THE UNIVERSITY OF NEW SOUTH WALES

SEMESTER 1 2016 EXAMINATIONS

GSOE9820: Engineering Project Management

FINAL EXAM

1. TIME ALLOWED – 2 hours

2. READING TIME – 10 minutes

3. THIS EXAMINATION PAPER HAS 14 PAGES

4. TOTAL NUMBER OF QUESTIONS – 41

5. TOTAL MARKS AVAILABLE – 60

6. MARKS AVAILABLE FOR EACH QUESTION ARE SHOWN IN THE EXAMINATION PAPER

7. ALL ANSWERS MUST BE WRITTEN IN INK. EXCEPT WHERE THEY ARE EXPRESSLY REQUIRED, PENCILS MAY BE USED ONLY FOR DRAWING, SKETCHING OR GRAPHICAL WORK

8. THIS PAPER MAY BE RETAINED BY CANDIDATE

9. CANDIDATES MAY BRING TO THE EXAMINATION - UNSW Approved Calculator

10. THE FOLLOWING MATERIALS WILL BE PROVIDED - Statistical Tables

SECTION 1 – 40 marks

Attempt Questions 1–40

Use the multiple-choice answer sheet for Questions 1–40.

Question 1
Which of the following is not considered to be a characteristic of a project?

A. An established objective
B. A clear beginning and end
C. Complex tasks
D. Routine work
E. Never been done before

Question 2
Which of the following choices is not one of the stages of a project life cycle?

A. Conceptualising
B. Defining
C. Planning
D. Executing
E. Closing

Question 3
A major function of portfolio management is to

A. Encourage use of the latest tools
B. Oversee project selection
C. Oversee customer selection
D. Improve customer service
E. Improve project services

Question 4
Which of the following is a main reason why project managers need to understand their organisation's mission and strategy?

A. They can better focus on the immediate customer
B. They can make appropriate decisions and adjustments
C. They can be effective project advocates
D. Both B and C are correct
E. A, B and C are all correct

Question 5
Which of the following is not one of the characteristics of effective objectives?

A. Realistic
B. Assignable
C. Flexible
D. Specific
E. Measurable

Question 6
A project has an initial investment of $300,000. The quarterly projected cash inflows and outflows are $50,000 and $25,000 respectively. The payback period for the project is?

A. 1 year
B. 3 years
C. 4 years
D. 12 years
E. None of the above

Question 7
The three most common forms of project management structures are:

A. Functional, Dedicated Project Teams and Matrix
B. Weak, Balanced and Strong
C. Functional, Project and Matrix
D. Functional, Dedicated Teams and Mixed
E. Divisional, Team and Mixed

Question 8
In a strong matrix form, the typical breakdown of authority is:

A. 10% Project Manager, 90% Functional Manager
B. 20% Project Manager, 80% Functional Manager
C. 50% Project Manager, 50% Functional Manager
D. 80% Project Manager, 20% Functional Manager
E. None of the above

Question 9
Elisabeth is considering how to structure a project team that will not directly disrupt ongoing operations. The project needs to be done quickly and a high level of motivation will be needed in order to do that. For this situation, the _____ organisation would be the best choice.

A. Functional
B. Balanced matrix
C. Weak matrix
D. Strong matrix
E. Dedicated project

Question 10
The first step of project scope definition is to define:

A. Project milestones
B. Project limits and exclusions
C. Project objective
D. Project technical requirements
E. Project deliverables

Question 11
What are the typical trade-offs that a project manager must often make?

A. Time, Cost and Performance
B. Time, Scope and Performance
C. Time, Scope and Quality
D. Time, Cost and Quality
E. None of the above

Question 12
How would you best describe the project with the following priority matrix?

	Time	Performance	Cost
Constrain	X		X
Enhance			
Accept		X	

A. The project should be completed as soon as possible
B. The project should be completed on time and budget allowing for trade-offs in scope.
C. The project must be completed on time and within scope allowing for trade-offs in cost.
D. The project must be completed on time and budget allowing for trade-offs in scope.
E. None of the above

Question 13
The process of forecasting or approximating the time and cost of completing project deliverables is called

A. Budgeting
B. Predicting
C. Estimating
D. Planning
E. Guesstimating

Question 14
Jose is forecasting project time and cost for constructing a new building by multiplying the total square footage by a given dollar amount. Which of the following methods is he using?

A. Ratio
B. Template
C. Apportion
D. Function point
E. Learning curve

Question 15
The approach that begins with a top-down estimate for the project and then refines estimates as the project is implemented is known as _____ method.

