

**Complete, fold and seal
(see note 2 below)**

SURNAME: Lambert

FORENAME(S):

Samuel Andrews

Examination Answer Books

12 Pages

Instructions to Candidates

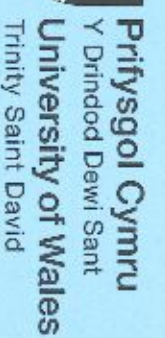
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8. **Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.**

[illegible]

1	Student Number	1302741/1
2	Title of Examination Paper	Major project management exam
3	Module Code	PRDE 6019
4	Date and Time of Examination	24/5/2018 9.30
5	Examination Venue	Collyer suite - Craig campus
6	Seat Number	
7	Number of Answer Books handed in	1 & 1

(Gweler yr ochr arall am y fersiwn Cymraeg)

~~65%~~ $38\frac{1}{2} = 64\%$ 60



Llyfr Atebion Arholiadau

12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

1. Rhwch yr holl wybodaeth y gofynnir amdani yn y blychau isod.
2. Rhwch eich enw yn y lle a ddarparwyd ar y dde, plygwch ef at selio i lawr (gan ddefnyddio'r label a ddarparwyd) i guddio'ch enw.
3. Rhaid i'r atebion fod mewn llawysgrifen ddarlennadwy. Gall yr Arholiwr naill ai anwybyddu sgript annarlennadwy, neu drefnu iodi gael ei tholpo a chael yr ymgeisydd i dalu.
4. Ysgrifennwch eich atebion mewn inc.
5. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thynnu llinell drwyddynl.
6. Ni ddylid rhwgo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwyr/gwylywyr.
8. Rhaid dychwelyd pob llyfr. Ni chaniateir mynd â llyfrau atebion, wedi eu defnyddio neu heb eu defnyddio, allan o'r lleoliad arholi o dan unrhyw amgylchiadau.

Llenwch, plygwch a seliwch
(aweler nodyn 2 isod)

CYFENWY

ENW(AU) CYNTAF:

1	Rhif Myfyriwr	
2	Teitl y Papur Arholiad	
3	Cod y Modwl	
4	Dyddiad ac Amser yr Arholiad	
5	Lleoliad yr Arholiad	
6	Rhif Sedd	
7	Nifer y Llyfrau Atebion a gyflwynwyd	

[illegible]

(See the other side for English version)

2.

a) Planned value = The quote provided to the customer

WY Earned value = The amount the contractor can charge for work completed

Actual cost = The amount the contractor has spent

Schedule variance = $EV - PV$

Cost variance = $EV - AC$

Schedule performance index = EV/PV , indicates the progress of the task where 1 = complete

Cost performance index = EV/AC , indicates the spend where > 1 is an underspend

b)

	PV	EV	AC	SV	CV	SPI	CPI
Task A	4,500	4,000	4,000	-500	0	0.89	1
Task B	6,300	6,300	8,000	0	-1,700	1	0.79
Task C	9,700	9,500	11,000	-200	-1,500	0.98	0.86
Task D	6,100	2,000	3,000	-4,100	-1,000	0.33	0.67
Task E	5,600	1,000	1,000	-4,600	0	0.18	1
Task F	7,500	7,500	7,500	0	0	1	1
Total	38,700	30,300	34,500	-9,400	-4,200	0.76	0.88

c). Task A is 89% complete and on budget

Task B is complete with an overspend of £1,700

Task C is 98% complete with an overspend of £1,500

Task D is 33% complete with an overspend of £1000

Task E is 18% complete and is on budget

Task F is complete and is on budget

OVERALL PROFIT

d)

In order to mitigate any potential loss in the project, Task D will need to be completed with an underspend. It is 33% complete and already £1000 over, which means it will require major cost saving methods. Task E is only 18% complete and is on budget, which means that extra will also need to be saved here.

More costs will have to make up for the heavy losses incurred in tasks B and C, or task B is complete and task C is 98% complete meaning there is no hope of saving money here. Task A should remain on budget for its completion

17

3. a)

A work breakdown structure is a tool used to define and group the direct project elements in order to simplify organisation and planning. The project is decomposed into separate groups and sub-groups, which can then be arranged into a project tree.

Advantages:

1. A WBS forces management and team members to form detailed planning steps. The exercise alone is enough to ~~form~~ encourage debate surrounding the project.

2. A WBS can help with scheduling and budgeting as each ~~work~~ task shows the ~~resources~~ resources required for completion

3. A WBS can help with timing as it creates ~~an~~ an accountability for each task. This puts pressure on ~~teams~~ teams to complete their allocated tasks, and also shows ~~where~~ where resources should be allocated as the ~~project~~ project progresses.

4. A WBS encourages excitement and commitment to the project. Management will make the initial draft, but team members will

be encouraged to partake in the activity.

Disadvantages:

1. It can be a painstaking process, especially with larger projects.

2. The WBS requires constant validation

6
5/2

b)

1. Research

- 1.1 server research
- 1.2 hardware research
- 1.3 software research

2. Specification

- 2.1 Project requirements
- 2.2 Test planning

3. Design

- 3.1 Hardware design 3.1.1 layout
- 3.1.2 Drawings
- 3.2 Software design

4. Installation

- 4.1 Hardware installation
- 4.2 Program installation
- 4.3 system wiring

5. Test

- 5.1 Functional testing
- 5.2 System verification

6. Services

- 6.1 Training
- 6.2 Manuals

7. Project management

- 7.1 Documentation

9

51

1

a) Staff - The team members assigned to the project can be a source of risk as if they fail to meet targets or can't complete the work, poor management strategies may also jeopardize the project.

②

Customer - The customer may be a source of risk if the initial specification is incorrect and ~~needs~~ to be changed during the project.

②

b) Risk exposure is the consequence and likelihood that the risks pose to the project. A risk matrix can be drawn up to show how much the project is exposed and whether an investment into the project is worthwhile.

