

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2023****Subject Code:3161013****Date:07-12-2023****Subject Name:Systems Engineering****Time:02:30 PM TO 05:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	MARKS
Q.1 (a) Define system engineering and give example of it.	03
(b) Give the comparison between following two systems perspectives: systems thinking and systems engineering.	04
(c) Explain the project life cycle in detail.	07
Q.2 (a) Which are three basic entities that constitute media on which systems operate?	03
(b) What are the sub divisions of information elements? Explain those divisions.	04
(c) What do you understand by system design hierarchy? Explain it with example.	07
OR	
(c) Explain the spiral model of system life cycle.	07
Q.3 (a) What is rapid prototyping?	03
(b) List out the most common methods of dealing with program risk.	04
(c) Write a note on system engineering management plan (SEMP).	07
OR	
Q.3 (a) Briefly explain need analysis phase.	03
(b) Explain the analysis pyramid used for analysis purpose.	04
(c) Write a note on work breakdown structures (WBS).	07
Q.4 (a) Explain briefly about model based systems engineering (MBSE).	03
(b) What is test and evaluation master plan (TEMP)?	04
(c) Draw and explain the concept exploration phase flow diagram.	07
OR	
Q.4 (a) What is risk reduction?	03
(b) Explain prototype development as a risk mitigation technique.	04
(c) Draw and explain the concept definition phase flow diagram.	07
Q.5 (a) Define modular maintainability, availability and redundancy.	03
(b) Which are the techniques to increase reliability?	04
(c) Give the parallels between the system development and test & evaluation planning.	07
OR	
Q.5 (a) What do you understand by in service support?	03
(b) Which are the key elements of production plan?	04
(c) Give the essential features of effective operational evaluation.	07
