RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Information and Communication Technology
Third Year - Semester I Examination – June/July 2018

ICT 3205 – INFORMATION TECHNOLOGY PROJECT MANAGEMENT

Time: Two (2) hours

Examination Index No: _____

Important Instructions:

- This paper has 4 questions in 15 pages.
- Answer all questions (25 marks each).
- Write your answers in English using the space provided in this question paper.
- Do not tear off any part of this question paper.
- Note that questions appear on both sides of the paper.
- If a page is not printed, please inform the supervisor immediately.

To be completed by the examiners:

Marks	Question number				Total Marks
	1	2	3	4	

Question 01

a) What are the characteristics of a successful project? (2 Marks)

b) List the Project Management Process Groups. (2 Marks)

c) State four advantages of using formal Project Management. (4 Marks)

d) Name three basic tools and techniques used for project cost estimation. (2 Marks)

Following section mentions a scenario of a project which has been planned to run using the Scrum methodology. Answer Question 1 part (e) and (f) by analyzing this scenario.

Scrum Plan

Product owner of this Scrum team has prepared the product backlog of the new version of their e-commerce web application. According to that, the product backlog items are listed in the following Table 1.

Table 1: Product Backlog

Priority	Product Backlog Item	Relative Size (Story Points)
1	A: Developing User Management Module	20
2	B: Developing Server Handling Module	35
3	C: Preparing Release Notes	15
4	D: Executing Test Cycles	20
5	E: Integrating Payment Gateway	10

It has been appointed a Dev Team with 8 members for this project. In addition to that, it has been revealed from the past experience that this team can complete 22 story points per sprint. According to the lessons learned from previous similar projects, 20% story points are added per sprint as the uncertainty buffer. Time allocated per sprint is 2 weeks and cost per month has been estimated as US$ 2,500.

e) Estimate the total number of sprints required to complete this project. Show all steps clearly. (5 Marks)

f) Estimate total months required to complete this project. (4 Marks)

g) According to the work breakdown structure of a technically challenged IT project, it has been scheduled to complete system integration task at the end of this month. However, the team has completed only 60% of this task due to the inexperience of using new APIs for programming. The budgeted cost of work scheduled for the current month US$ 25,000 but US$ 28,000 has been spent for accomplishing the scheduled task during the same month. Estimate both the Cost Variance and Schedule Variance of this project for the current month. Clearly state all the steps followed. (6 Marks)

Question 02

a) What is the Work Breakdown Structure (WBS)? (2 Marks)