①

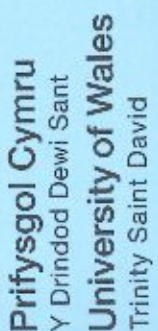
c) Identification - The first stage is to identify the risks present the project is exposed to.

①

f) Contingency is defined as an being being a backup strategy in the case that the initial plan is not working. In terms of a project, this would be used when risks are too great.

①

7



SURNAME: Gallagher

FORENAME(S): Rhannon

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12 Pages

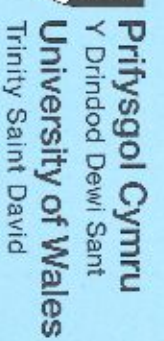
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3	Module Code	PSDE 6019
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(Gweler yr ochr arall am y fersiwn Cymraeg)



12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

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4. Ysgrifennwch eich atebion mewn inc.
5. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thymu llinell drwyddynt.
6. Ni ddylid rhwgo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwyr/gwylwyr.
8. Rhaid dychwelyd pob llyfr. Ni chaniateir mynd â llyfrau atebion, wedi eu defnyddio neu heb eu defnyddio, allan o'r lleoliad arholi o dan unrhyw amgylchiadau.

Llenwch, plygwch a seliwch
(gweler nodyn 2 isod)

CYFENW:

ENW(AU) CYNTAF:

ENW(AU) CYNTAF: _____

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2	Teitl y Papur Arholiad	
3	Cod y Mociwl	
4	Dyddiad ac Amser yr Archoliad	
5	Lleoliad yr Arholiad	
6	Rhif Sedd	
7	Nifer y Llyfrau Atebion a gyflwynwyd	

[illegible]

(See the other side for English version)

Question 2

a) Planned Value is the quote. This is the amount that has been agreed upon that it will take for the tasks to be completed in the agreed upon time.

①

Earned Value is the amount that doing the project has earned the contractor to date. If work was to stop it is the amount the contractor could charge.

①^x
②

b)

	SV	CV	SPI	CPI
A	-£500	0	0.89	1
B	0	-£1700	1	0.79
C	-£200	-£1500	0.98	0.86
D	-£4100	-£1000	0.33	0.67
E	-£4600	0	0.18	1
F	0	0	1	1
Total	-£9400	-£4200	0.76	0.88

⑧

c) Task A is 89% Complete and on budget

Task B is Complete but is 21% or £1700 over budget

Task C is 98% Complete and 14% or £1500 over budget

Task D is 33% Complete and 33% or £1000 over budget

Task E is 18% Complete and on budget

Task F is Complete and on budget

As a whole, the project is 76% Complete and 12% or £4200 over budget

⑨

d) The project manager must ensure that no extra money is spent. Task ~~CD~~ is only 33% complete and already over budget by £1000, this must not be allowed to increase.
Task E is only 18% complete but currently on budget it should be looked into if anything can be cut from this to bring the ~~pr~~ task under budget and ~~hope~~ mitigate potential losses.

② ✓

18

19

Question 4

Contribution margin is the amount left from sales revenue after variable expenses have been deducted.

$$CM = \text{Sales revenue} - \text{Variable expenses}$$

Contribution margin ratio is the contribution margin compared to the total sales

$$CMR = CM / \text{Total Sales}$$

② ✓

② ✓

$$\begin{aligned} b) \quad CM &= \text{Unit cost} - \text{Variable expenses} \\ &= 9 - 5 \\ &= 4 \end{aligned}$$

$$\text{Break-even Volume} = \frac{\text{Fixed expenses}}{CM}$$

$$= \frac{120,000}{4}$$

$$= 30,000 \text{ units}$$

② ✓

d) Equation analysis ✓
Graphical analysis ✓
Break-even analysis ✗

② ✓

8 ② ✓

Question 3

a) A WBS is a tool used to break down a project into discrete tasks ~~the total of the~~. The project will be broken down into tasks and subtasks to enable the project to be planned and resources allocated.

~~Advantages~~ The WBS will show what must be completed for the project objectives to be met.

Advantages

#1 lays groundwork for scheduling and budgeting.

A well defined WBS will make it easier to allocate resources.

#2 Forces the team to create detailed steps

This will help ensure everyone has clarity on the project, what is needed and what must be done.

#3 Creates accountability

~~Having~~ Each section will be allocated to a person, this person then becomes directly responsible for ensuring the task is completed.

#4 Breeds commitment.

Although the project manager will create the high level sections of the WBS he will seek the help of the core team to flesh out the detail. This will breed interdependence.

Disadvantages
 #1 Painstaking process which can take a long time for large projects ✓
 #2 Needs constant updating. ✓

b) Research — Computer Systems
 Servers
 Remote devices
 Recording Databases

Specification — Computer System
 Remote devices
 Data base

Design — Server
 Remote devices
 Database

Design — Software — Server
 database ^{Read Access}
 Security ID's ^{Write Access}
 Hardware — Computer
 Remote devices
 Subsystems.

Install — Software — Server
 database

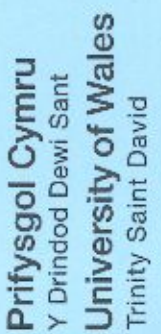
Hardware — Computer
 Remote devices
 Subsystems

Commission — Computer System — ^{Server} database
 Remote devices
 Subsystems

Support Systems — Create user Manual
 Fault finding guides
 Provide training

Project Management — ~~Create~~ ^{Budget} ~~BSS~~ Budget
 Planning docs
 RA + FMEA

10



SURNAME: Jones

FORENAME(S): BRIAN

Examination Answer Books

12 Pages

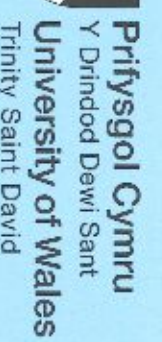
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(Gweler yr ochr arall am y tersiwn Cymraeg)

[illegible]

1	Student Number	1303047/1
2	Title of Examination Paper	PSDE 6019 MAJOR PROJECT MANAGEMENT
3	Module Code	PSDE 6019
4	Date and Time of Examination	9:30 - 11:30 24th May 2018
5	Examination Venue	
6	Seat Number	
7	Number of Answer Books handed in	

$$\frac{49}{60} = 82\frac{1}{2}\%$$


Llyfr Atebion Arholiadau

12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

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6. Ni ddylid rhwgo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwybwr/gwylywyr.
8. Rhaid dychwelyd pob llyfr. Ni chaniateir mynd â llyfrau atebion, wedi eu defnyddio neu heb eu defnyddio, allan o'r lleoliad arholi o dan unrhyw amgylchiadau.

