)	4.0m ²	P/Mtr	
14	XLPE/SWA/PVC 12C Cable		
a)	1.5m ²	P/Mtr	
b)	2.5m ²	P/Mtr	
c)	4.0m ²	P/Mtr	
15	XLPE/SWA/PVC 16C Cable		
a)	1.5m ²	P/Mtr	
b)	2.5m ²	P/Mtr	
c)	4.0m ²	P/Mtr	
16	XLPE/SWA/PVC 21C Cable		
a)	1.5m ²	P/Mtr	
b)	2.5m ²	P/Mtr	
c)	4.0m ²	P/Mtr	
17	1C Flexible Cable for Capacitor Bank		
a)	6m ²	P/Mtr	
b)	10m ²	P/Mtr	
c)	16m ²	P/Mtr	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
d)	25m ²	P/Mtr	
e)	95m ²	P/Mtr	
18	Fire Rated Cable 1C Cable		
a)	25m ²	P/Mtr	
b)	35m ²	P/Mtr	
c)	50m ²	P/Mtr	
d)	70m ²	P/Mtr	
e)	95m ²	P/Mtr	
f)	120m ²	P/Mtr	
g)	150m ²	P/Mtr	
h)	185m ²	P/Mtr	
i)	240m ²	P/Mtr	
19	Main Intake 33kV		
i.)	1 core 185mm ² XLPE/PVC 33kV Copper. Armored	P/Mtr	
ii.)	1 core 185mm ² XLPE/PVC 33kV Aluminium. Armoured	P/Mtr	
iii.)	1 core 240mm ² XLPE/PVC 33kV Copper. Armored	P/Mtr	
iv.)	1 core 240mm ² XLPE/PVC 33kV Aluminium. Armoured	P/Mtr	
v.)	1 core 630mm ² XLPE/PVC 33kV Copper. Armored	P/Mtr	
vi.)	1 core 630mm ² XLPE/PVC 33kV Aluminium. Armoured	P/Mtr	
20	To terminate, test and commission new 11kV Power Cable, 3C, 11kV XLPE cable to 11kV VCB Panel c/w cable bracket and accessories as following sizes :-		
a)	3c - 95 sq.mm each	L.Sum	
b)	3c - 150 sq.mm each	L.Sum	
c)	3c - 185 sq.mm each	L.Sum	
d)	3c - 240 sq.mm each	L.Sum	
e)	3c - 300 sq.mm each	L.Sum	
21	STEEL CABLE TRAYS & ACCESSORIES Supply & install the following sizes of galvanise.		
a.	51mm (2inci) 14 SWG	P/Mtr	
b.	76mm (3inci) 14 SWG	P/Mtr	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
c.	102mm (4inci) 14 SWG	P/Mtr	
d.	127mm (5inci) 14 SWG	P/Mtr	
e.	152mm (6inci) 14 SWG	P/Mtr	
A1	Maintenance For Generator Set Membekal dan top-up air bateri.		
i)	Deionised Water (NiCad)	liter	
ii)	Distilled Water (Lead Acid)	liter	
2	Membekal dan menghantar air bateri.		
i)	Deionised Water (NiCad)	liter	
ii)	Distilled Water (Lead Acid)	liter	
3	Membekal dan top-up minyak enjin (SAE 15W/40).	liter	
4	Membekal dan menghantar minyak enjin (SAE 15W/40).	liter	
5	Membekal dan top-up coolant	liter	
6	Membekal dan menghantar coolant	liter	
7	Servis radiator / flushing (all range)	No.	
8	Membekal dan mengisi minyak diesel untuk Generatol set.	liter	
9	Kerja-Kerja Servis Set Generator samada Janakuasa Tunggusedia atau Janakuasa Bergerak (Standby or Mobile). Setiap kali servis perlu tukar air, oil, fuel dan water filter sahaja.		
