2020 Nov12
Examination Period

Faculty of Information Technology

EXAM CODES:	FIT2002
TITLE OF PAPER:	Mock Exam 1
EXAM DURATION:	2 hours 10 mins

Rules

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You must comply with any instructions given to you by an exam supervisor.

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Authorised Materials

OPEN BOOK	☐ YES	☑ NO	
CALCULATORS	☑ YES	☐ NO	Calculator
DICTIONARIES	☐ YES	☑ NO	
NOTES	☐ YES	☑ NO	
SPECIFICALLY PERMITTED ITEMS	☐ YES	☑ NO	

if yes, items permitted are:

Instructions

Information

Answer all questions in this exam.
This exam contributes to 50% for the unit assessment This exam consists of FOUR (4) parts:

- Part A: 20 multiple choice questions worth 1 mark each. Subtotal 20 marks
- Part B: 5 questions worth 2 marks each. Subtotal 10 marks
- Part C: Case Study with 3 sub-parts Subtotal 15 marks
- Part D: 4 questions with sub-parts Subtotal 35 marks

Total 80 marks

Part A: Multiple Choice Questions

Information

PART A: (20 questions x 1 mark each = 20 marks)
There are 20 multiple choice questions. Attempt all questions.
Correct response score 1 mark, NO marks are deducted for incorrect response.

Question 1

Which of the following is true of projects?

1 Mark

Select one:

- a. They are permanent in nature.
- b. They are developed using regressive elaboration.
- c. They have an indefinite beginning and end.
- d. They have a unique purpose.

Question 2

Steve, an engineer in a construction company, is at present working on a home construction project. The home is being built for the Robinson's family, the owners of the home. Steve is working with his project team and support staff to ensure the project is completed on time. In such a scenario, the project sponsor is _____.

1 Mark

Select one:

- a. the project team
- b. Steve
- c. the support staff
- d. the Robinson family

Question 3

A preliminary or rough cost estimate is developed in the _____ phase of the project life cycle, and an overview of the work involved is created.

1 Mark

Select one:

- a. acquisition
- b. concept
- c. close-out
- d. implementation

1 Mark

Question 4

Which of the following is true of the agile approach to software development?

Select one:

- a. In the agile method, requirements and solutions evolve through collaboration.
- b. Agile is a predictive model of software development.
- c. An agile approach sets scope goals, but leaves time and cost goals flexible.
- d. In the agile approach, requirements must be clearly expressed early in the life cycle.

Question 5

Which one of the following statements is TRUE?

1 Mark

Select one:

- a. It is more expensive to make major changes to a project during the earlier phases.
- b. The WBS provides a basis for creating the project schedule and performing earned value management for measuring and forecasting project performance.
- c. The last phase of the traditional project life cycle is the implementation phase.
- d. A project manager's primary role is to provide the funding for a project.

Question 6

_____ involves identifying and controlling the functional and physical design characteristics of products and their support documentation, and ensures that the descriptions of the project's products are correct and complete.

1 Mark

Select one:

- a. Project time management
- b. NPV analysis
- c. Configuration management
- d. Project management information systems

Question 7

_____ involves building individual and group skills to enhance project performance.

1 Mark

Select one:

- a. Developing the human resource plan
- b. Developing the project team
- c. Acquiring the project team
- d. Managing the project team

1 Mark

Question 8

Which one of the following statements is TRUE?

Select one:

- a. The lower the earned monetary value calculation for a project, the higher the chances of project success.
- b. The tasks in a WBS must be developed as a sequential list of steps.
- c. According to the symbolic frame, the most important aspect of any event in an organization is not what actually happened, but what it means.
- d. Internal stakeholders include groups affected by the project such as government officials or concerned citizens.

Question 9

Which of the following types of dependencies are inherent in the nature of work being performed on a project?

1 Mark

Select one:

- a. Discretionary
- b. Mandatory
- c. External
- d. Random

Question 10

How many communication channel(s) do we need for a to a team of nine?

1 Mark

Select one:

- a. 1
- b. 9
- c. 10
- d. 36

Question 11

_____ is the degree to which a system performs its intended function.

1 Mark

Select one:

- a. Reliability
- b. Validity
- c. Maintainability
- d. Functionality

1 Mark

Question 12

At the bottom of Maslow's structure are _____ needs.

