# School of Business

**Department of Business**
**Mid Term Examination**

**Exam Date: 27 Sep 2023**
**Time : 90 Minutes**
**Marks : 50**

**Sem V - D1UA508T - Operations Research**

*Your answer should be specific to the question asked*
*Draw neat labeled diagrams wherever necessary*

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| **1)** | Explain about any two models of OR. | K2 | (2) |
| **2)** | What are the limitations of OR? | K1 | (3) |
| **3)** | Summarize the mathematical model of LPP. | K2 | (4) |
| **4)** | Illustrate unbounded solution in LPP. | K2 | (6) |
| **5)** | A Manufacturer produces two types of models M1 and M2. Each model of the type M1 requires 4 hours of grinding and 2 hours of polishing, whereas each model of the type M2 requires 2 hours of grinding and 5 hours of polishing. The manufacturer has 2 grinders and 3 polishers. Each grinder works 40 hours a week and each polisher works for 60 hours a week. Profit on M1 model is Rs. 3.00 and on model M2 is Rs.4.00. whatever is produced in a week is sold in the market. How should the manufacturer allocate his production capacity to the two types of models, so that he may make the maximum profit in a week? Write a suitable LPP mathemamtical model for the above question. | K3 | (6) |
| **6)** | Use Graphical Method to solve the following LP problem Minimize $Z=3x1+2x2$.<br>Subject to constraint<br>$5x1+x2\geq10$;<br>$x1+x2\geq6$;<br>$x1+4x2\geq12$;<br>$x1\geq0$, $x2\geq0$ | K3 | (9) |
| **7)** | Distinguish between bounded and unbounded graphical solutions of LPP, with diagram. | K4 | (8) |
| **8)** | Find the solution of given LPP-<br>Maximize $Z= x1+x2+3x3$<br>Subject to Constraint<br>$3x1+2x2+x3 \leq3$;<br>$2x1+x2+2x3\leq2$;<br>$x1\geq0$, $x2\geq0$<br>and also examine the result. | K4 | (12) |

**OR**

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| | Find the solution of given LPP-<br>Profit = Max $Z=4x1+10x2$<br>Subject to<br>$2x1+x2 \leq 10$<br>$2x1+5x2 \leq 20$<br>$2x1+3x2 \leq 18$<br>&<br>$x1, x2 \geq 0$ and also examine the result. | K4 | (12) |