	i) Generator Berkuasa dari 10KVA-50KVA	Lump Sum	
	ii) Generator Berkuasa dari 60 KVA - 125 KVA	Lump Sum	
	iii) Generator Berkuasa dari 150 KVA - 250 KVA	Lump Sum	
	iv) Generator Berkuasa dari 300 KVA - 500 KVA	Lump Sum	
	v) Generator Berkuasa dari 500 KVA - 750 KVA	Lump Sum	
	vi) Generator Berkuasa dari 1000 KVA	Lump Sum	
	vi) Generator Berkuasa dari 1750 KVA - 1800 KVA	Lump Sum	
10	Membekal dan memasang bateri Generator jenis NiCad seperti berikut mengikut nilai Ah sediaada :-		
	i) 60 KVA - 125 KVA (NiCad).	set	
	ii) 150 KVA - 250 KVA (NiCad).	set	
	iii) 300 KVA - 500 KVA (NiCad).	set	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
	iv) 500 KVA - 750 KVA (NiCad).	set	
	v) 1000 KVA - 1750 KVA (NiCad).	set	
	vi) 1800kVA (NiCad).	set	
11	Kos pemasangan bagi semua jenis bateri (upah pasang)	set	
12	To service Battery (all range)	set	
13	Memeriksa, menguji dan membaiki Automatic Voltage Regulator (AVR).	No.	
14	Membekal dan memasang Digital Temperature Controller.	No.	
15	Memeriksa, menguji dan membaiki litar kawalan genset (AMF Board).	No.	
16	Memeriksa, menguji dan membaiki litar kawalan Change Over Contactor.	No.	
17	Kerja-kerja penyenggaraan papan suis 200 - 400 Amp (Essential Board).		
	i) Pengujian Penebatan	No.	
	ii) Pengujian Elektrod Bumi	No.	
	iii) Pengujian Keterusan Pengalir	No.	
	iv) Mengetat Skru Bolt dan Nut Busbar	No.	
	v) Mencuci dan membersihkan sesentuh dan segala kerja berkaitan.	No.	
18	Kerja-kerja penyenggaraan papan suis 500 - 800 Amp (Essential Board).		
	i) Pengujian Penebatan	No.	
	ii) Pengujian Elektrod Bumi	No.	
	iii) Pengujian Keterusan Pengalir	No.	
	iv) Mengetat Skru Bolt dan Nut Busbar	No.	
	v) Mencuci dan membersihkan sesentuh dan segala kerja berkaitan.	No.	
