Hall Ticket No: | | | | | | | | | | | Question Paper Code: 22MBAP115

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MBA II Year I Semester (R22) Supplementary End Semester Examinations, July - 2025

OPERATIONS RESEARCH

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.No 1 to 5 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1(A)	A company produces two products A and B, which possess raw materials, 400 quintals and 450 labor hours. It is known that 1 unit of product A requires 5 quintals of raw materials and 10-man hours and yields a profit of Rs 45. Product B requires 20 quintals of raw materials, 15-man hours and yields a profit of Rs 80. Formulate LPP.	10M	1	6
	OR			
Q.1(B)	Solve the L.P.P. by Simplex method: $Max.Z = 5x_1 + 3x_2$ Subject to $x_1 + x_2 \le 2$, $5x_1 + 2x_2 \le 10$, $3x_1 + 8x_2 \le 12$, $x_1, x_2 \ge 0$	10M	1	3
Q.2(A)	Determine the optimum transportation cost for the following Transportation problem:	10M	2	5

	D1	D2	D3	D4	Availability
P1	1	2	1	4	30
P2	3	3	2	1	50
P3	4	2	5	9	20
Requirement	20	40	30	10	

OR

Q.2(B)	Solve the following assignment problem to find the maximum total expected sale					10M	2	3

	1	2	3	4
A	42	35	28	21
B	30	25	20	15
C	30	25	20	15
D	24	20	16	12

Q.3(A)	Explain the terms i) Two-Person zero-sum games ii) Pay-off matrix iii) Minimax-Maximin principle and iv) Saddle point and value of the game.	10M	3	5
	OR			
Q.3(B)	Evaluate the optimal strategies of player A & B and Determine value of the game by using dominance property.	10M	3	5

		Player B		
		B1	B2	B3
Player A	A1	1	7	2
	A2	6	2	7
	A3	5	1	6

Q.4(A)	A fleet owner finds, from his past records, that the cost per year of running vehicle and resale value per year as shown below and whose purchase price is Rs. 7000	10M	4	5

Year	1	2	3	4	5	6	7	8
Running Cost (Rs.)	900	1200	1600	2100	2800	3700	4700	5900
Resale value (Rs.)	4000	2000	1200	600	500	400	400	400

Determine when the vehicle should be replaced.

OR

Q.4(B) A dentist who schedules all his patients for 30 minutes appointments. Some of the patients take more or less than 30 minutes depending on the type of dental work to be done. The following summary shows the various categories of work , their probabilities and the time actually needed to complete the work: 10M 4 5

Category	Filling	Crown	Cleaning	Extracting	Check-up
Time required (mim.)	45	60	15	45	15
Probability	0.40	0.15	0.15	0.10	0.20

Simulate the dentist's clinic for 4 hours and determine the average waiting time for the patients as well as the idleness of the doctor. Assume that all the patients show up at the clinic exactly at their scheduled arrival time, starting at 8.00 a.m. Use the following random numbers for handing in the above problem:

40 82 11 34 25 66 17 79

Q.5(A) In a service department manned by one server, on average 8 customers arrive every 5 minutes while the server can serve 10 customers in the same time assuming Poisson distribution for arrival and exponential distribution for service rate. Determine: 10M 5 5

a) Average number of customers in the system.
b) Average number of customers in the queue.
c) Average time a customer spends in the system.
d) Average time a customer waits before being served.

OR

Q.5(B) The following table gives the activities of construction project and duration: 10M 5 5

Activity	1-2	1-3	2-3	2-4	3-4	4-5
Duration (days)	20	25	10	12	5	10

Draw the network for the project. Determine the critical path and project duration.

Q.6 **Case Study** 10M 4 6

J.M Bakers has to supply only 200 pizzas every day to their outlet situated in city bazaar. The production of pizzas varies due to the availability of raw materials and labor for which the probability distribution of production by observation made is as follows:

Simulation Problem

Production per day	196	197	198	199	200	201	202	203	204
Probability	0.06	0.09	0.10	0.16	0.20	0.21	0.08	0.07	0.03

Simulate and formulate the average number of pizzas produced more than the requirement and the average number of shortage of pizzas supplied to the outlet for the random numbers of 26, 45, 74, 77, 74, 51, 92, 43, 37, 29, 65, 39, 45, 95 and 93.

