

BACHELOR OF BUSINESS ADMINISTRATION
Second Semester
QUANTITATIVE TECHNIQUES
(BBA - 10)

Duration: 3Hrs.

Full Marks: 70

Part-A (Objective) =20
Part-B (Descriptive) =50

PART-B (Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

1. Evaluate the following

5+5=10

i. $\lim_{x \rightarrow 3} \frac{\sqrt{x} - \sqrt{2}}{x - 2}$

ii. $\lim_{x \rightarrow 1} \frac{x^2 + 2x + 5}{x^2 + 1}$

2. Find,

5+5=10

i. $\frac{d}{dx} (x + \sqrt{x})$

ii. $\frac{d}{dx} \log(X + 1)$

3. Distinguish between Slack variable, Surplus variable, and artificial variable. Solve the following LPP by Graphical Method.

5+5=10

$$\begin{aligned} \text{Max } Z &= 40X + 30 Y \\ 2X + 4Y &\leq 300 \\ X + Y &\leq 200 \\ X, Y &\geq 0 \end{aligned}$$

4. i. Proved that,

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

5+5=10

ii. A card is drawn from a pack of 52 cards. What is the probability that it is either a black or a king card.

5. i. A bag contains 3 white and 2 black balls. Two balls are drawn at random without replacement. Determine the probability of getting both the balls black.

ii. Define conditional probability.

7+3 = 10

6. Find the value of the following

5+5 = 10

i. $\int (x^2 - x + 1) dx$

ii. $\int (x^3 - \frac{1}{\sqrt{x}} - \frac{1}{x^2}) dx$

7. Define Sample & population with examples. Mention three advantages and disadvantages of census.

5+5 = 10

8. An oil company has two units A and B, which produce three different grades of oil—super fine, medium, and low grade. The company has to supply 12, 8, and 24 barrels of super fine, medium and low grade oil respectively per week. It costs the company Rs.1000 and 800 per day to run the units A and B respectively.

In a day unit A produces 6, 2, and 4 barrels and unit B produces 2, 2, and 12 barrels of super fine, medium, and low grade respectively. The manager has to decide on how many days per week should each unit be operated in order to meet the requirement at minimum cost.

Formulate the LPP model.

10

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Duration: 20 minutes

Marks – 20

PART-A (Objective)

Time: 20 mins

Total Marks: 20

I. Choose the correct answer:

1×20=20

1. The distinguishing feature of an LP model is the relationship among all variables is _____

- a. Non linear
- b. linear
- c. Additive
- d. None of these

2. A census survey is done on

- a. part of population
- b. whole population
- c. half of the population.
- d. None of the above

3. Random sampling is a _____ sampling.

- a. probability
- b. non probability sampling
- c. judgment sampling
- d. None of these

4. If A and B are independent then $P(A/B) = ?$

- a. A
- b. B
- c. AB
- d. None of these

5. A bag contains 3 red, 2 white and 4 black balls. What is the probability of drawing 2 black balls?

- a. 1/6
- b. 1/9
- c. 0
- d. None of these

6. Operations research approach is _____.

- a. Multi-disciplinary
- b. scientific
- c. Institutive
- d. All of the above

7. Two events A and B are said to be independent if

- a. $P(AB) = p(A) + P(B)$
- b. $P(AB) = P(A) - P(B)$
- c. $P(AB) = P(A).P(B)$
- d. None of these.

8. $\int \frac{1}{x} dx = ?$

- a. x^{-1}
- b. $\log x$
- c. 0
- d. none of these

9. $P(\bar{A} \cap B)$ is known as the probability of occurrence of

- a. A only
- b. B only
- c. Both A and B
- d. None of these

10. The while solving an LP model graphically, the area bounded by the constraints is called

- a. feasible region
- b. infeasible region
- c. unbounded solution
- d. none of the above

11. $\lim_{x \rightarrow 0} \frac{e^x - 1}{x} = ?$

- a. 0
- b. 1
- c. 2
- d. None of these

12. $\frac{d}{dx} x^0 = ?$

- a. 0
- b. 1
- c. 2
- d. 3

13. Data which are collected already by someone are known as _____.

- a. Secondary data
- b. Primary data
- c. Census
- d. None of these

14. What is the chance that a leap year selected at random will contain 53 Sundays?

- a. 1/7
- b. 2/7
- c. 3/7
- d. None of these

15. $\lim_{x \rightarrow 0} 5 = ?$

- a. 5
- b. 0
- c. 1
- d. None of the above

16. Which of the following is non-probability sampling?

- a) Purposive sampling
- b) Random sampling
- c) Cluster sampling
- d) Stratified sampling

17. Most of the constraints in the linear programming problem are expressed as _____.

- a. Equations
- b. Inequalities
- c. Both (a) and (b)
- d. None of these

18. The difference between the highest observation and the lowest observation of a distribution is known as _____.

- a. Class limits
- b. Class boundaries
- c. Width of a class
- d. Range

- a. 0 to 1
- b. -1 to 1
- c. 1 to 2
- d. None of the above

20. To convert \geq inequality constraints into equality constraints, we must

- a. Add a surplus variable
- b. Subtract an artificial variable
- c. Subtract a surplus variable and an artificial variable
- d. Add a surplus variable and subtract an artificial variable



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Date Stamp: _____

| COURSE _____ PAPER Code: _____ NAME OF THE PAPER: _____ SEMESTER _____ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Instructions to Candidates | | Session: 2016-17 Course _____ Roll No. _____ Enrollment No. _____ Semester _____ Name of the Paper _____ _____ Paper Code _____ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <ol style="list-style-type: none"> 1. This answer booklet has 4 pages. Please check before writing whether it is complete or in good condition. 2. Do not write your name anywhere in the answer booklet. 3. Write legibly on both sides of the paper 4. You may use some space for any rough notes or calculation on the answer booklet if you need. These rough notes, calculations must be scored out before submitting the answer booklet. 5. Do not bring any book or loose paper in the examination hall. 6. Do not tear any page from the answer booklet. 7. Do not write anything on the question paper or blotting paper or any pieces of paper while you are in the examination hall. 8. Any act of indiscipline or misbehavior in the examination hall will result in your expulsion. 9. No examinee is allowed to leave the examination hall until 30 minutes lapse after the commencement of the examination. 10. Additional answer sheet will be supplied after the main answer booklet is completed. | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">For Objective Type Questions</th> </tr> <tr> <th style="font-size: small;">Page No.</th> <th style="font-size: small;">Marks</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr> <td style="text-align: center;">Total</td> <td> </td> </tr> <tr> <th colspan="2" style="text-align: center;">For Descriptive Type Questions</th> </tr> <tr> <th style="font-size: small;">Question No.</th> <th style="font-size: small;">Marks</th> </tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr> <td style="text-align: center;">Total</td> <td> </td> </tr> <tr> <td style="text-align: center;">Grand Total</td> <td> </td> </tr> </tbody> </table> | For Objective Type Questions | | Page No. | Marks | | | | | | | | | | | | | | | | | | | | | Total | | For Descriptive Type Questions | | Question No. | Marks | | | | | | | | | | | | | | | | | | | Total | | Grand Total | |
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Scrutinizer's Signature

Examiner's Signature

Invigilator's Signature