19	Membalut exhaust pada flexible silencer dengan rockwool dan aluminium foil. (Exhaust insulation)	meter	
20	Membekal dan memasang pintu kedap bunyi (acoustic door) satu daun l/d aksesori berkaitan.	No.	
21	Membekal dan memasang pintu kedap bunyi (acoustic door) dua daun l/d aksesori berkaitan spt selak dan kunci.	No.	
22	Membekal dan memasang telinga kunci pada pintu genset.	No.	
23	Membekal dan memasang selak bawah dan atas saiz 4 inci	No.	
24	Membekal dan memasang selak bawah dan atas saiz 16 inci	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
25	Membekal tong drum 200L	No.	
26	Kerja-kerja membuka dan membuang semua jenis pintu kedap bunyi(acoustic door) lama.	No.	
27	Membekal dan memasang stopper radiator	No.	
28	Membekal dan memasang radiator cap	No.	
29	Membekal dan memasang radiator hose	No.	
30	Battery cable (flexible type size 95mm - 120 mm)	m	
31	Membekal dan memasang Solenoid valve	No.	
32	Membekal dan memasang Rectifier card	No.	
33	Membekal dan memasang Bateri N150 - N250	No.	
34	Membekal dan memasang Pressure switch	No.	
35	Membekal dan memasang SPD Rating 0 - 100 Amp	No.	
36	Membekal dan memasang SPD Rating 110 - 250 Amp	No.	
37	Menggantikan keseluruhan gasket genset		
	i) 20 kVA	Lot	
	ii) 150 kVA	Lot	
	iii) 175 kVA	Lot	
	iv) 250 kVA To 275kVA	Lot	
	v) 400 kVA	Lot	
	vi) 600 kVA	Lot	
	vii) 1500 kVA	Lot	
38	Membekal dan menggantikan oil pressure switch	No.	
39	Membekal dan menggantikan gasket untuk enjin oil pan		
	i) 20 kVA	Lot	
	ii) 150 kVA	Lot	
	iii) 175 kVA	Lot	
	iv) 250 kVA To 275kVA	Lot	
	v) 400 kVA	Lot	
	vi) 600 kVA	Lot	
	vii) 1500 kVA	Lot	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
40	Membaiki Radiator Genset		
	i) 20 kVA	Lot	
	ii) 150 kVA	Lot	
	iii) 175 kVA	Lot	
	iv) 250 kVA To 275 kVA	Lot	
	v) 400 kVA	Lot	
	vi) 600 kVA	Lot	
	vii) 1500 kVA	Lot	
41	Membekal dan menggantikan Radiator Genset		
	i) 20 kVA	Lot	
	ii) 150 kVA	Lot	
	iii) 175 kVA	Lot	
	iv) 250 kVA To 275kVA	Lot	
	v) 400 kVA	Lot	
	vi) 600 kVA	Lot	
	vii) 1500 kVA	Lot	
B	JADUAL KADAR HARGA - ALAT GANTI UMUM GENSET MEMBEKAL, MENGHANTAR DAN MEMASANG		
1	Membekal elektrik pam (3/4 HP 240 VAC) bagi pam minyak	satu	
2	Photo-relay 16A, 240VAC	satu	
3	Under Voltage Relay AC 440 V	satu	
4	Exhaust Fan 2 inchi	satu	
5	CH Diode	satu	
6	Auxiliary Contactor	satu	
7	Battery Terminal	satu	
8	Lever Indicator Float Switch	satu	
9	Battery Flexible Cable (Welding cable)	meter	
10	Cancel Alarm Button	satu	
11	Automatic Voltage Regulator		
	i) 20 kVA	satu	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
	ii) 150 kVA	satu	
	iii) 175 kVA	satu	
	iv) 250 kVA To 275kVA	satu	
	v) 400 kVA	satu	
	vi) 600kVA	satu	
	vii) 1500kVA	satu	
C	RELAY RELAY 240VAC		
1	Relay 240VAC - 8 pins (250VAC, 10 A) c/w base	satu	
2	Relay 240VAC - 11 pins (250VAC, 10 A) c/w base	satu	
3	Relay 240VAC - 14 pins (250VAC, 10 A) c/w base	satu	
	RELAY 24VDC		
1	Relay 24VDC - 8 pins (24VDC, 10 A) c/w base	satu	
2	Relay 24VDC - 11 pins (24VDC, 10 A) c/w base	satu	
3	Relay 24VDC - 14 pins (24VDC, 10 A) c/w base	satu	
	RELAY 12VDC		
1	Relay 12VDC - 8 pins (12VDC, 10 A) c/w base	satu	
2	Relay 12VDC - 11 pins (12VDC, 10 A) c/w base	satu	
3	Relay 12VDC - 14 pins (12VDC, 10 A) c/w base	satu	
	TIME DELAY 24VDC TDR		
1	Time Delay Relay (24VDC, 10 A) c/w base	satu	
2	Time Delay Relay - 8 pins 0 - 30 sec (24VDC, 10 A) c/w base	satu	
3	Time Delay Relay - 8 pins 0 - 30 minutes (24VDC, 10 A) c/w base	satu	
4	Time Delay Relay - 11 pins 0 - 30 minutes (24VDC, 10 A) c/w base	satu	
	TIME DELAY 12VDC TDR		
1	Time Delay Relay (12VDC, 10 A) c/w base	satu	
2	Time Delay Relay - 8 pins 0 - 30 sec (12VDC, 10 A) c/w base	satu	
3	Time Delay Relay - 8 pins 0 - 30 minutes (12VDC, 10 A) c/w base	satu	
4	Time Delay Relay - 11 pins 0 - 30 minutes (12VDC, 10 A) c/w base	satu	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
5	Under voltage monitoring relay	satu	
6	Automatic synchronizing relay	satu	
7	Synchronizing scope	satu	
D	ITEM PEPASANGAN GENSET		
1	Auto Voltage Regulator Card MX 341	No.	
2	240VAC MY4N Relay	No.	