END

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 22MBAP116

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MBA II Year I Semester (R22) Supplementary End Semester Examinations, July - 2025

STRATEGIC MANAGEMENT

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part A or Part B only. Q.no 6 which is a case study is compulsory.

Q.No	Question	Marks	CO	BL
Q.1(A)	Discuss the importance of creating sustainable mission statement? While formulating the mission statement for an organization which aspects will you consider?	10M	1	2
	OR			
Q.1(B)	Explain the steps involved in Strategic Decision-Making Process.	10M	1	2
Q.2(A)	Explain GE Nine Cell model. What is the advantage of GE Nine Cell over the BCG matrix?	10M	2	3
	OR			
Q.2(B)	Critically evaluate is TOWS matrix?	10M	2	3
Q.3(A)	Explain about corporate restructuring strategic options at business level and functional level.	10M	3	2
	OR			
Q.3(B)	Strategy includes the determination and evaluation of alternative paths to an already established mission or objective and eventually, choice of the alternatives to be adopted.' Explain the statement underlining the process of strategy formulation.	10M	3	2
Q.4(A)	Compare the differences between strategy formulation and its implementation?	10M	4	2
	OR			
Q.4(B)	Discuss the role of organization structure in strategic management.	10M	4	3
Q.5(A)	Describe the steps in strategic evaluation and control process.	10M	5	2
	OR			
Q.5(B)	Explain any three methods/techniques used in strategic control systems, giving examples.	10M	5	3
Q.6	**Case Study** Apple Inc sued Samsung Electronics claiming the South Korean firm's Galaxy line of mobile phones and tablets "slavishly" copies the iPhone and iPad, according to court papers, a move analysts say is aimed at keeping its close rivals at bay. Apple is one participant in a web of litigation among phone makers and software firms over who owns the patents used in smart phones, as rivals aggressively rush into the smart phone and tablet market which the US firm jumpstarted with iPhone and ipad. Nokia has also sued Apple, which in turn has sued Taiwanese handset maker HTC Corp. Samsung is one of the fastest growing smart phone makers and has emerged as Apple's strongest competitor in the booming tablet market with models in three sizes but it remains a distant second in the space. Its Galaxy products use Google Inc's Android operating system, which directly competes with Apple's mobile software. However, Apple's claims against Samsung focus on Galaxy's design features, such as the look of its screen icons, the lawsuit said. John Jackson, an analyst with CCS Insight, said Samsung is essentially	10M	5	5

Apple's only real tablet competitor at this stage. "It's clear that they do not intend to let Apple run away with the category", Jackson said.

Samsung faces the challenge of moving beyond being a hardware company, clever at copying ideas, to becoming more creative, better adept at software, at a time when consumer gadgets are getting smarter all the time.

It has yet to come up with the kind of original, iconic, market-leading products that powered brands such as Apple's i-series or Sony Corp's Walkman. Nor has it taken the kind of initiatives in software that Google and Apple did to thwart Microsoft.

The lawsuit, field on Friday, alleges Samsung violated Apple's patents and trademarks.

"This kind of blatant copying is wrong", Apple spokeswoman Kristin Huguet said in a statement.

Samsung said it would respond to the legal action "through appropriate legal measures to protect our intellectual property."

"Samsung's development of core technologies and strengthening our intellectual property portfolio are keys to our continued success," it said in a statement.

Retaliation

Hit by a lawsuit from Apple last week, Samsung returned the favor yesterday, countersuing the iPhone and iPad maker over claims of patent infringement.

In its suit filed in Seoul Central District Court, Samsung claims that Apple is violating five different patents. Samsung has also field a suit in Tokyo, citing two patent infringements, and another in Manheim, Germany, citing three instances of infringement.

A statement on the Samsung Web site says that the company is "responding actively to the legal action taken against us in order to protect our intellectual property and to ensure our continued innovation and growth in the mobile communications business."