Select one:

- a. esteem
- b. self-actualisation
- c. physiological
- d. social

Question 13

Projects must operate in a broad organizational environment, and project managers need to consider projects within the greater organizational context. _____ describes this holistic view of carrying out projects within the context of the organization.

1 Mark

Select one:

- a. Linear analysis
- b. Systems thinking
- c. Reductionism
- d. The silo approach

Question 14

The procurement statements of work are an output of the _____ process of project procurement management.

1 Mark

Select one:

- a. planning
- b. executing
- c. monitoring and controlling
- d. closing

Question 15

Which of the following is true of tangible costs?

1 Mark

Select one:

- a. They cannot be calculated in monetary terms.
- b. They can be easily measured.
- c. They are difficult to quantify.
- d. Their examples include goodwill and prestige.

Question 16

1 Mark

Which of the following processes in project time management involves identifying the specific tasks that the project team members and stakeholders must perform to produce the project deliverables?

Select one:

- a. Defining activities
- b. Sequencing activities
- c. Developing the schedule
- d. Estimating activity durations

Information

Question 17 – 20 refers to the following scenario:

You are given the following information of a project: Initial Investment: 26,000

Cost of capital: 15%

The following table shows the cash flow for this project:

Year N	0	1	2	3	4
Costs	26,000	14,000	8,000	5,000	4,000
Benefits		10,000	20,000	30,000	20,000

Discounted Cash Flows Formulas:

Present Value (PV): $PV = \frac{FV}{(1+i)^n}$

Future Value (FV): $FV = PV(1 + i)^n$

Net Present Value (NPV): $NPV = \sum_{t=0...n} CF/ (1+i)^t$

ROI = (Discounted benefits – Discounted costs)/Discounted costs = NPV/Discounted costs

Question 17

1 Mark

What is the total discounted benefits for the above-mentioned project?

Select one:

- a. $11,400
- b. $34,980
- c. $55,100 d.
- $80,000

Question 18

What is the total discounted costs for the above-mentioned project?

1 Mark

Select one:

- a. $2,280
- b. $6,996
- c. $49,840
- d. $57,000

Question 19

What is the NPV (Net Present Value) for the above-mentioned project?

1 Mark

Select one:

- a. $5,260
- b. $9,120
- c. $23,000
- d. $27,984

Question 20

What is the ROI (Return on Investment) for the above-mentioned project?

1 Mark

Select one:

- a. 0.11%
- b. 0.4%
- c. 4% d.
- 11%

Part B: Short Essay Questions

Information

PART B (10 marks)
This section consists of five (5) short answer questions worth 2 marks each. Answer all questions.

Question 21

Briefly describe the process of initiating a project.

2 Marks

Initiating process involves defining and authorising a project or project phase. At the initiating phase of a project, it may include recognizing and starting a new project where a project charter is developed and it may also involve identifying the project stakeholders. (*1 mark per valid point*)

Question 22

What is design of experiments? When is it used?

2 Marks

Design of experiments is a technique that helps identify which variables have the most influence on the overall outcome of a process. Design of experiments may be used during the 'plan quality management' process to determine the best combination of materials and equipment that will produce the most reliable product and their impact on cost of quality. You can also apply design of experiments to project management issues such as cost and schedule trade-offs. (*1 mark per valid point*)

Question 23

Briefly describe two (2) types of cost estimates.

2 Marks

Any 2 of the following:

- A rough order of magnitude (ROM) estimate provides an estimate of what a project will cost. This type of estimate is done very early in a project or even before a project is officially started.
- A budgetary estimate is used to allocate money into an organization's budget. Many organizations develop budgets at least two years into the future. Budgetary estimates are made one to two years prior to project completion.
- A definitive estimate provides an accurate estimate of project costs. Definitive estimates are used for making many purchasing decisions for which accurate estimates are required and for estimating final project costs.

Part B: Short Essay Questions

Question 24

What is involve when developing the schedule and what is a schedule baseline?