3	Detuned Reactor 7% (Copper Winding)	No.	
4	Diesel Hose	1 ft	
5	Diesel Injector Hose	1 ft	
6	Nipple Hose	No.	
7	Clip Hose	No.	
8	Fuse Carrier	No.	
9	HRC Fuse 500v - 6A	No.	
10	High Voltage Indicator,	No.	
11	MCB 6A	No.	
12	Genset Inlet Canvas	No.	
13	High pressure hose Genset		
	i) diameter 2 to 3.5 inci	No.	
	ii) 4 inci dan ke atas	No.	
	To dismantle, repair and install genset flywheel genset		
	i) 20 kVA	No.	
	ii) 150 kVA	No.	
	iii) 175 kVA	No.	
	iv) 250 kVA To 275 kVA	No.	
	v) 400 kVA	No.	
	vi) 600kVA	No.	
	vii) 1500kVA	No.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
E	MENYEWA COMPACT SUB STATION Kadar harga termasuk kos penyediaan kos pengangkutan, penyelenggaraan, tenaga kerja untuk kerja pemasangan dan kabel penyambungan yang sesuai ke board MSB/AMF dalam keadaan running jika berlaku terputus bekalan dari TNB.		
i)	750 kVA	per/bulan	
ii)	1000 kVA	per/bulan	
iii)	1250 kVA	per/bulan	
iv)	1500 kVA	per/bulan	
v)	2000 kVA	per/bulan	
vi)	2500 kVA	per/bulan	
F	MENYEWA SET GENERATOR (STANDBY) CATATAN : a. Pengangkutan ke lokasi yang ditetapkan b. Minyak Diesel untuk gen set dan pengangkutan yang lain c. Kabel- kabel penyambungan ke board MSB/AMF dan sebagainya mengikut panjang yang bersesuaian. d. Penyelenggaraan e. Tenaga Kerja semasa kerja-kerja pemasangan dan tunggusedia. f. Genset adalah dalam keadaan tunggusedia dan akan disalurkan ke MSB/AMF jika berlaku terputus bekalan dari TNB		
	i) Janakuasa 1000 KVA		
a.	Penggunaan bagi 8 jam yang pertama.	Lump Sum	
b.	Tambahan setiap jam bagi kategori b dan e.	Jam	
	ii) Janakuasa 750KVA		
a.	Penggunaan bagi 8 jam yang pertama.	Lump Sum	
b.	Tambahan setiap jam bagi kategori b dan e.	Jam	
	iii) Janakuasa 500KVA		
a.	Penggunaan bagi 8 jam yang pertama.	Lump Sum	
b.	Tambahan setiap jam bagi kategori b dan e.	Jam	
	iv) Janakuasa 250KVA - 350KVA		
a.	Penggunaan bagi 8 jam yang pertama.	Lump Sum	
b.	Tambahan setiap jam bagi kategori b dan e.	Jam	
	v) Janakuasa 100KVA - 200KVA		
a.	Penggunaan bagi 8 jam yang pertama.	Lump Sum	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
b.	Tambahan setiap jam bagi kategori b dan e.	Jam	
	vi) Janakuasa 5 KVA sehingga 50 KVA		
a.	Penggunaan bagi 8 jam yang pertama.	Lump Sum	
b.	Tambahan setiap jam bagi kategori b dan e.	Jam	
G	MENYEWA SET GENERATOR (RUNNING) CATATAN : a. Kadar harga di atas termasuk penyediaan kos-kos berikut : b. Pengangkutan ke lokasi yang ditetapkan c. Minyak Diesel untuk gen set dan pengangkutan yang lain d. Kabel- kabel penyambungan ke board MSB/AMF dan sebagainya mengikut panjang yang bersesuaian. e. Penyelenggaraan f. Tenaga Kerja semasa kerja-kerja pemasangan dan bertugas g. Genset dalam keadaan sentiasa running dan bekalan disalurkan ke MSB/AMF.		