Symbiotic Relationship

Apple has reportedly become Samsung's biggest customer in a move that can boggle the mind. How can Apple, a rival of Samsung's electronics unit, also be the largest customer ? And how long can this scenario go on ?

According to the Korea Economic Daily, Apple is poised to buy $7.8 billion in components from Samsung. These components range from liquid crystal displays, application processors and flash memory used in the iPhone and Pad.

If you bring this up in conversation, the Apple - Samsung relationship can become a headscratcher. Apple's iPhone battles Samsung's Galaxy phones. The Galaxy Tab takes on the iPad. Meanwhile, Samsung's tablets can't match the iPad on price - even though the Korean electronics provider has many parts lying around the company.

How is this Apple - Samsung thing even possible ? Apple certainly wouldn't sell components to Samsung if the roles were reversed. If you carry this line of thinking out to an extreme Apple could squash Samsung with its own parts. It's strange.

Questions :

(a) Describe the strategies adopted by Apple to become the leader in the smart phone market.

(b) How can Samsung Electronics Counteract Apple to capture the market ? Explain with relevant R and D strategy that it can pursue.

Discuss the different ways through which expansion into foreign markets can be achieved.

*****END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 22MBAP408

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MBA II Year I Semester (R22) Supplementary End Semester Examinations, July - 2025

HR ANALYTICS

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either A or B only. Q.no 6, which is a case study is compulsory.

Q.No	Question	Marks	CO	BL
Q.1(A)	How has mobile and social data explosion affected HR analytics? Comment on the different stages of HR analytics with reference to mobile and social data.	10M	1	2
	OR			
Q.1(B)	Discuss the objective and importance of HR analytics in the present digital business environment. Support the answer with examples from real business world.	10M	1	2
Q.2(A)	What is Wilcoxon Rank Sum test? How is it used in evaluating the performance of employees at work?	10M	2	3
	OR			
Q.2(B)	Comment on HR cost per employee? How this HR metric influence the recruitment and selection processes?	10M	2	4
Q.3(A)	How can you relate employee retention with talent management? Can it be an invisible competitive advantage of a firm? Comment.	10M	3	4
	OR			
Q.3(B)	Elucidate the various methods to measure productivity of the employees. Comment on their relative advantages and disadvantages	10M	3	4
Q.4(A)	How is the training cost per employee estimated? Assume data and estimate its training cost and interpret the results with respect to training budget, cost and ROI.	10M	4	3
	OR			
Q.4(B)	Explain the various work efficiency employee performance metrics. Support your answer with appropriate illustrations.	10M	4	2
Q.5(A)	Discuss the different types of leave benefits offered by companies to e Comment on the HR protocols associated with CL, ML, and EL.	10M	5	2
	OR			
Q.5(B)	Elaborate the different quantitative applications in compensation. a) Percentiles b) Cost benefit analysis c) Comp ratios	10M	5	2
Q.6	**CASE STUDY** **Enhancing Employee Training Metrics and Performance Measurement at MTZ Corporation.** **Introduction:** MTZ Corporation, a leading global organization, recognizes the critical importance of employee training and performance to maintain a competitive edge. However, the current system for measuring the effectiveness of training programs and employee performance lacks precision, hindering the company's ability to optimize its workforce.	10M	5	5

Challenges:

Ineffective Training Metrics:

The current metrics for evaluating training programs do not provide a clear understanding of their impact on employee performance and organizational goals.

Subjectivity in Performance Evaluation:

Performance evaluations are subjective, leading to inconsistencies and potential biases. Employees feel that the process does not accurately reflect their contributions.

Lack of Continuous Feedback:

There is a gap in providing continuous feedback to employees, impeding their professional development and the overall improvement of organizational performance.

Proposed Solutions:

Implement Key Performance Indicators (KPIs):

Develop specific KPIs tied to training objectives and business outcomes to measure the effectiveness of training programs.

Adopt a 360-Degree Feedback System:

Introduce a comprehensive 360-degree feedback system that includes feedback from peers, subordinates, and supervisors to provide a more holistic view of employee performance.

Utilize Technology for Real-Time Tracking:

Implement technology solutions for real-time tracking of employee progress and performance, allowing for instant adjustments and improvements.

