Subject Code:- BSPGDT207

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, NIET BUSINESS SCHOOL, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

PGDM

TRIMESTER: II - THEORY EXAMINATION (2024 -2025)

Subject: Quantitative Techniques for Business Decisions

Time: 2.5 Hours   Max. Marks: 60

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. This Question paper comprises of three Sections -A, B, & C. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A   15

1. Attempt all parts:-

1-a.   A model is(CO1,K2)   1

    (a)   an essence of reality

    (b)

an approximation

    (c)   an idealization

    (d)   All of the above

1-b.   The occurrence of degeneracy while solving a transportation problem means that (CO2,K1)   1

    (a)   Total supply equals total demand

    (b)   The solution so obtained is not feasible

    (c)   The few allocations become negative

    (d)   None of the above

1-c.   Two person zero sum game means that (CO3,K2)   1

    (a)   Sum of losses to one player equals the sum of g a in s   toother player.

    (b)   Sum of losses to one player is not equal to thesum of gains to other.

    (c)   Both (a) and (b).

    (d)   None of the above.

1-d.   Customer behavior in which he moves from one queue to another in a multiple   1
        channel situation is (CO4,K4)

   (a)   Balking

   (b)
   Reneging

   (c)   Jockeying

   (d)   Alternating

1-e.   The time elapsed from the point the machine fails to perform its function to the   1
        point it is repaired and brought into operating condition is known as (CO5,K2)

   (a)
   Down time

   (b)   Break Down time

   (c)
   Both (a) and (b)

   (d)   Idle time

2. Attempt all parts:-

2.a.   Discuss the origin and development of OR(CO1,K6)   2

2.b.   Define transportation problem (CO2,K1)   2

2.c.   Define pure strategy (CO3,K1)   2

2.d.   Define the problem of Sequencing. (CO4,K1)   2

2.e.   Define project management .(CO5,K1)   2

SECTION-B   15

3. Answer any <u>three</u> of the following:-

3-a.   Discuss the different types of models used in Operations Research (CO1,K6)   5

3-b.

	A	B	C	Supply
I	2	7	4	5
II	3	3	1	8
III	5	4	7	7
IV	1	6	2	14
Demand	7	9	18	34

5

Obtain the basic feasible solution of given transportation problem.(CO2,k1)

3.c.   Using the following cost matrix ,determine optimal job assignment. (CO3,K5)   5

	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

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3.d.   Define a queue. Give some important application of queuing theory. (CO4,K1)   5

3.e.   Discuss the applications of replacement problems .(CO5,K6)   5

SECTION-C   30

4. Answer any <u>one</u> of the following:-

4-a.   Explain six applications of Operations Research (O.R) and describe one briefly.(CO1,K5)   6

4-b.   Define Operations Research. Discuss the historical development and scope of Operations research.(CO1,K6)   6

5. Answer any <u>one</u> of the following:-

5-a.   Find the Optimum transportation Schedule and minimum total cost by Using VAM and u-v method of transportation problem: (CO2,K1)   6

	D1	D2	D3	ai
O1	10	7	8	45
O2	15	12	9	15
O3	7	8	12	40
bj	25	55	20	

5-b.   Find the Optimum transportation Schedule and minimum total cost by Using VAM and u-v method of transportation problem:(CO2,K1)   6

	D1	D2	D3	ai
O1	12	7	9	40
O2	15	12	9	20
O3	7	8	12	40
bj	30	50	20	

6. Answer any <u>one</u> of the following:-

6-a.   Discuss the uses of assignment problems. (CO3,K6)   6

6-b.   Give the working rule for Hungarian method (CO3,K1)   6

7. Answer any <u>one</u> of the following:-

7-a.   Customers arrive at a sale countermanded by a single person according to a Poisson process with a mean rate of 20per hour. The time required to serve a customer has an exponential distribution with a mean of 100 seconds. Find the average waiting time of a customer. (CO4,K4)   6

7-b.   We have five jobs, each of which must go through the machine A,B and C in the order ABC.   6

Job No.	1	2	3	4	5
Machine A	8	4	6	7	8
Machine B	5	6	2	3	4
Machine C	4	9	8	6	5

Determine a sequence for the jobs, that will minimize the total elapsed time and also calculate idle time.(CO4,K5)

8. Answer any <u>one</u> of the following:-

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8-a.   Discuss various tools which can be used to prevent scope creep during project execution.CO5,K6)   6

8-b.   Explain the importance of project scheduling in ensuring timely project completion. .(CO5,K2)   6

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