	i) Janakuasa 1000 KVA		
a.	Penggunaan bagi 8 jam yang pertama.	Lump Sum	
b.	Tambahan setiap jam bagi kategori b dan e.	Jam	
	ii) Janakuasa 750KVA		
a.	Penggunaan bagi 8 jam yang pertama.	Lump Sum	
b.	Tambahan setiap jam bagi kategori b dan e.	Jam	
	iii) Janakuasa 500KVA		
a.	Penggunaan bagi 8 jam yang pertama.	Lump Sum	
b.	Tambahan setiap jam bagi kategori b dan e.	Jam	
	iv) Janakuasa 250KVA - 350KVA		
a.	Penggunaan bagi 8 jam yang pertama.	Lump Sum	
b.	Tambahan setiap jam bagi kategori b dan e.	Jam	
	v) Janakuasa 100KVA - 200KVA		
a.	Penggunaan bagi 8 jam yang pertama.	Lump Sum	
b.	Tambahan setiap jam bagi kategori b dan e.	Jam	
	vi) Janakuasa 5 KVA sehingga 50 KVA		
a.	Penggunaan bagi 8 jam yang pertama.	Lump Sum	
b.	Tambahan setiap jam bagi kategori b dan e.	Jam	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
11.1	CIVIL AND STRUCTURE WORKS Building Painting External Wall Painting		
	Prepare wall surface for painting inclusive of brushing and cleaning of dust and apply one coat weather resistant and anti-fungus ICI Pentalite sealer and coats weather resistant and anti-fungus ICI emulsion paint as described to plastered wall with approved UiTM corporate colour.	m2	
	Internal Wall Painting		
1.2	Prepare wall surface for painting inclusive of brushing and cleaning of dust and apply one coat ICI Pentalite sealer and 2 coats ICI emulsion paints as described to plastered wall	m2	
	Ceiling Painting		
1.3	Prepare and apply one coat sealer and two coats ICI emulsion paint to ceiling	m2	
1.4	Floor Painting		
	Prepare and apply one epoxy primer and two epoxy non-slip deck paint green in colour as described on concrete surface.	m ²	
2	Road Works		
2.1	Cut and remove old premixes using premix cutter and clean impurities before premix new work is carried out	m ²	
2.2	To trim, grade and level sub grade to required fall and chamber and compact. Supply and lay 50mm thick sand base and compact. Supply and lay 150mm thick crusher run road base in two equal layers and compact. Supply and lay 65mm thick asphalted macadam binder course and 40mm thick macadam binder wearing course all inclusive of prime and binder bitumen.	m ²	
3	To supply and place sand in trench complete with 25mm thick cement mortar	m ²	
4	To supply and install mosquito net.	m ²	
5	To supply and install aluminium door for substations (2 leaf door) include demolish/dismantle existing door, installing new frame, touch-up, painting and ect where needed.	m ³	
6	To supply and install aluminium door for substations (single leaf door) include demolish/dismantle existing door, installing new frame, touch-up, painting and ect where needed.	m ³	
