## 22 OE 301(II)-POWER BI

| Course Code | **22 OE 301(II)** | Course Delivery Method | Classroom / Blended Mode |
|---|---|---|---|
| Credits | **4** | CIA Marks | 30 |
| No. of Lecture Hours / Week | 05 | Semester End Exam Marks | 70 |
| Total Number of Lecture Hours | 75 | Total Marks | 100 |
| Year of Introduction :1987 | Year of Offering :2017 | Year of Revision :2019 | Percentage of Revision :10% |
| Course Focus | **E**mployability | **E**ntrepreneurship | **S**kill Development. |

**Course Objective:**The process of analyzing data using the tools those are at the core of Microsoft's self-service BI

**COURSE OUTCOMES:**By the end of this course, students should be able to

CO-1 Understand the concept and use of Power BI
CO-2 Prepare the data various sources, clean, merge, filter data and model view
CO-3 Prepare basic and advanced visualizations
CO-4 Calculating columns and DAX and use analytics
CO-5 Creating and Publishing interactive report & Dashboards

### COURSE CONTENT

**UNIT-I: Getting Started with Power BI:**What Is Power BI?,Understanding the Different Components of Power BI,Understanding Power BI as Part of the Power platform,Install Power BI Desktop,Start and Pin Power BI Desktop,Explore the Power BI Workspace
**Connecting Power BI to Your Data:**How Power Query Editor Works, with Power BI Desktop,Connect Power BI Desktop to a Local File,Save, Close, and Open Power BI Reports,Start Working with the Sample Dataset,Connect to a Power BI Dataset

**UNIT-II: Cleaning and Shaping Data:**Remove Duplicate Values,Replace Values in a Column,Split a Column Using a Delimiter,Group data, add a Calculated Column,Add an Index Column
**Modeling Data in Model View:**Create Dimension Tables,Create Relationships between Tables, Create a Star Schema,Create a Hierarchical Schema, Using the Properties Pane

**UNIT-III: Creating Basic Visualizations:**Create a Bar Chart,Apply Filters to Visuals,Format the Y-Axis of a Bar Chart,Format the X-Axis of a Bar Chart,Add and Format the Data Category of a Bar Chart,Move a Bar Chart's Legend and Add Gridlines,Add a Zoom Slider and Update

Bar Colors,Add Data Labels to a Bar chart,Add an Image to the Plot Area Background,Create a Line Chart or Area Chart, Format the Axes of a Line or Area Chart,Add a Legend to a Line or Area Chart,Move the Legend and Add Gridlines to a Line or Area Chart,Add a Zoom Slider and Steps to a Line or Area Chart, add Data Markers and Labels to a Line or Area Chart, Format the Data Labels of a Line or Area Chart.

**Creating Advanced Data Visualizations:**Create and Format a Gauge Chart,Create a Matrix Visual, Format a Matrix Visual, Format the Values and Column Headers of a Matrix Visual, Format the Row Headers of a Matrix Visual, Format the Row Subtotals and Grand Totals, of a Matrix Visual, Format the Specific Column and Cell Elements of a Matrix Visual, Create a Waterfall Chart,Format a Waterfall Chart,Format the X-Axis and Legend of a Waterfall Chart, Add and Format Breakdowns in a Waterfall Chart, Create, Format, and Label a Funnel Chart,Create a Pie Chart or Donut Chart, Format a Pie Chart or Donut Chart,Create a Tree map Chart,Format a Tree map Chart.

**UNIT-IV: Showing Geographic Data on Maps:**Create a Proportional Symbol Map,Create a Choropleth Map, Add Conditional Formatting to a Choropleth Map, Enable Power BI's Preview Features, Create an Isarithm Map, and Create a Skyscraper Map.**Using Calculated Columns and DAX:**Understanding DAX and Why You Should Use It,createmeasures, create columns , DAX Functions.**Using Analytics and Machine Learning:**IdentifyOutliers,Find Groups of Similar Data by Clustering,Create a Dataflow, Apply Binary Prediction with AutoML.

**UNIT-V: Creating Interactive Reports:**Planning to Create a Report,Start a Report and Add a Title, Add Visuals to a Report, Add Slicers to a Report,Control Which Visuals and Slicers Interact, Enable and Control Drill-Through Actions, Split a Page into Sections, Add Bookmarks and Navigation to a Report

**REFERENCES:**


1. Alexander Loth- Teach Yourself VISUALLY Power BI- John Wiley & Sons,2023 ISBN: 978-1-119-90378-9
2. Devin Knight, Erin Ostrowsky Mitchell Pearson,Bradley Schacht Microsoft Power BI Quick Start
3. Guide, 3EditionPackt Publishing 2022
4. Dan Clark- Beginning Power BI: A Practical Guide to Self-Service Data Analytics with Excel 2016 and Power BI Desktop Second Edition Apress
5. Orrin Edenfi eld, Edward Corcoran- Microsoft Power BI Data Analyst Certification GuidePackt Publishing 2022ISBN 978-1-80323-856-2
6. Alan Murray- Power BI for Job seekers BPB Online, 2023

https://books.google.co.in/books?id=Da8-DgAAQBAJ&newbks=0&printsec=frontcover&hl=en&source=newbks_fb&redir_esc=y#v=onepage&q&f=false

