**Operations Research**

**September 2022 Examination**

**Q1. XYZ Ltd is one of the leading manufacturing toys company and from last five years company is facing couple of issues such as lack of technical knowledge in regards to the technological advancements, significant competitors. The situation was challenging and it required technical expertise. As you are appointed as operations research consultant and advice company to use operations research tools. (10 Marks)**

**Ans 1.**

**Introduction:**

Organizational management can benefit from the analytical problem-solving and decision-making process known as operations research. In operations research, issues are deconstructed into their simplest forms before being mathematically analyzed and then resolved in a set of steps. Operations research is significant since it develops workable answers to challenging business problems. Data is used to generate information that can be used as knowledge and insight to enhance outcomes and inform future company decisions.

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**Q2. Operations research is not only applicable to manufacturing sector but other sectors as well. Discuss at least five applications of operations research in various industries. (10 Marks)**

**Ans 2.**

**Introduction:**

Operational research tools are an analytic technique of conflict resolution and decision-making that is beneficial in organisational management. In operations research, issues are deconstructed into their simplest forms before being mathematically analyzed and then resolved in a sequential manner. Since this systems made up of humans, machines, and processes may not possess comprehensive information, the main goal of O.R. is to establish a reasonable justification for decision-making in the absence of total knowledge. It is a method for making decisions and solving problems. It is regarded as a collection of rational, scientific

**Q3. Following table shows the various activities of a construction project along with their duration:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Activity** | **1-2** | **1-3** | **2-3** | **2-4** | **3-4** | **4-5** |
| **Duration** | **25** | **22** | **20** | **15** | **10** | **5** |

**a. Draw the network diagram for the project. (5 Marks)**

**b. Find the critical path. (5 Marks)**

**Kindly note: Students can draw network diagram in MS Word by following simple**

**steps.**

**1) Go to Insert option**

**2) Select Shapes**

**3) Use Circle, Arrow and draw a diagram**

**Ans 3.**

**Introduction:**

A network diagram is a picture that shows how a laptop or communication system network is organized. It demonstrates the routers, devices, hubs, firewalls, and other network building blocks as well as how they communicate directly. It is a diagram or schematic of your current network that shows the nodes and their relationships. The interactions between your elements and devices can be mapped out using network diagrams, which can also be used to show different network topologies. A project's network diagram will be very helpful for determining the overall duration of the project because it illustrates how operations are