Reg. No.

A Constituent Institute of Manipal University, Manipal

VII SEMESTER B.TECH (MECHANICAL/I&P ENGG.) MAKE UP EXAMINATIONS,

DEC 2017/JAN 2018

SUBJECT: PROJECT MANAGEMENT [MME 4032] (PE-VI)

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- * Answer ALL the questions.
- Missing data may be suitably assumed.
- ✤ All answers must be brief.

1A.	What is " <i>projectitis</i> " in Project Management?				
1B.	Write short notes on Projects within a Matrix Arrangement along with their strengths				
	and limitations.	3			
1C.	What is a "risk assessment matrix"? Explain.	5			
2A.	What are the differences between Top-Down and Bottom-Up Estimates?	2			
2B.	Make a list of the various types of Pre-feasibility study.				
2C.	Prepare a list of Estimating Guidelines for Times, Costs, and Resources and explain				
	any three of them.	5			
3A.	List the various types of project closure and explain any two of them.	5			
3B.	Explain the Risk Management Process in Project management.	3			
3C.	Explain "Change Control Management"	2			
4A.	Write short notes on Risk Response Development using any three of the ways to				
	manage risk.	5			
4B.	Prepare a list of "Types Of Feasibility" and explain any two of them.	3			
4C.	Which are the Methods for Estimating Project Times and Costs?	2			

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Activity	Preceding	Time (weeks		Cost (in Rs)	
	activity	Normal	Crash	Normal	Crash
А	None	3	2	18000	19000
В	None	8	6	600	1000
С	В	6	4	10000	12000
D	В	5	2	4000	10000
E	А	13	10	3000	9000
F	А	4	4	15000	15000
G	F	2	1	1200	1400
Н	C.E,G	6	4	3500	4500
1	F	2	1	7000	8000

5A. The data pertaining to a project are given below:

A) Draw the network diagram and determine the critical path.

B) If a dead line of 17 weeks is imposed for completion of the project, what activities will be crashed, what would be the additional costs, and what would be the critical activities of the network after crashing?

5B. Monte Carlo in Italy

ABC is a high - tech company based in the United States. Recently the company had a major shuffle in its management and the new management is planning on expanding into global markets. The CEO realizes that the best way to achieve this goal is by acquiring and merging with smaller high - tech companies in key locations across the globe that provide products and services to the high - tech market.

The CEO knows that process integration is an important issue of a successful merger and acquisition. This case discusses such an activity, especially the project risk management process.

GO STUDY THEM!

As a first step toward this mission, the top management calls for a meeting of all the Business Unit heads and the Program Managers. The agenda of the meeting is to identify feasible locations and companies for merger. At the end of the meeting, the management identified three countries in Europe and three in Asia as prospective locations for expansion, based on business opportunity, government policies, availability of skilled personnel, etc. The companies that were selected were all smaller companies with a good presence in their respective countries, offering high –

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tech products and services with a product portfolio matching ABC's range of products. Additionally, ABC, being a CMM - certified company, has a strong emphasis on the processes which are followed toward being a better project - oriented organization.

The management of the company understands that any merger or acquisition would result in aligning the company's policies and processes with the acquired company's. Therefore, it is considered important that the acquired company has an established set of processes for each phase of the product/project life cycle.

SEND OUR STARS

Since this is a critical step, the management decides that a selected group of business managers, who have a lot of project management experience and have a good understanding of the technology domain, would personally visit the companies that are short - listed and scrutinize their products and processes before finalizing any deal.