**Llenwch, plygwch a seliwch
(aweler nodyn 2 isod)**

CYFENWY:

ENW(AU) CYNTAF:

ENW(AU) CYNTAF:

1	Rhif Myfyriwr	
2	Teitl y Papur Arholiad	
3	Cod y Mlodwl	
4	Dyddiad ac Amser yr Arholiad	
5	Lleoliad yr Arholiad	
6	Rhif Sedd	
7	Nifer y Llyfrau Atebion a gyflwynwyd	

[illegible]

(See the other side for English version)

2

a) PV = The Quote (Planned value) ✓

EV = How much the contractor can charge for works already completed. (EV, EARNED VALUE)

AC = How much the contractor has spent.

SV = EV - PV

CV = EV - AC

SPI = EV/PV and indicates the progress of the task where 1 = task complete.

CPI = EV/AC and indicates the spend where >1 is an underspend.

b)

	PV	EV	AC	SV	CV	SPI	CPI
TASK A	£4500	£4000	£4000	-£500	£0	0.89	1
TASK B	£6300	£6300	£8000	£0	-£1700	1	0.79
TASK C	£9700	£9500	£11000	-£200	-£1500	0.98	0.86
TASK D	£6100	£2000	£3000	-£4100	-£1000	0.33	0.67
TASK E	£5600	£1000	£1000	-£4600	£0	0.18	1
TASK F	£7500	£7500	£7500	£0	£0	1	1
TOTAL	£39700	£30300	£34500	-£9400	-£4200	0.76	0.88

TASK A

SV = EV - PV = 4000 - 4500 = -£500

CV = EV - AC = 4000 - 4000 = £0

SPI = EV/PV = 4000 / 4500 = 0.8

CPI = EV/AC = 4000 / 4000 = 1

TASK B

SV = EV - PV = 6300 - 6300 = £0

CV = EV - AC = 6300 - 8000 = -£1700

SPI = EV/PV = 6300 / 6300 = 1

CPI = EV/AC = 6300 / 8000 = 0.79

TASK C

$$SV = EV - PV = 9500 - 9700 = -1200$$

$$CV = EV - AC = 9500 - 11000 = -1500$$

$$SPI = EV / PV = 9500 / 9700 = 0.98$$

$$CPI = EV / AC = 9500 / 11000 = 0.86$$

TASK D

$$SV = EV - PV = 2000 - 6100 = -4100$$

$$CV = EV - AC = 2000 - 3000 = -1000$$

$$SPI = EV / PV = 2000 / 6100 = 0.33$$

$$CPI = EV / AC = 2000 / 3000 = 0.6$$

TASK E

$$SV = EV - PV = 1000 - 5600 = -4600$$

$$CV = EV - AC = 1000 - 1000 = 0$$

$$SPI = EV / PV = 1000 / 5600 = 0.18$$

$$CPI = EV / AC = 1000 / 1000 = 1$$

TASK F

$$SV = EV - PV = 7500 - 7500 = 0$$

$$CV = EV - AC = 7500 - 7500 = 0$$

$$SPI = EV / PV = 7500 / 7500 = 1$$

$$CPI = EV / AC = 7500 / 7500 = 1$$

Total

$$SV = EV - PV = 30300 - 39700 = -9400$$

$$CV = EV - AC = 30300 - 34500 = -4200$$

$$SPI = EV / PV = 30300 / 39700 = 0.76$$

$$CPI = EV / AC = 30300 / 34500 = 0.88$$

c) TASK A is 80% complete and on budget

TASK B is complete with an ~~over~~ spend of 1700 ~~and over budget~~

TASK C is 98% complete with an ~~over~~ spend of 1500 ~~and over budget~~

TASK D is 33% complete with an ~~over~~ spend of 1000 ~~and over budget~~

TASK E is 18% complete and on budget

TASK F is complete and on budget.

The project is currently 76% complete with an overspend of 4200

d) The project is currently not complete and has an overspend of 4200. Only 2 tasks are complete, B & F. The remaining task should be undertaken with minimal extra expenditure as the project is likely to lose money.

a) Work Breakdown structure (WBS) is a tool used to define and group a project's discrete work elements, organising the ~~work~~ work scope of the project. It is a tree structure showing subdivisions of effort required to achieve an objective.

Benefits:-

Planning - ✓ WBS forces team member including project manager and client, to create detail steps, outlining detailed ~~steps~~ steps to complete a project, clarifying and narrowing the scope of works thus identifying any issues early on.

Budgeting - ✓ WBS lays the groundwork for schedule & budget, Enabling resources to be allocated to specific tasks, generating a meaningful schedule and making budgeting easier.

Time - ✓ WBS creates accountability for the completion of tasks down to the individual level.

Commitment - ✓ WBS breeds commitment during its development. The project manager develops high-level WBS aided by team members to flesh-out details.

Downsides

Painstaking process which take more time on larger projects.