2 Marks

Developing the schedule involves working out the activities, the duration and the dependencies between the activities (basically sequencing and scheduling)

Baseline is taking a screenshot the original schedule plan of the project so we can track our progress when there are any changes happening during the project.

Question 25

2

Would you use a Gantt Chart in Agile Project Management? Why/Why not?

In Agile project, requirements are normally vague and so cannot have exact detailed schedule of whole project. And so, in most cases, we would expect requirements to change often which affects the schedule. As such, it's probably not suitable (or a waste of time) to use Gantt chart to plan everything outright at the start. It would probably be more appropriate to plan at every sprint and monitor progress using burn-down charts. (1 mark per valid point).

Information

PART C (4 + 6 + 5 = 15 marks)

This part consists of three (3) sub-questions worth 15 marks in total. Answer

all questions.

Question 26

Case Study

15 Marks

Recently, several banks have started offering customers remote deposit capture. With this new service, customers do not have to physically go to banks or ATM machines to deposit checks anymore. Instead, they can send checks as a scanned image through an Internet portal provided by the bank. This technology can save banks and customers time and money making the transactions. Blue Bank is considering implementing this new service. To use it, customers need a remote capture account with Blue Bank and a special scanner to get the necessary images to make the electronic deposit. Once the account is established in the system, customers will be able to scan all of their checks anytime and anywhere by accessing the Blue Bank service through the Internet, logging in, and scanning the checks. The service should be as easy as sending an attachment in an email. Of course, this new application has to be very reliable, secure, and easy to use. It must be integrated into the current Blue Bank Website, and the Website must also provide the ability for customers to purchase the special scanner. Blue Bank will set up the scanner-purchasing ability with several appropriate hardware vendors and sell the devices at its physical banks as well. Blue Bank is not sure yet what to charge for the scanners or service. The Website will also provide online technical support and instructions showing customers how to set up and use the new scanner and service. Support will be provided 24/7 via the Website and telephone.

a) Based on the case study, briefly describe one requirement for each of the category listed below: (4 marks)

Technical Requirement	Ability to scan cheques into the system
Performance Requirement	System must be easy to use and allow customers perform transaction quickly and easily
Security Requirement	Ability to upload scanned cheques securely.
Business Requirement	Able to provide good 24/7 customer support via website or by phone.

b) Identify three (3) distinct potential risks for the project based on the category given. State briefly what would be the trigger and how will the risk impact the success of the project. Briefly discuss a response strategy for each risk. (6 marks)

Name of Risk	Description	Category	Trigger	Impact	Response Strategy
Scanners Faulty	Scanners are not working properly causing errors	Technology	Customers complaints	May have a medium to high impact if customers view it as a risk and do not want to use it.	Risk mitigation – source out good and reliable suppliers
Low adoption rate from customer	The customers are not using the new system as expected	Business/ Marketing	New system has low usage	May have a medium to high impact if customers do not buy in to the new technology.	Risk mitigation – having adequate advertisement /marketing
Team member lacking technical skills	Team members have never worked on a project like this before	People (Human resource)	PM identifies team is taking too long to produce deliverables	May have a low to medium impact as the project may be delayed.	Risk avoidance – ensuring staff has the right technical skills or provide appropriate training

c) Briefly describe the four basic response strategies for positive risks? In your opinion, what response strategy should the bank adopt if there is a good uptake of this new technology? (5 marks)

- Risk exploitation is doing whatever you can to exploit the situation to make sure the positive risk happens.
- Risk sharing or allocating ownership of the risk to another party for example forming partnership with another company.
- Risk acceptance is when the project team does not take any actions towards the risk.
- Risk enhancement is maximizing the opportunity by identifying key drivers of the positive risk.

If there is a good uptake of the new technology, the bank can exploit the situation by organising some news coverage of the project or to involve some media coverage to ensure greater publicity.

Information

PART D (8+ 8 + 4 + 15 = 35 marks)
This section consists of four (4) questions worth 35 marks in total. Answer all questions.

Question 27

Earned Value Management (8 marks)

Assume a 6 months software project is budgeted for $40,000. At the end of the 4th month, the project was evaluated and it was estimated that only 50% of the work was actually completed. At this point, they have already spent $22,000.