**MODEL QUESTION PAPER**
**M.B.A. (REGULAR) DEGREE EXAMINATION**
**Third Semester**
**22 BA 301 :: OPERATIONS RESEARCH**
**(2020-2021 Regulation Onwards)**

**Time: Three hours** **Maximum Marks: 70**

**SECTION A – (5X4 = 20 Marks)**

***Answer the Following Questions***

1. a) Explain Scope of O.R. (CO1) (L1)
   (OR)
   b) Explain Slack and Surplus variables (CO1) (L1)
2. a) Compare Total and free floats(CO2)(L2)
   (OR)
   b) Compare Duality and L.P (CO3)(L2)
3. a) Demonstrate Unbalanced Assignment Problem(CO 3)(L3)
   (OR)
   b) Demonstrate Unbalanced Transportation Problem (CO3)(L3)
4. a) Define Pure and Mixed Strategy(CO 4)(L1)
   (OR)
   b) Define Decision Theory (CO 4)(L1)
5. a)What are the Characteristics of a queuing system (CO5)(L1)
   (OR)
   b) What is Simulation(CO5)(L1)

**SECTION- B**

**(5X8 = 40 Marks)**

**Answer All Questions.**

**2.**a) Solve by Graphical method(CO 1)(L 3)
Maximise z= $5x_1+7x_2$
Subject to constraints:
$2x_1+3x_2<=15$
$2x_1+ x_2<=12$
$x_1+3x_2<=10$, and x1,x2>=0.

**Or**

b) Solve the following problem by using Big M method(CO 1)(L3)
Maximize Z = $3 x_1 + 2x_2 +3x_3$
Subject to constraints:
$2 x_1 +3 x_2>= 24$
$3 x_1 + \mathbf{x_2}>= 12$
$2 x_1+2 x_2>=16$, and $x_1,x_2>=0$.

**3**. a) One unit of A contributes Rs. 7 as profit and requires 3 units of Raw material and 2 hours of labour. One unit of product B contributes Rs. 5 as profit and requires 2 units of raw material and one hour labour. Availability of raw material at present is 45 units and that of labour as 40 hours. Formulate it as linear programming problem and write its dual.(CO 2)(L6)

**Or**

b) Explain briefly the network models and its applications?(CO 2)(L2)

**4.**a) Solve the following transportation problem starting with the initial solution obtained by VAM(CO 3)(L3)

| | D1 | D2 | D3 | D4 | Supply |
|---|---|---|---|---|---|
| O1 | 2 | 2 | 2 | 1 | 3 |
| O2 | 10 | 8 | 5 | 4 | 7 |
| O3 | 7 | 6 | 6 | 8 | 5 |
| Required | 4 | 3 | 4 | 4 | |

**Or**

b) A company has 4 machines to do 3 jobs. Each job can be assigned to one and only one machine. The cost of each job on each machine is given below. Determine the job assignments which will minimize the total cost.(CO 3)(L5)

| Job/Machine | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| Job 1 | 18 | 24 | 28 | 82 |
| Job 2 | 8 | 18 | 17 | 18 |
| Job 3 | 10 | 15 | 19 | 22 |

**5.**a) Solve the following game using principle of dominance(CO 4)(L3)

| | | Player B | | | | | |
|---|---|---|---|---|---|---|---|
| | | B1 | B2 | B3 | B4 | B5 | B6 |
| | A1 | 4 | 2 | 0 | 2 | 1 | 1 |
| | A2 | 4 | 3 | 1 | 3 | 2 | 2 |
| Player A | A3 | 4 | 3 | 7 | -5 | 1 | 2 |
| | A4 | 4 | 3 | 4 | -1 | 2 | 2 |
| | A5 | 4 | 3 | 3 | -2 | 2 | 2 |

**Or**

b) A and B play a game in which each has three coins, a 5 paise, a 10 paise and a 20 paise.

Each selects a coin without the knowledge of the others choice. If the sum of the coins thus elected by them is an odd amount, A wins B's coin. If the sum is even B wins A's coin.

Find the best strategy for each player and the value of the game.(CO 4)(L1)

**6.** (a)A TV repairman finds that the time spent on his jobs has an exponential distribution with mean 30 minutes. If he repairs sets in the order in which they come in, and if the arrival of sets is approximately Poisson with an average rate of 10 per 8-hour day, what is repairman's expected idle time each day? How many jobs are ahead of the average set just brought in?(CO 4)(L1)

**Or**

(b) What is simulation? Discuss the advantages and limitations of Simulation.(CO 5)(L1)

**SECTION C – (Compulsory) 1X10 = 10 Marks**

7. Construct the Network for the following Project and determine the following :(CO 2)(L3)

(i) Critical Path

(ii) Earliest Slack, Earliest Finish, Latest Slack, Latest Finish

(iii) Total Float, Free Float.

| Activity | 1-2 | 2-3 | 2-4 | 3-5 | 3-6 | 4-6 | 4-7 | 5-8 | 6-8 | 7-8 |
|---|---|---|---|---|---|---|---|---|---|---|
| Duration | 2 | 3 | 5 | 4 | 1 | 6 | 2 | 8 | 7 | 4 |

***