b) Model a Gantt Chart for the Work Breakdown Structure depicted in Figure 1. Clearly indicate the main tasks, sub tasks and dependencies. (4 Marks)
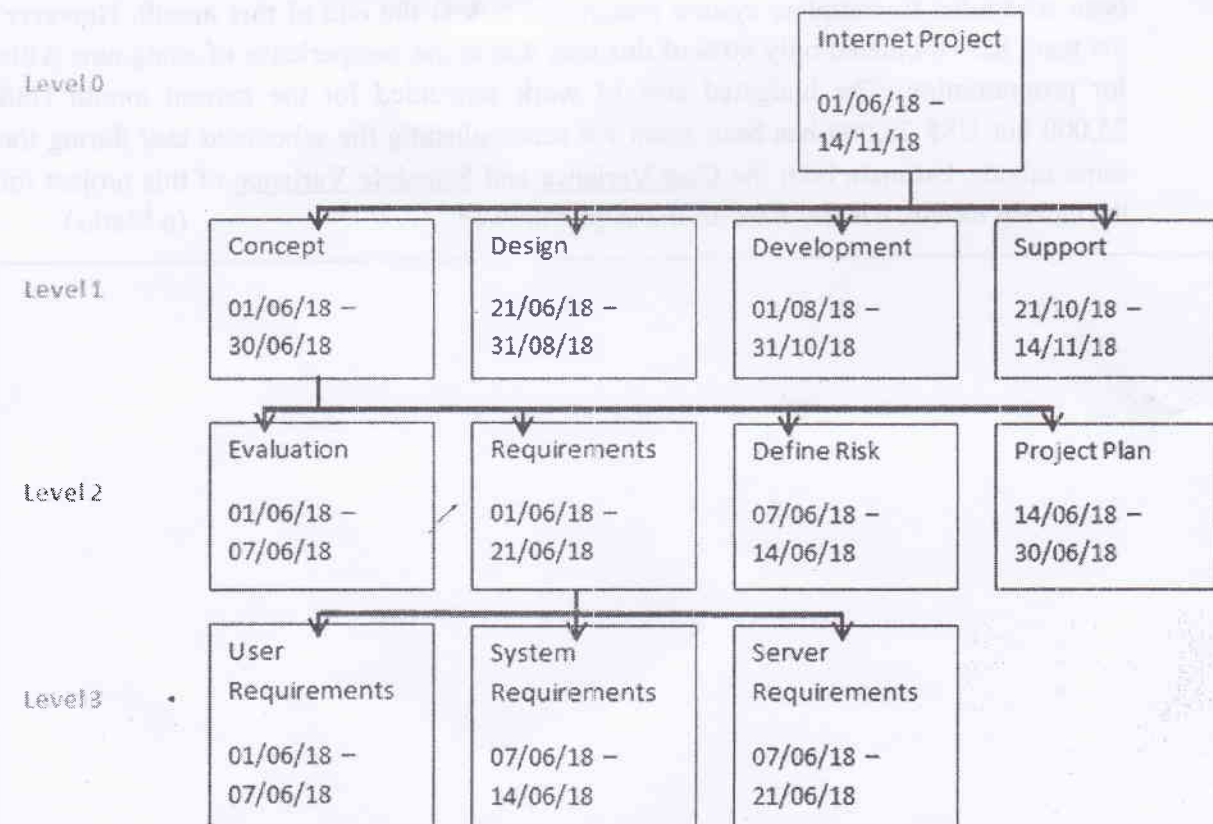
Level 0

Internet Project
01/06/18 –
14/11/18

Level 1

Concept	Design	Development	Support
01/06/18 – 30/06/18	21/06/18 – 31/08/18	01/08/18 – 31/10/18	21/10/18 – 14/11/18

Level 2

Evaluation	Requirements	Define Risk	Project Plan
01/06/18 – 07/06/18	01/06/18 – 21/06/18	07/06/18 – 14/06/18	14/06/18 – 30/06/18

Level 3

User Requirements	System Requirements	Server Requirements
01/06/18 – 07/06/18	07/06/18 – 14/06/18	07/06/18 – 21/06/18

Figure 1: Work Breakdown Structure

Dependencies

"Project Plan" task starts after "Define Risk" task and "System Requirements" task starts after "User Requirements" task.

Answer Question 2 part (c) to (g) using the Work Breakdown Structure given in Table 2.

Table 2: Work Breakdown Structure

Activity	Duration (Days)	Precedence	Number of Employees
A: Requirement Analysis	5	-	2
B: Test Manual Preparation	3	-	1
C: Training Manual Preparation	5	-	1
D: Implementation	4	A,B	4
E: Maintenance	3	B	2
F: Training	2	C	2

c) Model the Network Diagram for the Work Breakdown Structure given in Table 2. Clearly label the activity nodes. (2 Marks)

d) Find the Activity Float by filling the following table for each activity in the Network diagram which you have modelled in Question 2 part (c). Find the Critical Path of it. (7 Marks)

Activity	Earliest Start Date	Earliest End Date	Latest Start Date	Latest End Date	Activity Float
A					
B					
C					
D					
E					
F					

Critical Path

e) Fill in the following table for activities A, B, C, D and E in the Network diagram which you have modelled in Question 2 part (c). (3 Marks)