Earned Value Formulas:
Actual Cost = AC
Planned Value = PV
Earned value = EV
Cost Variance (CV): CV = EV - AC
Cost Performance Index (CPI): CPI = EV/AC
Schedule Variance (SV): SV = EV – PV
Schedule Performance Index (SPI): SPI = EV/PV
Budget at Completion = BAC
Estimate to Complete (ETC): ETC = (BAC- EV)/CPI
Estimate at Completion (EAC): EAC = AC + ETC

a) Calculate the Cost Variance, Schedule Variance, Cost Performance Index and Schedule Performance Index for this project as at the end of the 4th month. (4 marks)

PV (BCWS) = (Planned % Complete) x (Project Budget)
= 4/6 x 40,000 = $26,667

EV (BCWP) = (Actual % Complete) x (Project Budget)
= 50% x 40,000 = $20,000

AC (ACWP) = $22,000

CV = EV – AC
= 20,000 – 22,000 = –$2,000 (over budget)
CPI = EV / AC
= 20,000 / 22,000 = 0.909
That means the project is spending about 1/0.909*100 ≈ 110% over budget. (can at this stage estimate revised project cost is 40,000 * 1.1 = $44,000)

SV = EV – PV
= 20,000 – 26,667
= –$6,667 (behind schedule)
SPI = EV / PV
= 20,000 / 26,667
= 0.75
That means the project has only achieved ≈ 75% of its intended schedule.

8
Marks

b) Based on the performance to date, what would be the total estimated cost to complete this project (assuming there are no further delays after the 4th month). (1 mark)

- ETC = (BAC – EV)/CPI = (40000-20000)/0.909 = 22,000
- EAC = AC + ETC = 22,000 + 22,000 = 44,000

c) Based on your calculation in a) and b), discuss the situation and your recommendation. (3 marks)

Based on CPI and SPI values, the project is having a 10% cost overrun and 25% behind planned schedule. Therefore, the project is doing a slightly better job in terms of its budget, and the project team should do enough necessary adjustment in its schedule based on the nature of the project, organisational culture, project priorities, and the triple constraint.
The estimated cost to complete the project will be an additional $22,000, which is $4,000 more than what was budgeted.
If the project has a tight schedule constraint, they may have to apply more resources to avoid slipping in its schedule.

Question 28

Project Network Diagram (8 marks)

8 Marks

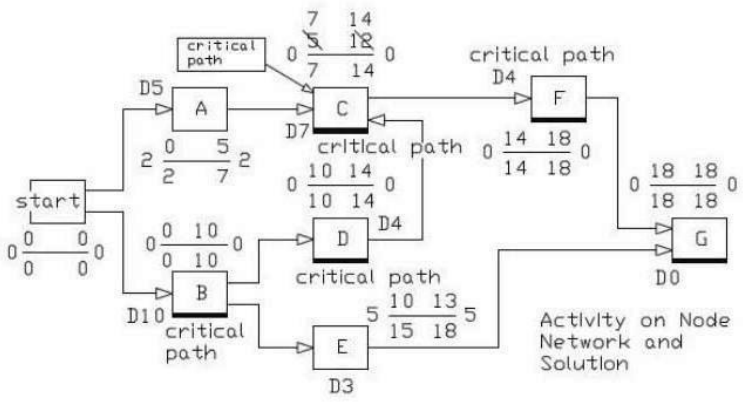
A project consists of activities A, B, C, D, E, and F.

Activity	Estimated Duration (days)	Predecessor
A	5	Start any time
B	10	Start any time
C	7	Start after A has ended End after D has ended
D	4	Start after B has ended
E	3	Start after B has ended
F	4	Start after C has ended

The project has finished when activities E and F have finished.

Using the above information:

- Draw a project network diagram using the activity on node method.
- Include all calculations (estimated time and floats for each activity) on the project network. Highlight the
  - critical path.
  - Indicate what is the shortest possible time needed to complete this project.