Peter Davis is one of the business managers working for ABC. He has been with the company for a long time and has moved up the management ladder, most recently from the project manager level. He understands the technology management aspects at ABC very well and has also worked for some of the top high - tech companies before joining ABC. He understands the dynamics of high - tech companies and also project life cycle management and is a renowned PMP - certified professional in the field. The management of ABC therefore chooses Peter as one of the managers to work with the acquisitions. Because of his prior work experience in Italy, ABC decides that Peter should go to Italy to verify the processes at PQR Inc. Soon after his arrival in Italy, Peter schedules meetings with the business managers and the project managers at PQR Inc. He is really surprised at the amount of detail that has been given to every aspect of the project life cycle. He scans through the company's project selection process, project portfolio mapping process, project planning and control tools for the customer roadmap, scope (WBS, Change Coordination Matrix, Project Change Request/Log), schedule (Gantt Charts, Critical Path Method, Critical Chain Schedule, Milestone Prediction Chart, Slip Chart), cost (Analogous Estimate, Parametric Estimate, Earned Value Analysis), and quality planning (Affinity Diagrams, Quality Improvement Maps, Cause and Effect Diagrams, and control charts).

Of all the tools that Peter saw at PQR Inc., one tool caught his attention. This was the Monte Carlo Analysis (MCA) tool for risk planning. PQR Inc., being a small start - up

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company in a high - tech market, obviously faced a high degree of risk in terms of the new technology they were dealing with, competitors, markets, etc. So utilization of any risk planning tool would provide the company with a strategy to ward off any undesired events during the execution of projects. Given below is an implementation of how Monte Carlo Analysis was implemented at PQR Inc.

RISK MANAGEMENT AND THE PLANNING PROCESS

The risk management process at PQR Inc. has been iteratively defined by the following five steps:

Risk Identification: Use past project experiences and data bases to uncover any risks that might occur during the execution of the current project. These are termed risk events.

Risk Analysis: Identify drivers that might lead to the occurrence of risks identified above.

Risk Priority/Impact Analysis: Each risk is given a severity score by assigning a probability of occurrence and impact of the risk. The risk severity is then calculated using a P - I matrix and a specific number of risks that score high on the P - I matrix are considered. For a detailed procedure of assigning probabilities to the risks, the Monte Carlo Analysis technique is used.

Risk Resolution: Develop a Risk Response Plan to prevent identified risks. Contingency plans should be made in case of risks that cannot be prevented.

Risk Monitoring: A constant monitoring of risks is done at regular intervals to prevent/mitigate them.

Using the above model, PQR Inc. has then implemented Monte Carlo

Analysis for assigning probability to uncertain events such as schedule and cost probabilities. Below is an example of how MCA has been effectively applied to avoid the risk of incorrect scheduling on the project leading to late time - to - market, customer dissatisfaction, and loss in profitability.

A new product development (NPD) project at PQR Inc. has a network diagram showing the dependent tasks/activities in the project.

But seldom is the process of new product development so linear. Since time - to - market is critical for PQR Inc., most of the tasks are handled in parallel between Engineering and the Marketing departments (concurrent engineering), which induces a lot of interdependencies.

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The uncertainty in assigning a final deadline to the project is the nature of the project itself. Since the company deals with high - technology products which are very new in the market, not many projects of a similar nature have been undertaken to estimate the schedule of activities with certainty. But accurate assessment of timelines for the individual tasks under uncertainty is both essential as well as critical. So then, how will the company provide a final estimate, so that the risks identified are prevented?

The next step followed in the process is assigning a range of possibilities for each activity. For example, say activity A can be completed in five days at a minimum, but can extend to 15 days at a maximum. An MCA simulation can be run on this range of possibilities to evaluate the mean likelihood of A's completion time.

Single point estimates where available can be made use of without using MCA. The Monte Carlo process thus gives project managers a more precise completion time of the project. In the case of companies that focus on new product development like PQR Inc., this gives a more accurate estimate for the time - to - market. Peter, who had a PMP certification and had used a lot of project management tools in his long tenure as a project manager, was really impressed with such a great method for reducing risks due to schedule slippages. His audition of the company had given him a great impression of how well PQR Inc. had been managing its projects and their processes. In his audit results, he therefore gladly recommended that ABC acquire PQR Inc.

Question:

1. Discuss the advantages and disadvantages of Monte Carlo Analysis in project risk management.

2. Should Monte Carlo Analysis be used in every project? Why or why not?

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