Activities	Activity Span	Free Float	Interference Float
A			
B			
C			
D			
E			

f) Justify what happens to the network diagram if the duration of <u>Activity A</u> will reduce to 2 days. (2 Marks)
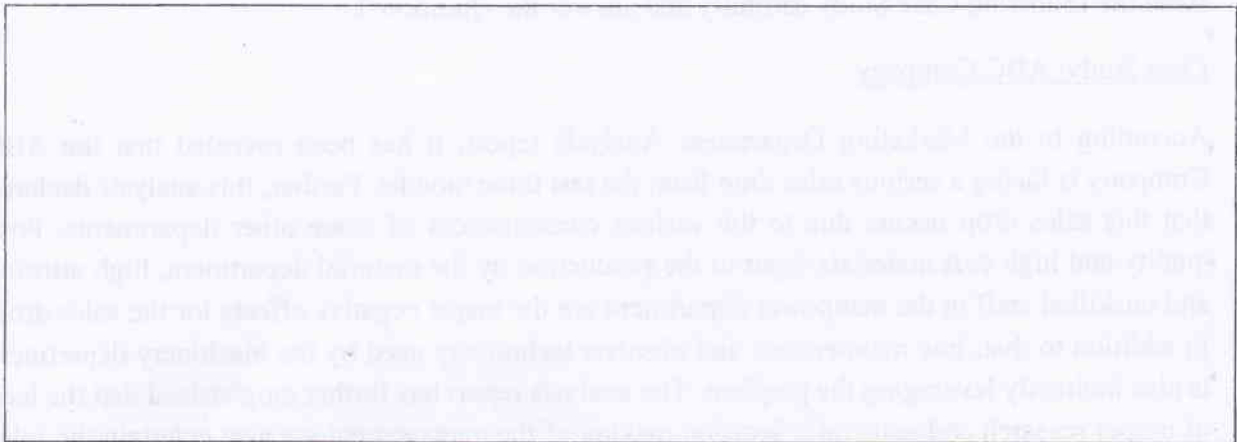
g) Sketch a bar chart to demonstrate the human resource usage of this project. Suppose all activities start on day 1. (5 Marks)
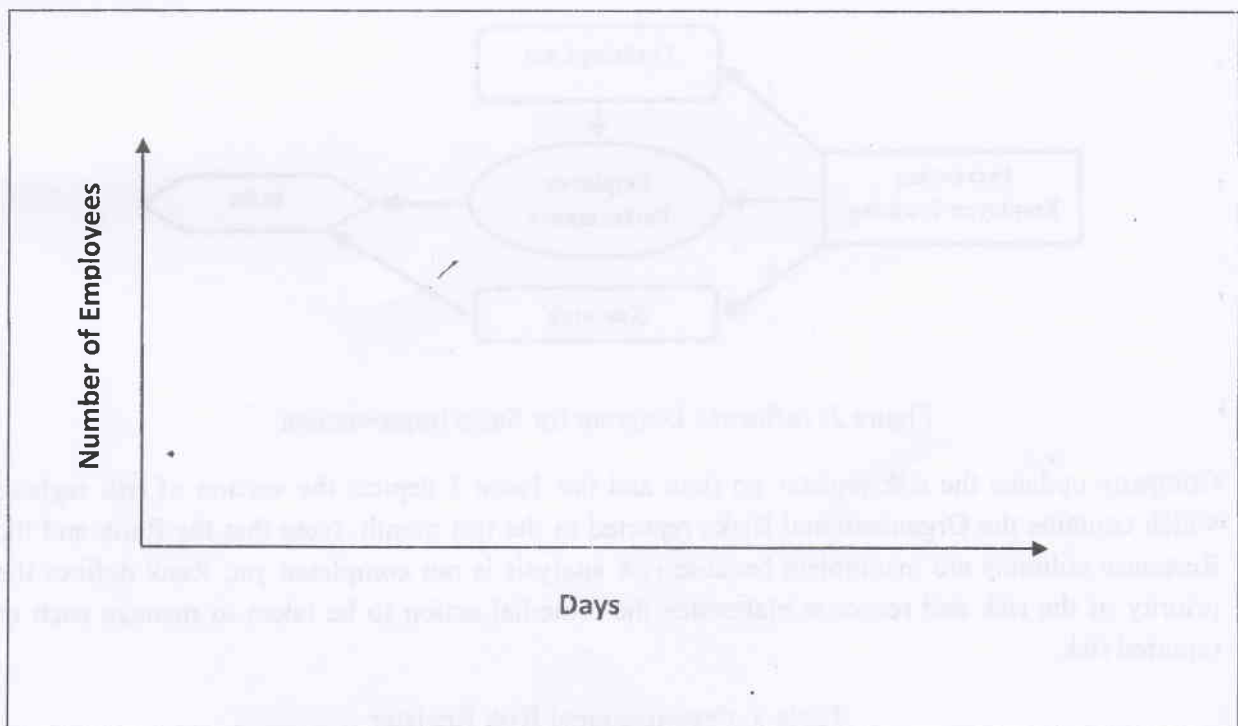
Question 03