Question 29

Answer the following questions based on the project network diagram that you draw in Question 28.

a) What is the effect on Activity E and the project duration if Activity B is delayed by 2 days? Why? (1 mark)

- will not affect activity E as E has a float of 5 days
- but will affect the project duration – possibly delaying the project by 2 days

b) What is the effect on the project duration if activity A is delayed by 2 days? Why? (1 mark)

Will not affect the project duration as Activity A has 2 days of float but will push A into the critical path.

c) What is the importance of correct scheduling? Discuss why you would use the Activity-on-Arrow and when you would use the Activity-on-Node techniques. (3 marks)

With correct scheduling, we can continuously track the project progress to ensure it does not go over the original schedule. A correct scheduling allows us to track it more precisely.
Activity on arrow: use it for big networks (however, it needs dummy activities for start-to-start and end-to-end dependencies)
Activity on node: use if for complex networks with uncommon dependencies.

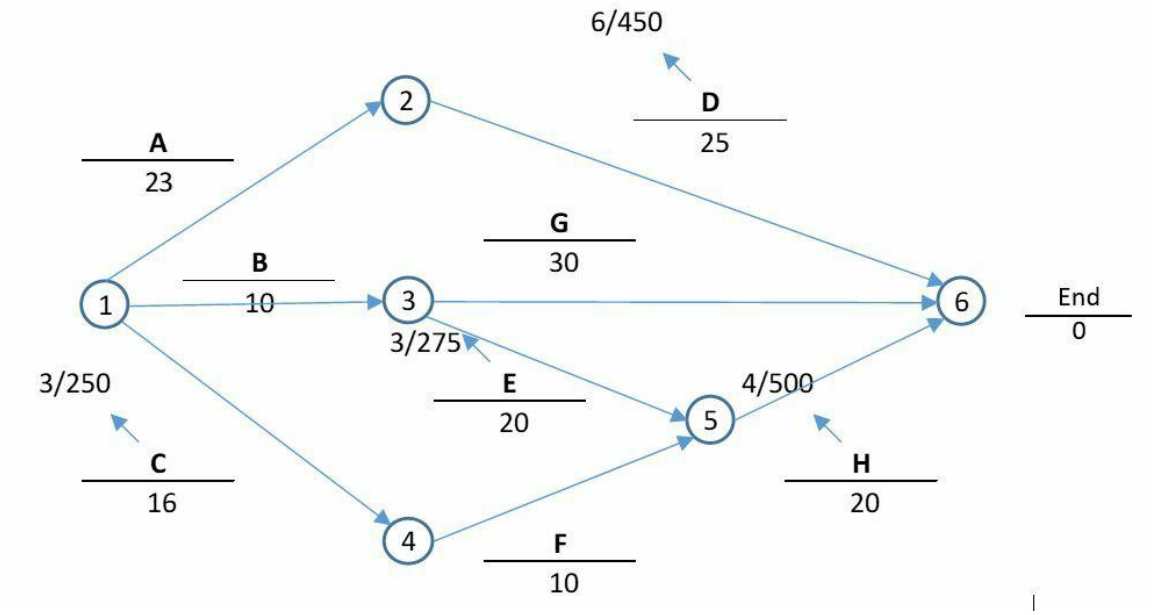
Question 30

Network Compression

15

Your company has received a Request for Quotation to develop an application for a MOOC (Massive Open Online Courses) System. Deadline for this project is very tight and delaying it would have serious repercussions. You identify that once you win the tender, you would only have a maximum of 45 weeks before the 'go-live' date. You have planned out the job and have drawn the project network as shown below. The activity durations depicted in the network diagram are for the "All Normal" situation where the duration estimates are the normal duration required to work on a certain activity. However, if there is a need to shorten the duration to meet the 45-weeks deadline, you may have to hire more resources and incur additional cost.