Enhance Training Delivery Methods:

Explore innovative training delivery methods, such as online courses, simulations, and mentorship programs, to cater to diverse learning styles and preferences.

Questions:

1. How the implementations of Key Performance Indicators (KPIs) can specifically tied to training objectives help in assessing the impact of training programs on employee performance and organizational goals?
2. What are the potential challenges and benefits associated with adopting a 360-degree feedback system for performance evaluation? How can potential biases be minimized in this process?
3. In what ways can technology be leveraged to track employee progress and performance in real-time, and what impact might this have on the agility of the organization in responding to performance issues?
4. Discuss the role of continuous feedback in employee development. How can organizations strike a balance between constructive criticism and positive reinforcement?

END

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 22MBAP429

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MBA II Year I Semester (R22) Supplementary End Semester Examinations, July - 2025

BUSINESS ANALYTICS AND DATA MINING

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.No1 to 5 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1(A)	How can businesses utilize tools such as Scenario Manager, Goal Seek, and Data Tables in Excel to conduct comprehensive 'What if analysis for strategic decision-making, risk assessment, and scenario planning in financial management?	10M	1	3
	OR			
Q.1(B)	(i) Write short notes on the following types of Analytics: (a) Descriptive Analytics (b) Diagnostic Analytics (c) Predictive Analytics (d) Prescriptive Analytics	6M	1	2
	(ii) Explain the process of business analytics with each step.	4M		
Q.2(A)	Find Skewness and Kurtosis values along with insights for the give set of business data Sales of product 'X' :₹500, ₹550, ₹600, ₹650, ₹700, ₹800	10M	2	4
	OR			
Q.2(B)	As a Business Analyst when? where? why? You will use the following graphs: (a) Scatter Plot (b) Box Plot (c) Gantt Chart (d) Funnel Chart (e) Histogram	10M	2	3
Q.3(A)	Illustrate the distinctions among trend, seasonality, and cyclical components within a dataset.	10M	3	2
	OR			
Q.3(B)		10M	3	4

Year	2011	2012	2013	2014	2015	2016	2017	2018
Price	68	78	71	80	74	66	74	82

The approximate petrol prize in '₹' is given for a period. By using linear regression method forecast petrol price for the year 2023 and measure performance this model.

Q.4(A) 10M 4 3

Height(Cms)	158	170	165	162	150	160	172	155
Weight (Kgs)	62	74	68	60	55	66	74	50
T-Shirt Size	M	L	M	M	S	M	L	S

(a) By considering the above given table, predict T-shirt size of the customer named 'Ganesh 'who has height 163cm and wight 61Kg. Use K-Nearest Neighbour algorithm and Manhattan Distance

(b) Write short note on the terms (i) Confusion Matrix (ii) AUC-ROC Curve

OR

Q.4(B)	(i). Provide a comprehensive explanation of the distinct stages encompassed in the process of data mining.	6M	4	2
	(ii). Write short note on the terms a) Silhouette Score b) Precision& recall.	4M		

Q.5(A)	Provide a straightforward, step-by-step method for creating a decision tree.	10M	5	2

OR

Q.5(B)	Consider giving dataset, Apply naïve Baye's Algorithm and Predict the type of fruit. Properties of fruit are given as Fruit = {Yellow, Sweet, Long)	10M	5	5

Frequency Table:

Fruit	Yellow	Sweet	Long	Total
Mango	350	450	0	650
Banana	400	300	350	400
Others	50	100	50	150
Total	800	850	400	1200

Q.6	**CASE STUDY** You are a data scientist working for a retail company, and your goal is to segment customers into three clusters based on their behavior using the k-Means algorithm. The company has provided you with a dataset containing the following features for a sample of customers: Purchase Frequency: Number of purchases made by the customer in the last six months. Time Spent Online: Average time spent by the customer on the company's online platform per visit (in minutes). Purchase_Frequency: [5, 2, 8, 1, 9, 3, 4, 7, 2, 6] Time_Spent_Online: [7, 15, 25, 10, 22, 18, 5, 28, 14, 8]	10M	4	5

END

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 22MBAP431

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MBA II Year I Semester (R22) Supplementary End Semester Examinations, July - 2025

BUSINESS FORECASTING

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either A or B only. Q.no 6, which is a case study is compulsory.