Read the following Case Study carefully and answer the Question 3.

Case Study: ABC Company

According to the Marketing Department Analysis report, it has been revealed that the ABC Company is facing a serious sales drop from the last three months. Further, this analysis declared that this sales drop occurs due to the various consequences of some other departments. Poor quality and high cost materials input to the production by the material department, high attrition and unskilled staff in the manpower department are the major negative effects for the sales drop. In addition to that, low maintenance and obsolete technology used by the machinery department is also indirectly leveraging the problem. The analysis report has further emphasized that the lack of proper research and autocratic decision making of the management are also entertain the sales drop within the last three months. As a solution for the identified problem, the strategic management team of the company has suggested a mitigation plan through Influence diagram as depicted in Figure 2.
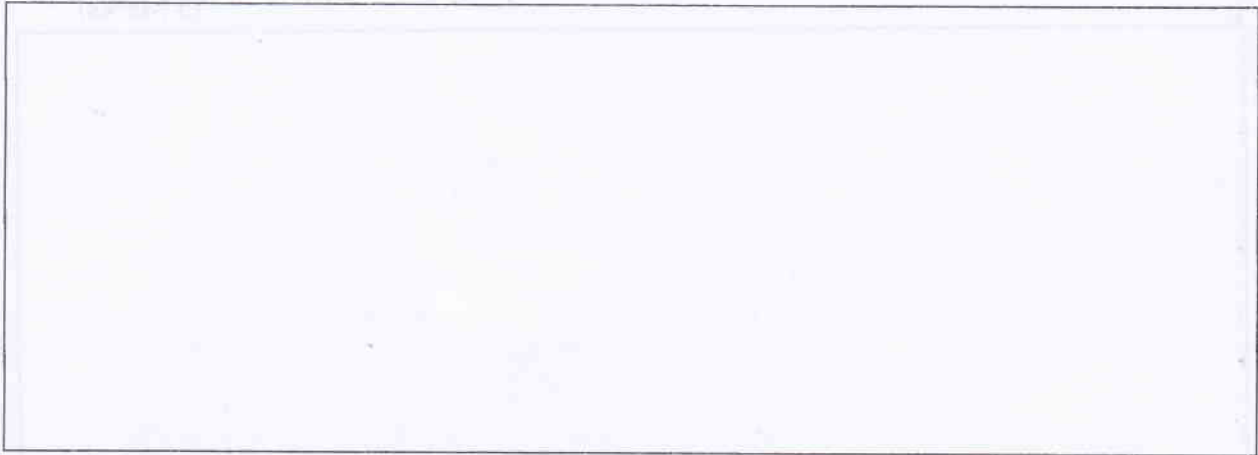