You have worked out the additional costs and the compression options are shown below in the usual notation. The "All Normal" cost for this project is estimated to be $500,000.



a) Perform the "All normal" calculation on the network diagram and put the values in the response template below. (4 marks)

b) Carry out project compression calculations, using the response templates given. Stop the calculations when you have achieved the 45-week target. (9 marks)

c) Calculate the minimum price you would quote to develop the MOOC systems, if you are to deliver this project within 45 weeks and making a 40% profit margin. (2 marks)

Question 30

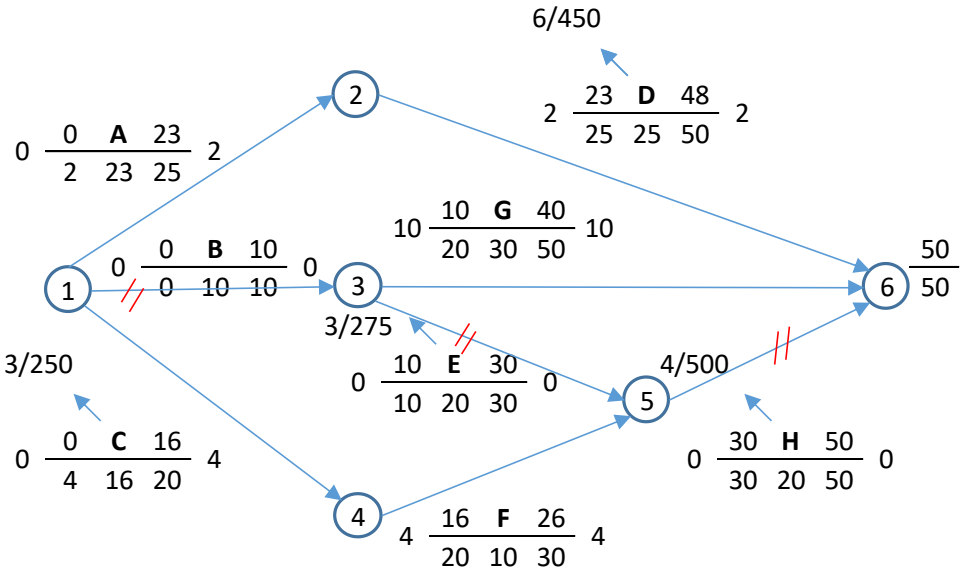
Network Compression

15

Solution:

a) Perform the "All Normal" calculation on the network diagram below. **(4 marks)**

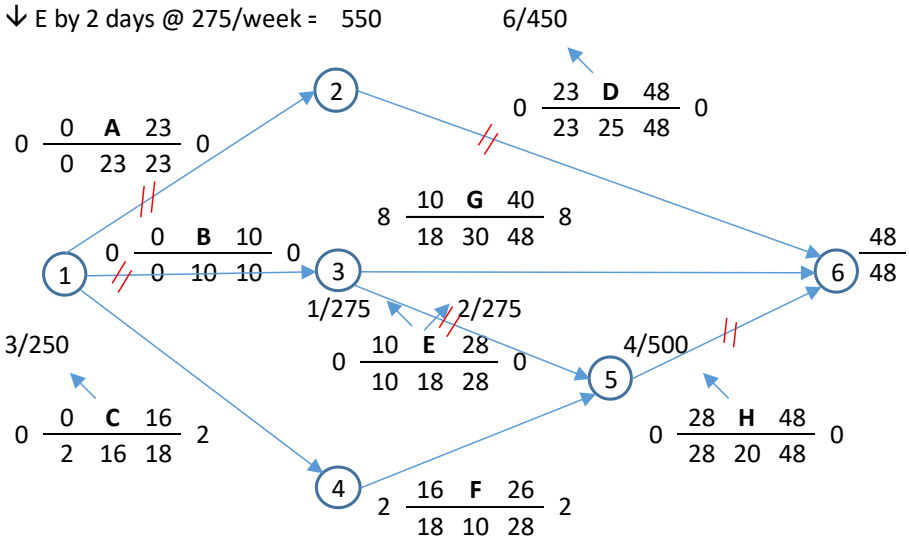
All Normal:



b) Carry out project compression calculations, using the templates given. Stop the calculations when you have achieved the 45-week target. (Note you are given extra templates and you may not need to use all of them.) **(9 marks)**