Requires continual refinements. ✓

6

1. Research - 1.1 Server Software
1.2 Remote devices

2. Specifications - 2.1 System spec
2.2 Remote devices Spec
2.3 Hardware subsystem spec
2.4 Software Subsystem Spec

3. Development -

3.1 Hardware - 3.2 Software

3.1.1 Server 3.2.1 Server code
3.1.2 Remote devices 3.2.2 Database Code
3.1.3 Documentation 3.2.3 Security Code
3.2.4 Remote devices
3.2.5 GUI interface

4. Installation - 4.1 Wiring
4.2 Server
4.3 Remote access points
4.4 Software / Remote devices

5. Commissioning - 5.1 Server
5.2 Remote devices
5.3 Remote access points

18

12

18

4

- a) Contribution margin^(CM) is the amount remaining from sales revenue after variable expenses have been deducted.

$$\text{e.g. - CM} = \text{Sales revenue} - \text{variable expenses}$$

Contribution margin ratio is the percentage ratio between contribution margin and total sales.

$$\text{e.g. - CM ratio} = \frac{\text{Total CM}}{\text{Total Sales}}$$

i.e. if Total CM = 100,000 and Total Sales = 250,000 then:

$$\text{CM ratio} = \frac{\text{Total CM}}{\text{Total Sales}}$$

$$= \frac{100,000}{250,000}$$

$$= 0.4 \times 100 = 40\%$$

b)

$$\text{CM} = \text{Unit price} - \text{variable costs}$$

$$= 9 - 5 = 4$$

$$\text{Break-even volume} = \frac{\text{Fixed production costs}}{\text{CM}}$$

$$= \frac{120,000}{4} = 30,000 \text{ units.}$$

c)

Payback analysis is the amount of time taken to recover costs of an investment. Payback period is used to determine whether a project is worth investing in a longer payback periods are less attractive investments.

The better investment is the one with the shortest payback period.

Break-even analysis is to determine revenue received from costs associated with receiving the revenue. At break-even point profit equals zero.

i) Equation method

$$\text{i.e. profits} = \text{Sales} - (\text{Variable expenses} + \text{Fixed expenses})$$

ii) Contribution margin method

$$\text{i.e. Break-even point} = \frac{\text{Fixed expenses}}{\text{unit CM}}$$

iii) Graphical analysis method.

2

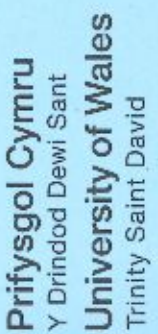
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4

2

2

1



SURNAME: ZAHADYAKTA

FORENAME(S): FARSHID

Examination Answer Books

12 Pages

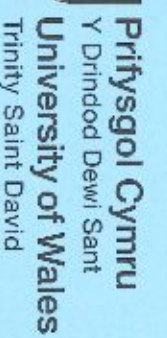
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Llyfr Atebion Arholiadau

12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

1. Rhownn yr holl wybodaeth y gofynnir amdani ym y blychau isod.
2. Rhownn eich enw ym y lle a ddarparwyd ar y dde, plygwch ef at y sello i lawr (gan ddefnyddio'r label a ddarparwyd) i guddio'ch enw.

3. Rhaid i'r atebion fod mewn llawysgrifen ddarlennadwy. Gall yr Arholwyr naili ai arwybodu sgript annarlennadwy, neu drefnu iddi gael ei theipio a chael yr ymgaisydd i dalu.

4. Ysgriennwch eich atebion mewn inc.

5. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thrynu llinell drwyddynt.

6. Ni ddylid rhwngyo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.

7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwylwyr/gwylwyr.

8. Rhaid dychwelyd pob llyfr. Ni chaniateir mynd â llyfrau atebion, wedi eu defnyddio neu heb eu defnyddio, allan o'r lleoliad arholi o dan unrhyw amgylchiadau.

1	Rhif Myfyrwr	
2	Teitl y Papur Arholiad	
3	Cod y Modiwl	
4	Dyddiad ac Amser yr Archoliad	
5	Lleoliad yr Arholiad	
6	Rhif Sedd	
7	Nifer y Llyfrau Atebion a gyflwynwyd	

[illegible]

Llenwch, plygwch a seliwch
(fweier nodyn 2 isod)

CYFENW:

ENW(AU) CYNTAF: _____

(See the other side for English version)

Q2

(a)

PV = Planned Value: is the ~~quote~~ quote, it is what the contractor quoted the job

EV = Earned Value: is how much the contractor can charge for the work that is already completed.

AC = Actual cost: What had the contractor spent.

SV = EV - PV is the schedule variance; indicating whether the task is ahead or behind its scheduled time. It is calculated by subtracting PV from EV

CV = EV - AC Cost variance: indicates whether a ~~task~~ finished task is over or under budget.

SPI = EV / PV schedule performance index: indicates whether the task is completed where ≥ 1 means it is completed.

CPI = EV / AC cost performance index: indicates the spend of the task where > 1 is underspend.

Q2
(b)

	PV	EV	AC	SV = EV - PV	CV = EV - AC	SPI = EV / PV	CPI = EV / AC
TASK A	£4500	£4000	£4000	-£500	0	0.88	1
TASK B	£6300	£6300	£8000	0	-£1700	1	0.78
TASK C	£9700	£9500	£11000	-£200	-£1500	0.97	0.86
TASK D	£6100	£2000	£3000	-£4100	-£1000	0.32	0.66
TASK E	£5600	£1000	£1000	-£4600	0	0.17	1
TASK F	£7500	£7500	£7500	0	0	1	1
Total	£39700	£30300	£34500	-£9400	-£4200	0.76	0.87

Q2(c)

Task A is 88% completed and £500 underspend.

Task B is 100% completed and £1700 over budget or overspend.

Task C is 97% completed and £200 under budget but also £1500 overspend so in total it would be £1300 over budget.

Task D is 32% completed and £4900 under budget as well as cost variance of £1000 overspend, therefore it is £3100 ~~underspend~~ overspend as $CPI = 0.66$.

Task E is 17% completed and £4600 in profit.

Task F is 100% completed and on budget.

The whole project is 76% ~~complete~~ completed and £5244 overspend.

or loss as mentioned before if $CPI > 1$ it is underspend but CPI is less than 1.