Figure 2: Influence Diagram for Sales Improvement

Company updates the risk register on time and the Table 3 depicts the section of risk register which contains the Organizational Risks reported in the last month. Note that the Rank and the Response columns are incomplete because risk analysis is not completed yet. Rank defines the priority of the risk and response elaborates the remedial action to be taken to manage each of reported risk.
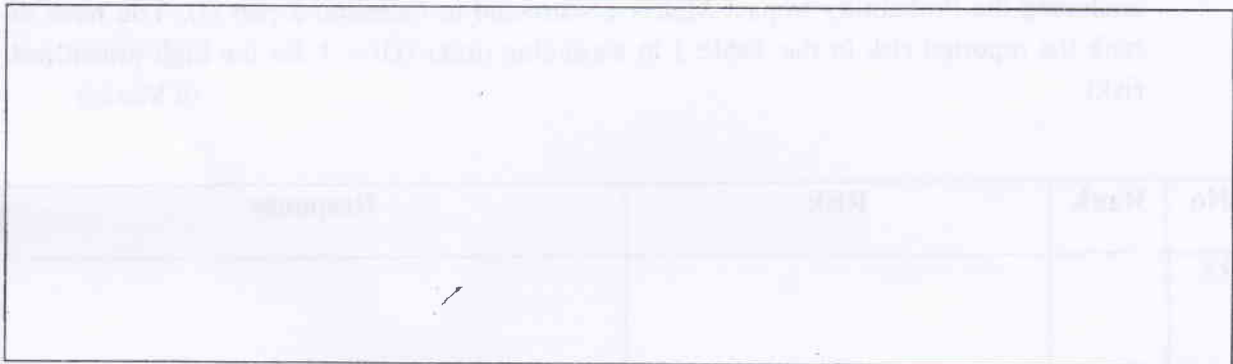
Table 3: Organizational Risk Register

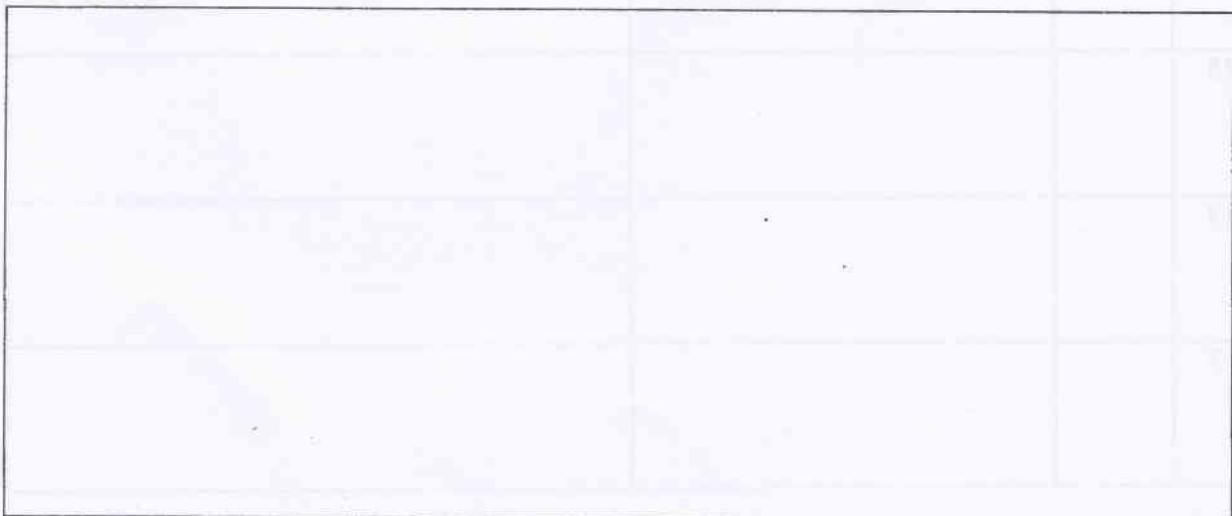| No	Rank	Risk	Response	Probability	Impact
R5		Inadequate planning.		0.95	High
R2		Absence of leadership.		0.20	High
R8		Obsolete platforms.		0.55	Medium
R9		Low performance employees		0.58	Low
R3		Poor information distribution.		0.29	Low

a) Model a <u>Fishbone Diagram</u> to demonstrate the Risk Identification for sales drop problem of the ABC Company's Case Study. (5 Marks)

b) Which Risk Response Planning method can be suggested to manage the sales drop of the ABC Company? Justify your answer. (4 Marks)

c) Briefly explain the consequences of the Influence Diagram depicted in Figure 2 for Sales Improvement. (5 Marks)

d) Construct a 3×3 Probability Impact Matrix for analyzing the Organizational Risks of the ABC Company. Elaborate your assumptions and label the axes of the matrix clearly.

