OPERATIONS RESEARCH (2013 Scheme)

Time: 3 Hours   **Max Marks: 100**

- **Answer all the questions**
- *Ordinary calculator can be used*

Essays: **(2x20=40)**

1. A project has following time schedule:

Activity	Time in weeks	Activity	Time in weeks
1-2	4	5-7	8
1-3	1	6-8	1
2-4	1	7-8	2
3-4	1	8-9	1
3-5	6	8-10	8
4-9	5	9-10	7
5-6	4		

   Construct PERT network and compute critical path   and its duration.

2. A flat owner finds from his past records that the costs per year of running a truck whose purchase price is Rs. 8000 are as given below:

Year	1	2	3	4	5	6	7	8
Running Cost	1000	1500	1600	1700	2000	3000	3200	4300
Resale price	2000	1500	1000	800	500	400	300	300

   What is the optimum period of replacement.

Short Essays: **(2x10=20)**

3. What are the essential characteristics of OR. Mention different phases in an OR.

4. Solve the following AP.

Machinist	Job				
	1	2	3	4	5
A	10	3	3	2	8
B	9	7	8	2	7
C	7	5	6	2	4
D	3	5	8	2	4
E	9	10	9	6	10

Short notes: **(8x5=40)**

5. Mention briefly about the following
   - Ironic models.   - Analytical models   - Mathematical models.

6. A company produces three products A, B, and C. These products require three ores O_1, O_2, and O_3. The maximum qualities of the ores O1, O2, and O3 available are 22 tons, 14 tons and 14 tons respectively. For one ton of each of these products the ore requirements are:

	A	B	C
O1	3	-	3
O2	1	2	3
O3	3	2	0
Profit / ton (Rs is thousand)	1	4	5

   The company makes a profit of one, four and five thousands on each ton of the products A, B and C respectively. Formulate an LPP.

7. What is transportation problem. Add a note on mathematical formulation of the transportation problem.

8. Explain the meaning of a queue and state the object of queuing analysis.

9. Define :   - Competitive game   - Pay off matrix   - Pure and mixed strategies.

10. Phases of simulation.

11. What is CPM and PERT. What does each involve

12. What is meant by inventory problem and list the classification of different inventory methods.

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