Q2(d)

Only task A and E are in profit which is total of £5100

but task A is 88% completed and the task is to be completed

with minimal expenditure. Task E is completed by only 17%

this task also to be completed with minimal expenditure.

task B is ~~complete~~ completed but there is a loss of £1700

task C The whole project is ~~complete~~ potentially a risk with

large losses and the task are to be finished with minimal

expenditure.

Work Breakdown structure is a tool used to define and group a

project's discrete work element in a way to help organise

and define the total work scope of the project.

WBS is hierarchical and incremental decomposition of a project into phases deliverables and work packages. It is a tree structure which

shows the subdivision of the effort required to achieve an objective.

Advantages:-

• WBS will force team to create detailed steps (planning)

WBS will force the project manager, team member and customers to

build and deliver product or service. The exercise itself will open

up talks and dialogue to identify things such as any issues

at early stage of the project, brings up assumption and narrow the

scope of work.

• WBS lays ground work for schedule and budget (budgeting)

WBS will lay groundwork for effective schedule and good budget plan.

a well defined WBS will relate each task to a specific budget

enables resources to specific task which make accounting easier.

• WBS will create ~~good~~ accountability

the level of WBS will make it easier to hold people accountable

a well defined WBS will identify each task to specific people who are responsible for completing the task and this will stop people to hide under the cover of broadness.

- WBS Create commitments or creation will breed commitment. The WBS breeds excitement and commitments, the project manager will create a high level WBS but he will seek individual in team core of team to spark excitement and commitment.

Disadvantages:

- It can be painstaking process for complex projects.
- It requires continual refinements.
- The larger the scope of the project the more people are to be involved and input their opinion.

The larger the scope of the project the more people are to be

1. Research
1.1 server software
1.2 Remote devices

2. Specification
2.1 system spec
2.2 hardware subsystem spec
2.3 software subsystem spec

3. Development
3.1 hardware
3.2 software
3.2.1 database code
3.2.2 server code
3.2.3 GUI interface
3.2.4 Remote devices
3.2.5 security code
3.1.1 Remote devices
3.1.2 hardware

4. Installation
4.1 server
4.2 hardware
4.3 wiring
4.4 software/Remote devices
4.5 Remote access point

5. Testing
5.1 database entries
5.2 Remote devices
5.3 system testing
5.4 Certification
5.4.1 EMC test
5.4.2 Safety test
5.4.3 security test

6. Support service
6.1 User manuals
6.2 maintenance training

7. Project management

12

Q4(a)

Contribution margin is the amount remaining from sales

revenue after variable expenses have been deducted.

$$CM = \text{Sales revenue} - \text{Variable expenses}$$

Contribution margin ratio is the percentage ratio between

the contribution margin and total sales.

$$CM \text{ ratio} = \frac{\text{Contribution margin (CM) total}}{\text{total sales}}$$

if $CM = 10000$ and sales = 25000

$$CM \text{ ratio} = \frac{10000}{25000} = 0.4 = 40\%$$

Variable cost = £5

Selling Price = £9

fixed cost production = 120000

$$CM = 9 - 4 = 5$$

$$\text{break even volume} = \frac{12000}{5} = 24000$$

Q4(c)

Payback analysis is the length of time required to cover the cost of investment or project. The payback period of given investment in a project is a very important ~~factor~~ as the shorter the period the better ~~the~~ is to invest. The longer payback is not desirable in an investment. The better one is the one with shorter payback.

PTO

Break even - determine the point to which revenue received is

equal to the cost associated with receiving the revenue

The profit at break even point is zero.

1. Graphical Method

which is the graphical image of the sales and

revenue in which can create a start showing losses

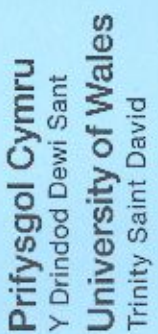
or Profit

2. Contribution Margin Method

Variable of equation method

$$\text{equation method} \quad \text{unit sold} = \frac{\text{fixed expenses}}{\text{unit contribution margin}}$$

$$\text{Profit} = \text{Sales} - (\text{Variable expense} + \text{fixed expense})$$



**Complete, fold and seal
(see note 2 below)**

SURNAME:

FORENAME(S): ALEXANDER.

Examination Answer Books

12 Pages

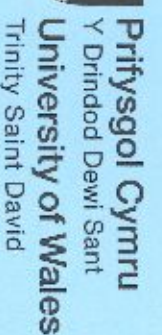
Instructions to Candidates

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.

[illegible]

1	Student Number	1103976/2.
2	Title of Examination Paper	MAJOR PROJECT MANAGEMENT Exam.
3	Module Code	PSDR6019
4	Date and Time of Examination	24/5/18 09:30
5	Examination Venue	
6	Seat Number	
7	Number of Answer Books handed in	

(Gweler yr ochr arall am y fersiwn Cymraeg)

$$\frac{57\frac{1}{2}}{60} = 96\%$$


Llyfr Atebion Arholiadau

12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

1. Rhowch yr holl wybodaeth y gofynnir amdani yn y blychau isod.
2. Rhowch eich enw yn y lle a ddarparwyd ar y dde, phygwch ef ai selio i lawr (gan ddefnyddio'r label a ddarparwyd) i guddio'ch enw.
3. Rhaid i'r atebion fod mewn llawysgrifen ddarlennadwy. Gall yr Arholiwr natli ai amwybyddu sgript annarllennadwy, neu drefnu iddi gael ei threipio a chael yr ymgaisydd i dalu.
4. Ysgrifennwch eich atebion mewn inc.
5. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw frasnodiadau yn y llyfr atebion a thynnu llinell drwyddynt.
6. Ni ddylid rhwngo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyliwr/gwyliwyr.
8. Rhaid dychwelyd pob llyfr. Ni chaniateir mynd â llyfrau atebion, wedi eu defnyddio neu heb eu defnyddio, allan o'r lleoliad arholi o dan unrhyw amgylchiadau.