A. Function point
B. Template
C. Learning curve
D. Phase estimating
E. Apportion

Question 16
Information to develop a project network is collected from the

A. Organisation breakdown structure
B. Work breakdown structure
C. Budget
D. Project proposal
E. Responsibility matrix

Question 17
A _____ activity has more than one dependency arrow flowing from it.

A. Parallel
B. Critical path
C. Burst
D. Merge
E. Node

Question 18
The forward pass in project network calculations determines the

A. Earliest times activities can begin
B. Earliest times activities can be finished
C. Duration of the project
D. Both A and B are correct
E. A, B and C are all correct

Question 19
The amount of time an activity can be delayed and yet not delay the project is termed

A. Total slack
B. Free slack
C. Critical float
D. Pad
E. Free time

Question 20
Four risks are identified in a project with the following parameters:

	Risk W	Risk X	Risk Y	Risk Z
Impact factor	3	3	2	5
Probability of occurrence	5	3	3	2
Difficulty of detection	2	4	4	1

Based on the information above, which risk has the greatest severity?
A. Risk W
B. Risk X
C. Risk Y
D. Risk Z
E. Both X and Z

Question 21
The two scales of a risk likelihood–consequence matrix measure

A. Time, cost
B. Cost, schedule
C. Impact, cost
D. Time, impact
E. Likelihood, impact

Question 22
When the number of people is not adequate to meet peak demand and it is impossible to get the right people the project manager faces

A. Human-constraints
B. Technical-constraints
C. Time-constraints
D. Resource-constraints
E. All of the above

Question 23
In a resource-constrained project, the first priority in assigning resources is usually given to activities with the

A. Smallest duration
B. Least slack
C. Most slack
D. Lowest identification number
E. Highest cost

Question 24
To determine if a project is time-constrained or resource-constrained you would consult a

A. Priority matrix
B. Resource matrix
C. Time matrix
D. Both A and C are correct
E. A, B and C are all correct

Question 25
The president of a software company remarks in a speech that new technologically advanced software will be available in one year. This is an example of reducing project duration caused by

A. Imposed project deadlines
B. Time to market
C. Unforeseen project delays
D. High overhead
E. Incentive contracts

Question 26
The less steep the cost slope of an activity, the

A. Less it costs to shorten one time period
B. More it costs to shorten one time period
C. Smaller the crash time
D. Larger the crash time
E. None of the above

Question 27
If a network has several critical or near-critical paths it is deemed to be

A. Well planned
B. The lowest cost alternative
C. Resource constrained
D. Sensitive
E. Insensitive

Question 28
Which stage of the five-stage team development model is best described by a team developing close relationships and clear expectations around working together?

A. Forming
B. Storming
C. Norming
D. Performing
E. Adjourning

Question 29
What are the two (2) foundational elements of leadership?

A. Self-awareness and social skills
B. Having Integrity and social networks
C. Being a person of integrity and having something greater than oneself
D. Leading by example and having something greater than oneself
E. None of the above

Question 30
Stakeholders in a project include

A. Contractors
B. Administrative support
C. Government agencies
D. Customers
E. All of the above

Question 31
What is an advantage of a fixed price contract?

A. Less risk to the contractor
B. May reduce the chances of project over bidding because the contractor does not need to pad fixed expenses to avoid going over budget
C. Owners know the cost and can focus on monitoring work
D. Both A and B
E. None of the above

Question 32
What is the primary control mechanism to deal with conflicts on a project?

A. Project status reviews
B. Escalation
C. Open communication
D. Co-location
E. None of the above

Question 33
The first step in the project control process of the measurement and evaluation of project performance is to

A. Set a baseline plan
B. Determine the project objectives
C. Determine the project deliverables
D. Analyse the project budget
E. Review the project priority matrix

Question 34
Which of the following are required to assess the current status of a project using the earned value cost/schedule system?

A. BAC, EAC and ETC
B. VAC, EAC and BAC
C. CV, SU and BAC
D. PV, EV and AC
E. TCPI, EV and PV

Question 35
Small refinements that eventually build to be major changes are known as

A. Project erosion
B. Scope creep
C. Specification adjustments
D. Specification refinements
E. Continuous improvements

Question 36

_____ of lessons learned are designed to improve performance on current and future projects.

A. Retrospectives
B. Corrective action plans
C. Introspectives
D. Culmination
E. Evolution

Question 37

All of the following are part of the Agile project management model except

A. Flexibility
B. High uncertainty
C. Embrace change
D. Design up front
E. Self-organised project teams

Question 38

Which of the following relates to the Agile principle of testing assumptions early and building working prototypes to solicit customer feedback and refine product requirements?