7	To supply and install heavy duty aluminium louvered window for substation.	m ²	
8	To supply and install door or louvered window aluminium frame for substation.	m ²	
9	To supply and deliver Standard Alloy High Security Pad Lock for Substation	nos	
10	Duplicate existing High Security Pad Lock for Substation	Nos	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
11	To rectified and make good substation roofing and rain water down pipe.	m ²	
12	To supply and install transformer Guard	m ²	
13	To supply and deliver Standard Alloy High Security Pad Lock for Substation	No.	
14	To supply and install alumanium door for substation :		
	i) 2 leaf door	m ²	
	II) single leaf door.	m ²	
15	Kerja-kerja pembaikan lantai dan render semula serta kerja-kerja berkaitan	m ²	
16	Kerja-kerja pembaikan dinding dan melepa semula serta kerja-kerja berkaitan	m ²	
	UiTM Logo		
17	To supply and fix UiTM logo including wording as described and specified with polycarbonate and stickers	No.	
	Chain link Fence		
19	To supply and install 2100mm PVC coated chain link fence with barded wire around the building as described.	m	
20	To rectify and make good damaged chain link fence	m	
21	To rectify and make good damaged perimeter drain	m	
	Documentation		
22	Preparation of hardcover contract documents	No.	
	To supply and install the following : CONVENTIONAL FIRE ALARM SYSTEM		
1	Manual Keyswitch	no.	
2	Ampere Meter 24V/DC/5Amp	no.	
3	Rotary Zone Selector Switch	no.	
4	Smoke Detector c/w Base (Apollo)	no.	
7	Alarm Bell Dia. 24VDC/150mm	no.	
8	Recharged Wet Cell Battery Nife LCP	no.	
9	Heat Detector c/w Base (Demco)	no.	
10	Beacon Light c/w Stroke	no.	
11	Buzzer 24VDC	no.	
12	DC Volt Meter 0-30V	no.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEMIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
13	AC Ampere meter 0-30A	no.	
14	Manual Call Point/Breakglass	no.	
15	Alarm Panel Push Button	no.	
16	Supply & Fixed Charger Card - 20	no.	
	GAS SUPPRESSION SYSTEM (FM-200 / FE-13)		
18	Fixing Brackets	no.	
19	Valve Assembly	no.	
20	Burst Disc	no.	
21	Low Pressure Switch	no.	
22	Manual Actuator	no.	
23	Pneumatic Actuator	no.	
24	Electrical Actuator	no.	
25	Flexible Discharge Hose	no.	
26	Solenoid Adaptor	no.	
27	Manifold Check Valve	no.	
	GAS SUPPRESSION SYSTEM (FM-200 / FE-13)		
28	Manifold Bracket Assembly	no.	
29	Flexible Pilot Hose	no.	
30	Male Adaptor	no.	
31	Male Tee	no.	
32	Male Elbow	no.	
33	Pressure Switch	no.	
34	Discharge Nozzle	no.	
35	Normal/Discharged Indicator Light	no.	
36	Battery Distil Water per Liter	no.	
37	Alarm Panel Light Switch	no.	
38	LED Indicator Light	no.	
39	ISO/NOR/FAULT/ALARM Selector	no.	
40	Supply Zone Card	no.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
41	Supply O.S.C Card	no.	
42	Repair Zone Card	no.	
43	Repair Charger Card ? 3Amp	no.	
44	Repair AC/DC Failure Card	no.	
45	Repair Discharge Card	no.	
46	Repair O.S.C. Card	no.	
	GAS SUPPRESSION SYSTEM (Co2)		
47	Solenoid Actuator (BBN)	no.	
48	Hydraulic Discharged Hose c/w Check Valve	no.	
49	Co2 Cylinder Head Valve	no.	
50	Dia. 25mm Multijet Horn Discharged Nozzle	no.	
51	Flanged Nozzle Horn	no.	
52	Fan Type Nozzle	no.	
53	Dia. 40mm Directional Valve	no.	
54	45kg Co2 Cylinder	no.	
55	Pilot Gas Cylinder	no.	
56	Control Head c/w Solenoid & Control Head	no.	
57	Pilot Bleed Vent	no.	
58	Dia. 20mm Multijet/Horn Discharged Nozzle	no.	
59	Co2 Pyrocharged	no.	
60	6? Alarm Bell (Demco)	no.	