**Llenwch, plygwch a seliwch
(gweler nodyn 2 isod)**

CYFENW:

ENW(AU) CYN TAF:

1	Rhif Myfyriwr	
2	Teitl y Papur Arholiad	
3	Cod y Modwl	
4	Dyddiad ac Amser yr Arholiad	
5	Lleoliad yr Arholiad	
6	Rhif Seed	
7	Nifer y Llyfrau Atebion a gyflwynwyd	

[illegible]

(See the other side for English version)

2. a) The 'planned value' (PV) is referring to a cost plan for the work and is a quote. The 'earned value' (EV) is how much the contractor can charge for work carried out already. There are other related factors such as the actual cost (AC) which is how much has actually been spent getting to this earned value. The scheduled variance (SV) is the difference between the earned value and the planned value i.e. $EV - PV$. The cost variance (CV) is the difference between the earned value and the actual cost i.e. $EV - AC$. The scheduled performance index (SPI) is an indicator for the progress of a task, where if $SPI = 1$, the task is complete, given as EV/PV . The cost performance index (CPI) is an indicator for the spend of a task, where a value > 1 is an underspend. Given as EV/AC .

(4)

(b)

Task	PV (£)	EV (£)	AC (£)	SV (£)	CV (£)	SPI	CPI
A	4500	4000	4000	-500	0	0.89	1
B	6300	6300	8000	0	-1700	1	0.79
C	9700	9500	11000	-200	-1500	0.98	0.86
D	6100	2000	3000	-4100	-1000	0.33	0.67
E	5600	1000	1000	-4600	0	0.18	1
F	7500	7500	7500	0	0	1	1
Total	39700	30300	34500	-9400	-4200	0.76	0.88

(8)

(c) Task A is ~~99~~ 98% complete and currently on budget.
 Task B is complete and has an overspend of £1700.
 Task C is 98% complete and has an overspend of £1500.
 Task D is 37% complete and has an overspend of £1000.
 Task E is 18% complete and currently on budget.
 Task F is complete and within budget.

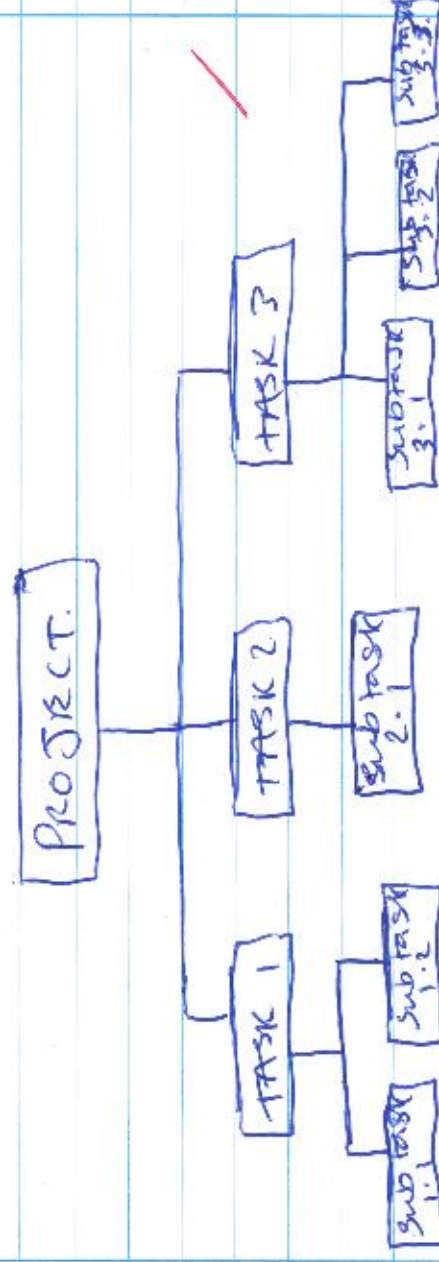
(d) The project is currently 76% complete and over budget by £4200. The tasks that are yet to be completed, i.e. tasks A, C, D and E will need to be completed with very little further cost, and they are already over budget. There is not a lot of difference left between the actual cost and the planned value.

20

20

3(a) A work breakdown structure is a project management tool that is used to define a project's discrete work elements in to groups. This defines the total work scope and helps in organisation of the project.

A work breakdown structure (WBS) is hierarchical and splits the project in to phases. It is a tree structure and shows sub-division requirements.
 For example.



Benefits of a WBS.

① A work breakdown structure forces the team to be involved with defining the tasks. All members conduct this, and it encourages dialogue and discussion. This helps to clearly define work tasks and raise potential issues early on.

② A work breakdown structure (WBS) lays good groundwork for budget and scheduling. With the defined tasks, comes a definable budget and good allocation of resources.

③ A work breakdown structure creates accountability. The level of detail created for the broken down tasks helps account people for them. Individuals may be responsible for specific tasks.

④ A work breakdown structure breeds commitment. The process of developing a WBS helps spark involvement amongst the team and creates a sense of ownership.

Disadvantages of a WBS.

- Potentially be a long, painstaking process especially if the project is large or complex.
- Requires continuous refinement.
- A larger project may need to involve more people.

⑥

1. Research.

- 1.1 Server software
- 1.2 Remote devices.

2. Specification.

- 2.1 System specification
- 2.2 Remote device specification
- 2.3 Hardware specification
- 2.4 Software specification

3. Development.

- 3.1 Hardware
 - 3.1.1 Servers
 - 3.1.2 Remote devices.
- 3.2 Software
 - 3.2.1 Server code.
 - 3.2.2 GUI interface.
 - 3.2.3 Remote devices.

4. Installation

- 4.1 Server install.
- 4.2 Remote access ports.
- 4.3 Hardware / wiring.
- 4.4 Remote devices.

5. Testing/Commissioning.

- 5.1 System testing.
- 5.2 Remote device tests.
- 5.3 Database entries.
- 5.4 Certification tests.
 - 5.4.1 EMC testing.
 - 5.4.2 Safety testing.
 - 5.4.3 Security tests.