A. Focus on customer value
B. Iterative and incremental delivery
C. Experimentation and adaptation
D. Self-organisation
E. Continuous improvement

Question 39

An expected output over the life of a project would be classified as

A. A deliverable
B. A product
C. An end object
D. An objective
E. A target

Question 40

A project is summarised below:

Activity	Crash time	Crashed cost	Normal time	Normal cost
A	3	$500	4	$300
B	1	$325	3	$250
C	4	$550	7	$400
D	3	$250	5	$150
E	4	$150	6	$120

Which activity is the most economical to crash using *cost slope* method?

A. Activity A
B. Activity B
C. Activity C
D. Activity D
E. Activity E

SECTION 2 – 20 marks

Attempt Question's 41

Use a SINGLE writing booklet for Q41

Question 41 (20 marks)

A project manager is trying to coordinate all the activities on a project and has determined the following:

Activity A can start immediately and has an estimated duration of 4 weeks;

Activity B, C and D can start after activity A is completed and they have an estimated duration of 8, 6 and 4 weeks respectively.

Activity E can start after activity C is completed and has an estimated duration of 4 weeks.

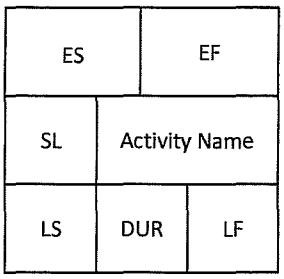
Activity F can start after activity D is completed and has an estimated duration of 8 weeks.

Activity G can start after activities B and E is completed with an estimated duration of 4 weeks.

Activity H can start only after both activities G and F are completed and its duration is 4 weeks.

Answer the following parts a) – f).

a) Construct a project network diagram (AON) using the information above. Use the following legend for each activity in your project network diagram. **(5 marks)**



b) Identify the critical path of the project? **(2 marks)**

c) What is the duration of the critical path for this project? **(1 mark)**

The following data is to be used for parts d), e) and f)

			Time-Phased Budget Baseline PV (week ending #)											
Activity	**Variance**	**PV ($,000)**	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**22**	**24**
A	3	8	4	4										
B	5	40			10	10	10	10						
C	4	30			10	15	5							
D	3	20			10	10								
E	2	40						20	20					
F	5	60					20	20	10	10				
G	2	20								10	10			
H	2	30										20	10	
Period PV Total			4	4	30	35	35	50	30	20	10	20	10	0
Cumulative PV Total			4	8	38	73	108	158	188	208	218	238	248	248

d) Calculate the probability for project to be completed within 18 weeks? **(2 marks)**

e) Complete the following "Project Status Report" at the end of week 12. **(3 marks)**

Activity	**% Complete**	**EV**	**AC**	**PV**	**CV**	**SV**
A	100%		10			
B	100%		50			
C	100%		40			
D	100%		40			
E	50%		30			
F	50%		40			
G	0%		0			
H	0%		0			
Cumulative Totals			210			

f) Answer the following statements about the condition of the project at the end of week 12 **(7 marks)**

i. We should have done $ _____ worth of work.

ii. We have actually completed $_____ worth of work.

iii. We have actually spent $_____.

iv. Our project budget is $_____.

v. We are $_____? *[under / over] (select which applies)* budget.

vi. We are only getting _____ cents out of every dollar we put into the project.

vii. We are *[behind / ahead] (select which applies)* of schedule.

Standard Normal Probabilities

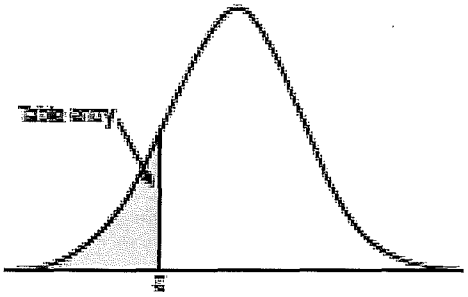
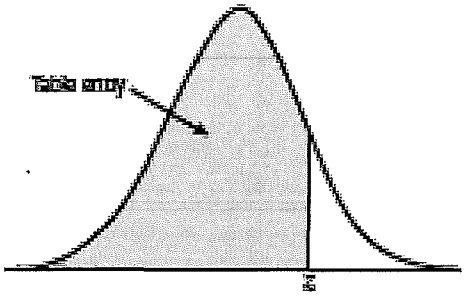


Table entry for z is the area under the standard normal curve to the left of z.

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
−3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0002
−3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
−3.2	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
−3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
−3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
−2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
−2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
−2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
−2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
−2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	.0049	.0048
−2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
−2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
−2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
−2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
−2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
−1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
−1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
−1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
−1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455
−1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
−1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
−1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
−1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
−1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
−1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
−0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
−0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
−0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148
−0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
−0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
−0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
−0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
−0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
−0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
−0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641

Standard Normal Probabilities



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z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9671	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998

End of Examination Paper