# B.B.A DEGREE EXAMINATION,NOVEMBER 2019
## II Year III Semester
## Business Maths and Operations Research

**Time : 3 Hours** **Max.marks :75**

### Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Find the Simple Interest on Rs. 5,000 at 10% for 3 years.
2. What is Nominal due date?
3. Write the formula for Compound Interest?
4. Define Probability.
5. What do you mean by mutually exclusive events?
6. Write the properties of an assignment problem.
7. What is an unbalanced assignment problem?
8. What is Transportation problem?
9. What is Free Cost?
10. What is the Use of PERT?
11. What is Optimal solution?
12. What do you mean by slack variable?

### Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Find the face value of a bill due after 8 months whose true discount is Rs.550 at $5\frac{1}{2}$% per annum
14. Compute the interest on Rs.1,000 for 10 years at 4% per annum, the interest being paid annually.
15. A can hit a target four times in 5 shot, B three times in 4 shots, and C twice in 3 shots. Calculate the probability(i) A,B,C all may hit (ii) B, C may hit and A may lose (iii) C, A may hit and B may lose.
16. Discuss the procedure used for obtaining an optimal solution to an assignment problems.

17. Find the optimal solution for the assignment problem with the following cost matrix

| Sales man | W | X | Y | Z |
|---|---|---|---|---|
| A | 11 | 17 | 8 | 16 |
| B | 9 | 7 | 12 | 6 |
| C | 13 | 16 | 15 | 12 |
| D | 14 | 10 | 12 | 11 |

18. Solve the following LPP graphically

    Max Z=4x+7y
    Subject to
    X+Y =60
    X=40
    Y =40 and X,Y=0

19. What is Network Analysis? Given the following information develop a network

| Activity | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| Pre-activity | - | - | A | B | A | C,D |

**Section C** $(2 \times 15 = 30)$ Marks

Answer any **TWO** questions

20. Explain Bayes Theorem and list the application of Bayes Theorem in Management.

21. Find the basic feasible solution to the following transportation problem using north west corner method

| | E | F | G | H | Availability |
|---|---|---|---|---|---|
| A | 4 | 8 | 10 | 16 | 100 |
| B | 7 | 2 | 3 | 1 | 200 |
| C | 5 | 9 | 11 | 2 | 300 |
| Requirement | 160 | 240 | 105 | 95 | |

22. Develop a network with the following information

| Activity | 1-2 | 1-3 | 2-3 | 2-4 | 3-4 | 4-5 |
|---|---|---|---|---|---|---|
| Duration | 20 | f25 | 10 | 12 | 6 | 10 |

23. A manufacturer makes two products P1 and P2 using two machines M1 and M2. Product P1 requires 2 hours on machine M1 and 6 hours on machine M2. Product P2 requires 5 hours on machine M1 and no time in machine M2. There are 16 hour of time per day available on machine M1 and 30 hours on M2. Profit margin from P1 and P2 are Rs.2 and Rs.10 per unit respectively. What should be the daily production mix to optimize profit?

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