61	Heat Detector (Demco)	no.	
62	Single LED Flashing Warning Light	no.	
63	Double LED Flasing Warning Light	no.	
64	Fire Curtain c/w Drop Weight (4.5m x 2.4m)	no.	
65	Tripping Device c/w Solenoid for Fire Curtain	no.	
66	Manual Release/Isolate Switch (Yellow)	no.	
67	Manual Release Switch	no.	
68	Aluminium Alloy-Manual Key Switch	no.	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
69	Plastic Manual Key Switch	no.	
70	Smoke Detector (Appolo)	no.	
	FIRE ALARM PANEL		
71	2 Zones (Weather Proof)	no.	
72	4 Zones (Weather Proof)	no.	
73	6 Zones (Weather Proof)	no.	
74	8 Zones (Weather Proof)	no.	
75	10 Zones (Weather Proof)	no.	
76	12 Zones (Weather Proof)	no.	
77	Supply & Fixed Mimic Diagram (1 ? 10 Zones) + Box	set	
	BATTERY		
78	12V 7.2AH Maintenance Free Dry Fit Battery	no.	
79	12V 12AH Maintenance Free Dry Fit Battery	no.	
80	Wiring for Bell Point, Glass Breaker, Heat & Smoke Detector using 2 x 1.5mm ² PVC (meter run)		
	a) Surface G.I conduit	meter	
	b) Concealed G.I conduit	meter	
81	Wiring for Bell Point, Glass Breaker, Heat & Smoke Detector using 2 x 2.5mm ² PVC (meter run)		
	a) Surface G.I conduit	meter	
	b) Concealed G.I conduit	meter	
82	Wiring for Bell Point, Glass Breaker, Heat & Smoke Detector using 2 x 2.5mm ² PVC with earth wire (meter run)		
	a) Surface G.I conduit	meter	
	b) Concealed G.I conduit	meter	
	c) Surface PVC pipe	meter	
83	Supply and install ABC dry powder fire extinguisher 9.0kg c/w bracket, Chop ?HAK MILIK UiTM	no.	
84	Supply and install Co2 fire extinguisher 2.7 kg c/w bracket, Chop ?HAK MILIK UiTM	no.	
85	Inspect, service and test panel of the complete manual and automatic fire alarm system.	lot	
86	Inspect, service and test panel of the complete Sprinkler System	lot	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
87	Inspect, service and test panel of the complete manual and automatic CO2 fire protection system.	lot	
88	Inspect, service and renew Bomba Certificate of Co2 2.7 kg fire extinguisher.	No.	
89	Inspect, service and renew Bomba Certificate of ABC (Dry Powder) 9.0 kg fire extinguisher.	No.	
90	To supply and install KELUAR Sign and Emergency Light :-		
	a) LED KELUAR Sign (3 hour)	no.	
	b) LED Emergency Light (3 hour)	no.	
91	To refill fire suppression gas:		
	a) Co2	kg	
	b) Fe-13	kg	
	c) FM-200	kg	
	d) AF 11E (Hartindo)	kg	
	e) IG 55 (Agronite)	kg	
92a	JADUAL KADAR HARGA STAF WAKTU PEJABAT ATAU TUNGGUSEDIA Berikut disenaraikan jadual kadar harga (upah) untuk setiap jawatan kakitangan TEKNIKAL / BUKAN TEKNIKAL yang akan menjalankan Kerja-kerja penyelenggaraan dari jam 8.00 pagi hingga 5.00 petang. Kadar Upah Dibayar Mengikut Per/Jam		
i	Jurutera Perkhidmatan (Ijazah/ Jurutera Kompeten)	Per/jam	
ii	Penolong Jurutera/ Penyelia (Diploma)	Per/jam	