(5 Marks)

e) Complete both Rank and Response columns in the Risk Register given in Table 3 by analyzing the Probability Impact Matrix constructed in Question 3 part (f). You have to rank the reported risk in the Table 3 in ascending order (Give 1 for the high prioritized risk). (6 Marks)

No	Rank	Risk	Response
R5			
R2			
R8			
R9			
R3			

Question 04

a) Briefly explain following processes in <u>Project Communications Management</u>. (4 Marks)

Communications planning:	
Information distribution:	
Performance reporting:	
Administrative closure:	

b) Justify how <u>Conflicts</u> cause <u>Positive Consequences</u> for improving project communication. (2 Marks)

c) Using suitable examples explain how <u>Safety</u> and <u>Social</u> needs in the Maslow's needs hierarchy are important for a Software Developer? (4 Marks)

Safety:
Social:

Read the following scenario carefully and prepare a <u>Stakeholder Communication Analysis</u> for the National Highway Monitoring System. (5 Marks)

<u>National Highway Monitoring System – Project Communication Requirements</u>

Project Manager is responsible to email both the implementation specification and monthly progress report to the development team and the client respectively. The scheduled date for sending the progress report to the client will be the second week of every month. Implementation specification is emailed weekly to the development team. Additionally, the team leader has to submit the hard copy of status report to the Project Manager weekly. The hard copy of the training plan will be prepared by the technical writer of the team and is posted to the training subcontractor on 8th August, 2018.