Compression: 1

↓ E by 2 days @ 275/week = 550



Question 30

Network Compression

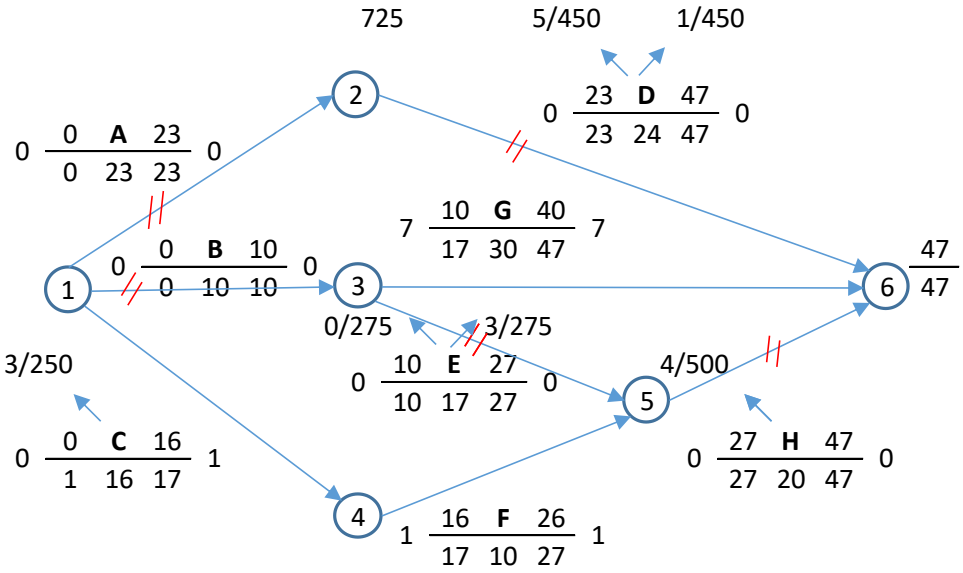
15

Compression: 2

↓ E by 1 week @ 275/wk = 275

↓ D by 1 week @ 450/wk = 450

725

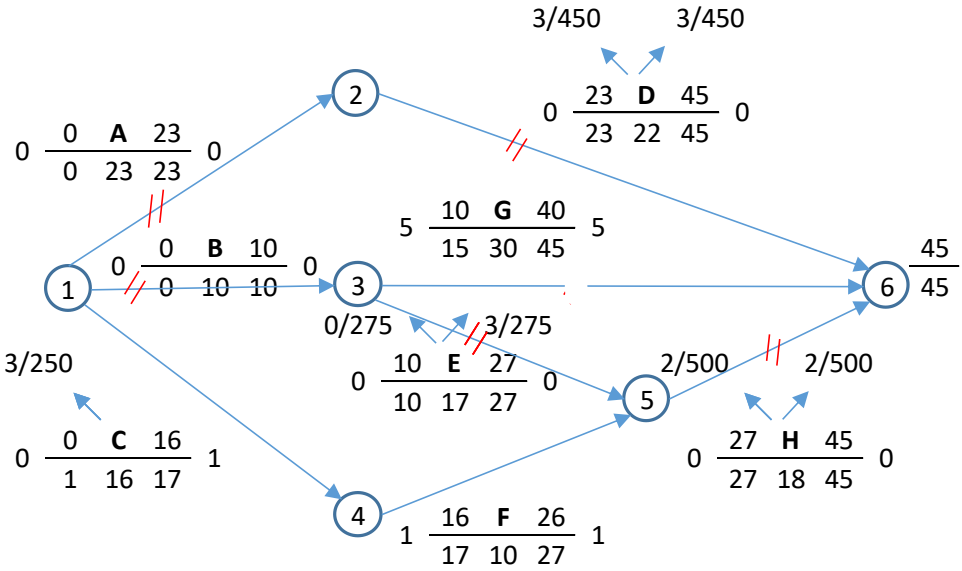


Compression: 3

↓ D by 2 weeks @ 450/wk = 900

↓ H by 2 weeks @ 500/wk = 1000

1900



Question 30

Network Compression

15

c) Calculate the minimum price you would quote to develop the MOOC systems, if you are to deliver this project within 45 weeks and making a 40% profit margin. **(2 marks)**

All Normal project cost: $ 500,000

To achieve 45 weeks:

Cost of Compression 1 = 550

Cost of Compression 2 = 725

Cost of Compression 3 = 1900 (Note: only require to compress 2 weeks to achieve 45 weeks)

3175

Total project cost: $ 503,175

Minimum price to quote (for 40% margin): = $ 704,445