Q.No	Question	Marks	CO	BL
Q.1(A)	Mention at least 4 forecasting models. Explain under what circumstances each model can be chosen.	10M	1	3
	OR			
Q.1(B)	What are the different types of forecasting models? Explain the advantages and disadvantages of each model.	10M	1	2
Q.2(A)	Develop a Simple Linear Regression equation and forecast the values of TFG (Dependent Variable) for the period 2003-04 to 2023-24 taking Wheat Production as the Independent Variable.	10M	2	4

Year	Wheat	Rice	TFG
2003-04	55.69	74.68	168.38
2004-05	57.21	72.86	179.48
2005-06	59.84	80.30	184.26
2006-07	65.77	81.81	191.50
2007-08	62.10	76.98	180.42
2008-09	69.35	81.73	199.43
2009-10	66.35	82.54	193.12
2010-11	71.29	86.08	203.61
2011-12	76.37	89.68	209.80
2012-13	69.68	84.98	196.81
2013-14	72.77	93.34	212.85
2014-15	65.76	71.82	174.78
2015-16	72.15	88.53	213.19
2016-17	68.64	83.13	198.36
2017-18	69.35	91.79	208.59
2018-19	75.81	93.35	217.28
2019-20	78.57	96.69	230.78
2020-21	80.68	99.18	234.47
2021-22	80.80	89.13	218.11
2022-23	85.93	95.32	241.56

Data on Production (Million Tons) of Wheat, Rice, and Total Food-grains (TFG) in India.

	OR			
Q.2(B)	Differentiate Partial Correlation and Autocorrelation with examples.	10M	2	4
Q.3(A)	What is Time Series Decomposition? Explain the different types of Time Series Patterns.	10M	3	2
	OR			
Q.3(B)	Forecast the TFG production for the period 2023-24 to 2025-26 applying the Box-Jenkins Model. Use the dataset given in **Q.2(A).**	10M	3	4

Q.4(A)	Differentiate Endogenous and Exogenous variables with examples. What is their significance in VAR Models?	10M	4	4
	OR			
Q.4(B)	What are Saturation Curves? How does logistic function help to model Saturation Curve? Explain.	10M	4	2
Q.5(A)	Applying the VAR Model to the dataset in **Q.2(A)** analyzes production of which grain is influencing other grains.	10M	5	4
	OR			
Q.5(B)	What are the characteristics of a VAR Model? Explain.	10M	5	2
Q.6	**CASE STUDY** Forecast the GDP for the next 3 periods for the data given in **Q.2(A)** using the weighted moving average method. Assume weights 3/6, 2/6, 1/6 starting from the immediate previous period.	10M	2	4

*****END*****

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 22MBAP433

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MBA II Year I Semester (R22) Supplementary End Semester Examinations, July/Aug - 2025

BISINESS DECISIONS USING DATA

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either A or B only. Q.no 6, which is case study, is compulsory.

Q.No	Question	Marks	CO	BL
Q.1(A)	Describe the process of Knowledge Discovery from Data.	10M	1	2
	OR			
Q.1(B)	Identify Different Types of Data.	10M	1	2
Q.2(A)	Explain the concept of Supervised classification.	10M	2	3
	OR			
Q.2(B)	Discuss Tree Terminologies with example.	10M	2	2
Q.3(A)	Illustrate the procedure for Evaluating performance of a classifier	10M	3	3
	OR			
Q.3(B)	Explain the nearest-neighbor classifier algorithm in detail.	10M	3	2
Q.4(A)	Extend Cluster Analysis, hierarchical clustering (Ward's method).	10M	4	3
	OR			
Q.4(B)	Explain k-means Clustering algorithm with algorithm.	10M	4	3
Q.5(A)	Discuss Simple and multiple linear regression concepts.	10M	5	2
	OR			
Q.5(B)	Describe multivariate linear regression process.	10M	5	2
Q.6	**CASE STUDY**	10M	2	4

Analyze the applications of decision tree in Business decisions.

END