6. Support Services.

- 6.1 User manuals.
- 6.2 Staff training.
- 6.3 Maintenance training.

12

7. Project Management.

7.1 Planning and control

7.2 Procurement planning.

4(a) The Contribution margin is the amount remaining from sales revenue following the deduction of variable expenses.

$$\text{i.e. Contribution Margin (CM)} = \text{Sales revenue} - \text{Variable expenses.} \quad (2)$$

The Contribution margin ratio is the percentage ratio between the contribution margin and the total sales.

$$\text{i.e. CM Ratio} = \frac{\text{Total Contribution Margin}}{\text{Total Sales}}$$

For example, if $\text{Total CM} = 200,000$
 $\text{Total Sales} = 500,000$

then

$$\text{CM Ratio} = \frac{200,000}{500,000} = 0.4 = \underline{40\%} \quad (2)$$

$$\begin{aligned} \text{(b) Contribution margin} &= \text{Unit price} - \text{Variable cost} \\ &= 9 - 5 \\ &= 4 \end{aligned}$$

$$\begin{aligned} \therefore \text{Break-even volume} &= \frac{\text{Fixed production cost.}}{\text{Contribution Margin}} \\ &= \frac{120,000}{4} \end{aligned}$$

$$\text{So, Break-even volume} = 30,000 \text{ units.} \quad (2)$$

(c) Payback analyzer is the length of time required to recover the cost of an investment. The 'payback period' is an important determinant when choosing or accepting a project. A long payback period is undesirable, and the better project/investment will have the shorter payback period.

For example,

$$\begin{aligned}\text{Project cost} &= £200,000 \\ \text{Annual return} &= £40,000\end{aligned}$$

$$\text{Then, payback period} = \frac{200000}{40000} = 5 \text{ years.}$$

Break-even analyzer determines the point at which the revenue is equal to the cost of recovering that revenue. The break-even volume is the number of units that must be sold to achieve this value. At break-even point, the profit is equal to zero.

$$\text{Break-even} = \text{total sales} - \text{total costs.}$$

Payback analyzer is looking at the number of periods required for investment recovery, whilst break-even analyzer focuses more on a specific point at which this happens.

6
5 1/2

d) Equation Method.

This helps with decision making problems of the organization. The profit is equal to the difference between the total revenue and the total cost.

$$\text{i.e. Profit} = \text{Sales} - (\text{Variable expenses} + \text{fixed expenses}).$$

$$\text{or Sales} = \text{Variable expenses} + \text{fixed expenses} + \text{profit.}$$

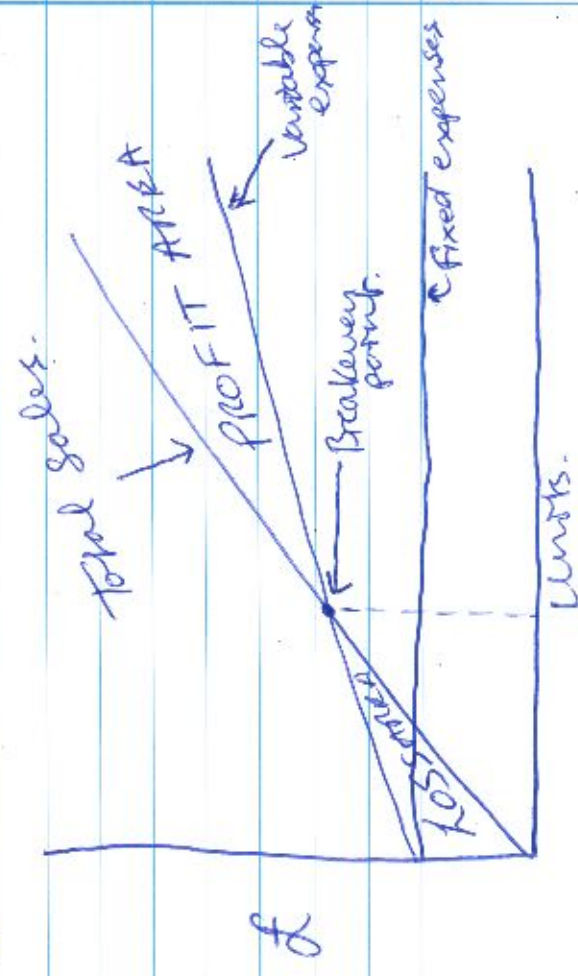
Contribution Margin Method.

This is a variation of the equation method, where.

$$\text{Break-even point} = \frac{\text{Fixed expenses}}{\text{Unit Contribution Margin.}}$$

Graphical method.

This shows a linear break-even analysts.



Using graphical formats, the increase in the number of units sold is shown with comparison to income. There is a breakeven point where the ~~total~~ total sales surpasses the expenses (begins to) and the profit area now begins with further unit sales.

~~Break~~

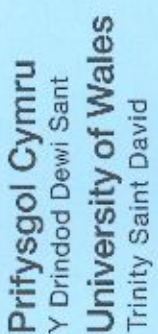
Assumptions of breakeven analysis:

- Sales prices remain constant.
- ~~Costs~~ Costs are linear.

④

20

1/2



Complete, fold and seal
(see note 2 below)

SURNAME: DAVIES

FORENAME(S): JOSHUA MICHAEL

Examination Answer Books

12 Pages

Instructions to Candidates

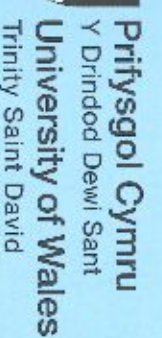
1. Please give the information requested in the boxes below.
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4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.