Figure 3 depicts a <u>Resource Histogram</u> of a typical IT project which runs according to the Waterfall Model. Answer Question 4 part (d) and (e) by analyzing this Resource Histogram.
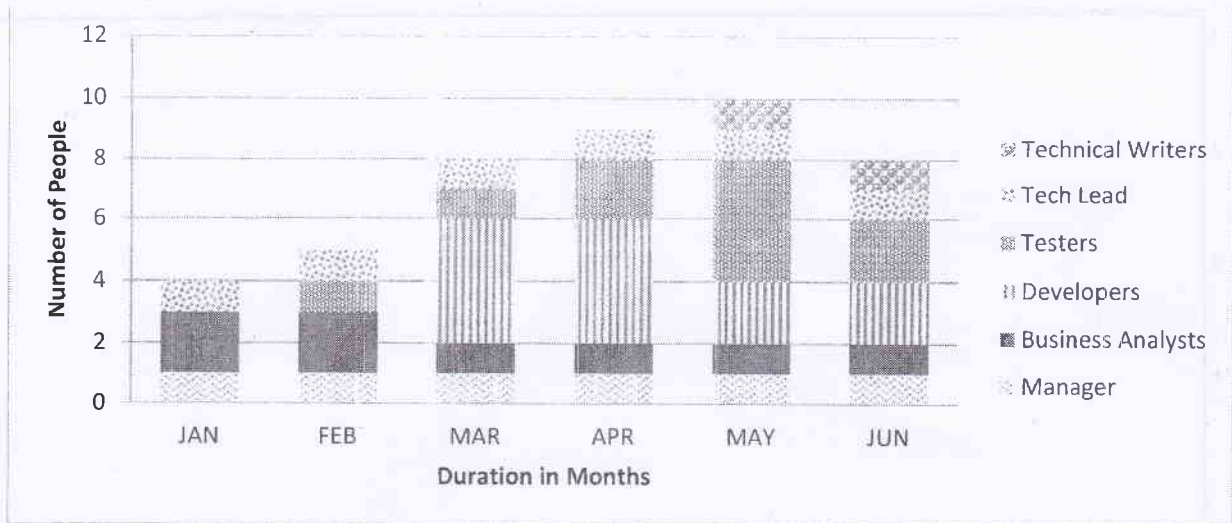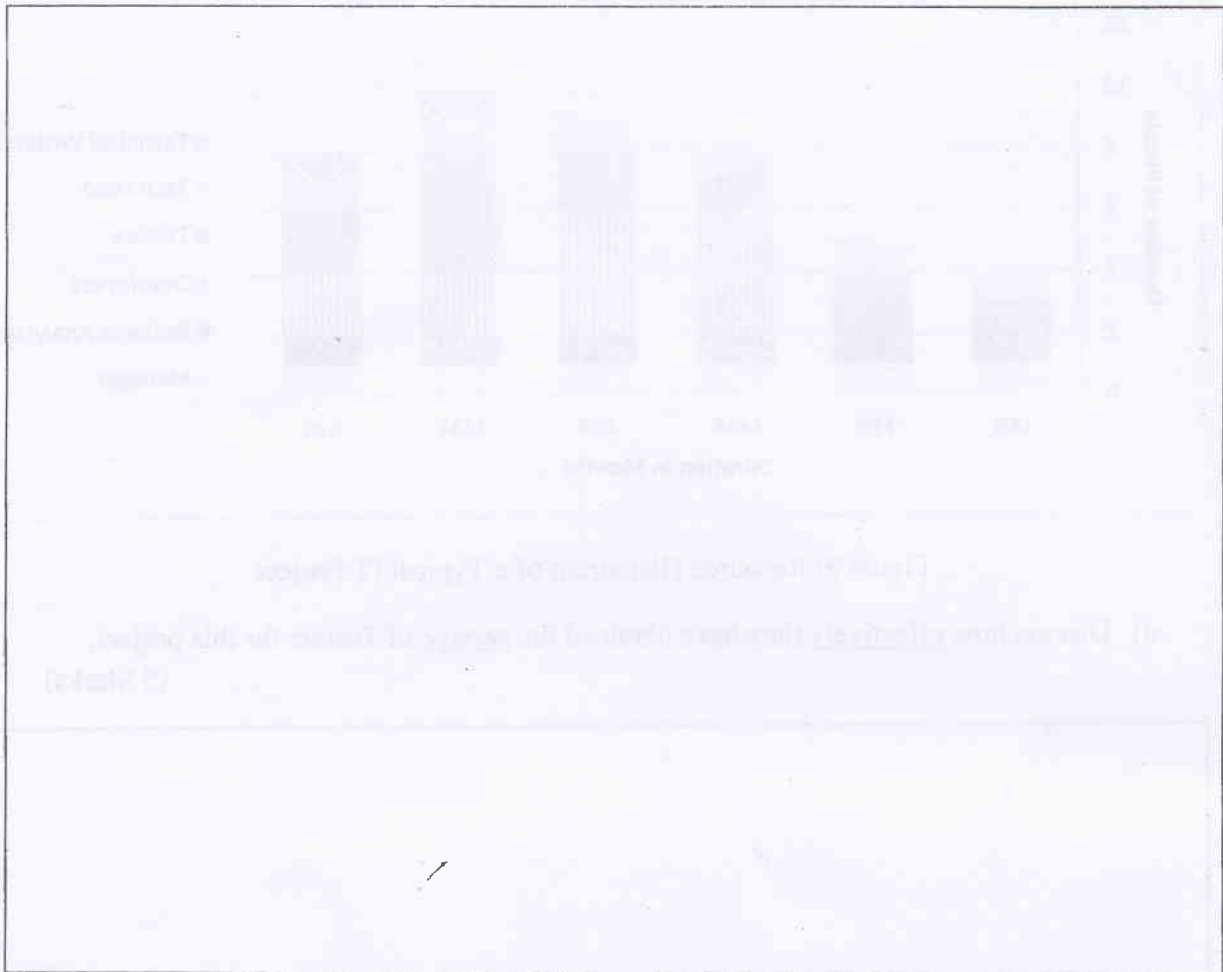

Figure 3: Resource Histogram of a Typical IT Project

d) Discuss how <u>effectively</u> they have obtained the <u>service</u> of Testers for this project.

(5 Marks)

e) How does the number of people change under each and every job role of this project if it runs based on the <u>Agile Methodology</u>? (5 Marks)

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