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|  | **BALOCHISTAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY KHUZDAR**  **DEPARTMENT OF MECHANICAL ENGINEERING**  **M.E Fourth Semester Examination 2023** | | | | |
|  | **Department:** | **MED** | **Examination:** | **Final Examination 2023** | |
| **Subject:** | **Operation Research** | **Code:** | **ME- 508** | |
|  | **Max. Marks:** | **60** | **Time Allowed:** | **02(hours):20 (minutes)** | |
|  | **NOTE: ATTEMPT All QUESTIONS** | | | | **Marks** |
| **Question No. 1** | Consider the birth-and-death process with the following mean rates. The birth rates are λ0 = 2, λ1 = 3, λ2 = 2, λ3 = 1, and λn = 0 for n>3. The death rates are μ1 = 3, μ2 = 4, μ3 = 1 and μn = 2 for n>4.   1. Construct the rate diagram for this birth-and-death process. 2. Develop the balance equation | | | | 15 |
| **Question No. 2** | Apply Hungarian Algorithm on an assignment problem of assigning four jobs to four machines. The assignment costs are given as follows. Determine the minimum cost. | | | | 15 |
| **Question No. 3** | For the given network below, find the maximum total flow from the source (S) to sink (T), sing using Maximum Flow Algorithm. | | | | 15 |
| **Question No. 4** | A company purchase a raw material with purchasing cost is 16 Rs. Company whole year requirement or demand is 25000 units, holding cost is 6.4 per unit for one year. The ordering cost is 32 Rs. Find out the Economic Order Quantity (EOQ?) | | | | 15 |

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