1	Student Number	1302739/1
2	Title of Examination Paper	major project project management
3	Module Code	PSDE0019
4	Date and Time of Examination	24.05.19 09:30 - 11:30
5	Examination Venue	Colleg Sir Cwale C27
6	Seat Number	
7	Number of Answer Books handed in	

(Gweler yr ochr arall am y fersiwn Cymraeg)

 $1a^{1/2}$ ✓

65%	$38\frac{1}{2} = 64\frac{1}{2}$	60
-----	---------------------------------	----



Llyfr Atebion Arholiadau

12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

1. Rhwch yr holl wyodaeth y gofynnir amdani yn y blychau isod.
2. Rhwch eich enw yn y lle a ddarparwyd ar y dde, phwygch ef at seilio i lawr (gan ddefnyddio'r label a ddarparwyd) i guddio'ch enw.
3. Rhaid i'r atebion fod mewn llawysgrifen ddarlennadwy. Gall yr Arholwyr nall ai arwybyddu sgrïp annarlennadwy, neu drefnu iddi gael ei threipio a chael yr ymgeisydd i dalu.
4. Ysgrifennwch eich atebion mewn inc.
5. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thynnwch llinell drwyddynt.
6. Ni ddylid rhwgo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyflwr/gwyflwyr.
8. Rhaid dychwelyd pob llyfr. Ni chaniateir mynd â llyfrau atebion, wedi eu defnyddio neu heb eu defnyddio, allan o'r lleoliaeth hon o dan unrhyw amgylchiadau.

Llenwch, plygwch a seliwch
(gweler nodyn 2 isod)

CYFENW:

ENW(AU) CYN TAF:

1	Rhif Myfyriwr	
2	Teitl y Papur Arholiad	
3	Cod y Mochwl	
4	Dyddiad ac Amser yr Archoliad	
5	Lleoliad yr Arholiad	
6	Rhif Sedd	
7	Nifer y Llyfrau Atebion a gyflwynwyd	

[illegible]

(See the other side for English version)

11

2a Earned value is an approach to monitoring the project plan, actual work and work completed to determine if the project is on track. It also shows the amount of time and budget that has been spent on a task in regard to the amount of work completed.

Planned Value is the planned work estimated cost, in effect the quote.

b

Task	PV	EV	AC	SV	EV-AC	EV/PV	EV/AC
A	£4500	4000	4000	-500	0	0.89	1
B	£6300	6300	8000	0	-1700	1	0.78
C	9700	9500	11000	-200	-1500	0.97	0.86
D	6100	2000	3000	-4100	-1000	0.32	0.6
E	5600	1000	1000	-4600	0	0.17	1
F	7500	7500	7500	0	0	1	1
Total	39700	30300	34500	-9400	-4200	0.76	0.87

c Task A is 80% complete and has used all of its planned budget.
 Task B is complete (SPI=1) and has an overspend of £1700 (CPI=0.78).
 Task C is 97% complete and has an overspend of £1500.
 Task D is 32% complete and has an overspend of £4100.
 Task E is 17% complete and has an overspend of £4600.
 Task F is complete and used all of its planned budget.

The project as a whole is 76% complete with an overspend of £4200 on work carried out so far.

Question No.	d The biggest risks to the project are tasks D and E. Task D is 32% complete and has an overhead of £1000 and task E is 17% and has used all the budget on work completed so far. These tasks will need to be completed using minimal expenditure. Tasks A and C are 80% and 97% complete with task A has used all of its budget on work so far and task C is over budget by £1500 on work completed. These tasks will need to be completed using minimal expenditure. The project is ^{most} likely to be completed over budget. 2 19 1/2 20 19 1/2	Examiner Only Question No.	3a A work breakdown structure is a tool used to define the project's discrete work elements in a way that will organize and define the work scope. ~~It~~ A work breakdown structure is hierarchical and incrementally decomposes the project into phases, deliverables and work packages. It is ~~Tree structure~~ showing subdivisions of effort to achieve the overall objective. There are 4 key stages of a work breakdown structure. 1. Planning - It forces the team ~~in~~ ^{to} creating steps. it forces the ~~team~~ ^{project} manager, team members and customers to delineate the steps required to build and deliver the product or service. The exercise alone encourages dialogue that will clarify ambiguity, bring out assumptions, narrow the scope of work and raise critical issues. 2. Budget - it lays the groundwork for schedules and budget. It lays the groundwork for developing a detailed schedule and good budget plans. A detailed work breakdown structure enables resources to be allocated to specific tasks, helps produce a meaningful budget and to calculate a reliable budget. 3. Time, creates accountability. The level of detail in a work breakdown structure provides accountability to the person who completed the task. With a defined work breakdown structure people cannot hide under one "blanket of broadness". A defined task can be allocated to a specific person who is then responsible for the completion of the task.	Examiner Only Final y Question
Question No.	Answer yn unig	Answer yn unig Final y Question	Final y Question	Final y Question

4. Commitment - breeds commitment

The process of developing and completing a work breakdown structure breeds excitement and commitment in the project. Although, the project manager will develop the high level of the work breakdown structure, they will seek participation from team members to flesh out the extreme detail of the work breakdown structure. This participation sparks involvement into the project.

The demand is a work breakdown structure and

The PII^{H} is a persistency process and will take a long time for large complex proteins.

2. It will require continual refinement

3. For a larger scope of the project, more people must provide input and approve their sections of the work breakdown structure.

Patent Progress

- 1. Research
 - 1-1 server software
 - 1-2 remote devices

- 2. Specification
 - 2.1 system specification
 - 2.2 software subsystem specification
 - 2.3 hardware subsystem specification
 - 2.4 remote devices specification

3. Development	3.1 Hardware	3.1 server
		3.2 remote devices
		3.3 documentation
	3.2 software	3.2.1 database code
		3.2.2 server code
		3.2.3 GUI interface
		3.2.4 remote devices code
		3.2.5 security code

- 4.1 server
- 4.2 wiring
- 4.3 software and remote devices
- 4.5 remote access ports

- 5.1 systems test
- 5.2 database entry
- 5.3 remove device test
- 5.4 Certification tests
 - 5.4.1 EMC Test
 - 5.4.2 safety Test
 - 5.4.3 security Test

Support services

C. ~~Project~~ management

C.1 user manuals

C.2 maintenance training.

7. Project management

7.1 Planning of cost

7.2 procurement planning