iii	HT Chargeman/ BO - 33kV (Sijil ST)	Per/jam	
iv	HT Chargeman/ BO - 11kV (Sijil ST)	Per/jam	
v	LV Chargeman/ AO - A4 (Sijil ST)	Per/jam	
vi	Juruteknik (Sijil Politeknik)	Per/jam	
vii	Kerani (SPM)	Per/jam	
viii	Pekerja Am (SRP/ PMR)	Per/jam	
b)	Kadar Upah Dibayar Mengikut Hari		
i	Jurutera Perkhidmatan (Ijazah/ Jurutera Kompeten)	sehari	
ii	Penolong Jurutera/ Penyelia (Diploma)	sehari	
iii	HT Chargeman/ BO - 33kV (Sijil ST)	sehari	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)

Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
iv	HT Chargeman/ BO - 11kV (Sijil ST)	sehari	
v	LV Chargeman/ AO - A4 (Sijil ST)	sehari	
vi	Juruteknik (Sijil Politeknik)	sehari	
vii	Kerani (SPM)	sehari	
viii	Pekerja Am (SRP/ PMR)	sehari	
c	Kadar Upah Dibayar Mengikut Bulan		
i	Jurutera Perkhidmatan (Ijazah/ Jurutera Kompetan)	sebulan	
ii	Penolong Jurutera/ Penyelia (Diploma)	sebulan	
iii	HT Chargeman/ BO - 33kV (Sijil ST)	sebulan	
iv	HT Chargeman/ BO - 11kV (Sijil ST)	sebulan	
v	LV Chargeman/ AO - A4 (Sijil ST)	sebulan	
vi	Juruteknik (Sijil Politeknik)	sebulan	
vii	Kerani (SPM)	sebulan	
viii	Pekerja Am (SRP/ PMR)	sebulan	
93a	JADUAL KADAR HARGA ATAS PANGGILAN KECEMASAN (ON CALL) Berikut disenaraikan jadual kadar harga (upah) untuk setiap jawatan kakitangan TEKNIKAL yang dicadangkan jika dipanggil bertugas semasa KECEMASAN (ON CALL) selepas waktu pejabat dari jam 05.01 petang hingga 8.00 pagi keesokan harinya. Kadar Upah Dibayar Mengikut Per/Jam		
i	Jurutera Perkhidmatan (Ijazah/ Jurutera Kompetan)	Per/jam	
ii	Penolong Jurutera/ Penyelia (Diploma)	Per/jam	
iii	HT Chargeman/ BO - 33kV (Sijil ST)	Per/jam	
iv	HT Chargeman/ BO - 11kV (Sijil ST)	Per/jam	
v	LV Chargeman/ AO - A4 (Sijil ST)	Per/jam	
vi	Juruteknik (Sijil Politeknik)	Per/jam	
vii	Kerani (SPM)	Per/jam	
viii	Pekerja Am (SRP/ PMR)	Per/jam	
b)	Kadar Upah Dibayar Mengikut Hari		
i	Jurutera Perkhidmatan (Ijazah/ Jurutera Kompetan)	sehari	
ii	Penolong Jurutera/ Penyelia (Diploma)	sehari	
iii	HT Chargeman/ BO - 33kV (Sijil ST)	sehari	

MAKLUMAT SPESIFIKASI KERJA (SKOP TERPERINCI)



Tajuk Projek : PERKHIDMATAN PENYELENGGARAAN INFRASTRUKTUR SISTEM BEKALAN ELEKTRIK (PENCAWANG ELEKTRIK & JANAKUASA TUNGGUSEDIA) DI UNIVERSITI TEKNOLOGI MARA (UiTM) CAWANGAN PULAU PINANG, KAMPUS PERMATANG PAUH, PULAU PINANG BAGI TEMPOH SATU (1) TAHUN.

Keterangan : 7 - JADUAL KADAR HARGA

BIL	KETERANGAN	UNIT	HARGA (RM)
iv	HT Chargeman/ BO - 11kV (Sijil ST)	sehari	
v	LV Chargeman/ AO - A4 (Sijil ST)	sehari	
vi	Juruteknik (Sijil Politeknik)	sehari	
vii	Kerani (SPM)	sehari	
viii	Pekerja Am (SRP/ PMR)	sehari	
94	Lawatan Jurutera Kompetan		
	i) 33kV - Pencawang Pembahagi Utama (PPU) 33kV	per/ lawatan	
	ii) 11kV - Pencawang Elektrik 11kV	per/ lawatan	
JUMLAH (RM)			