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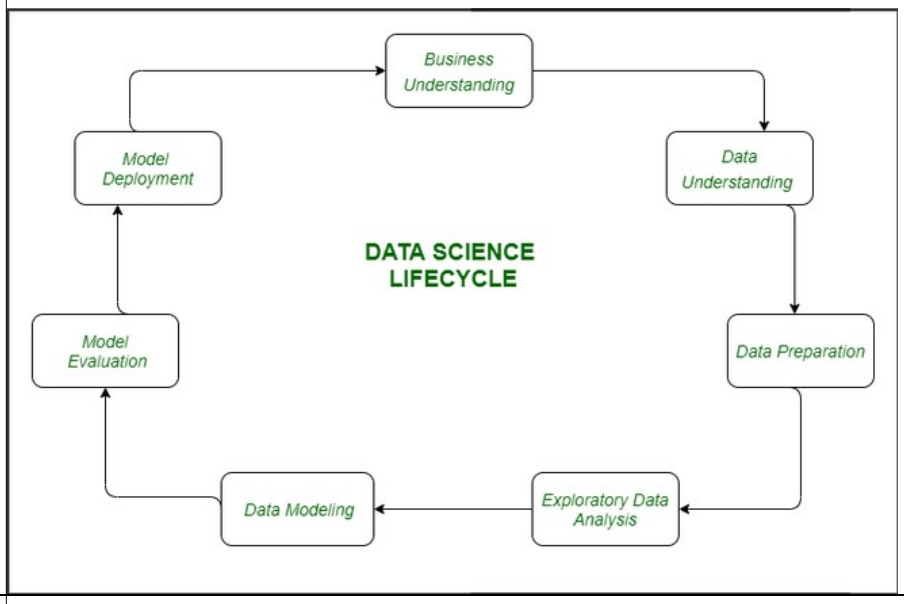
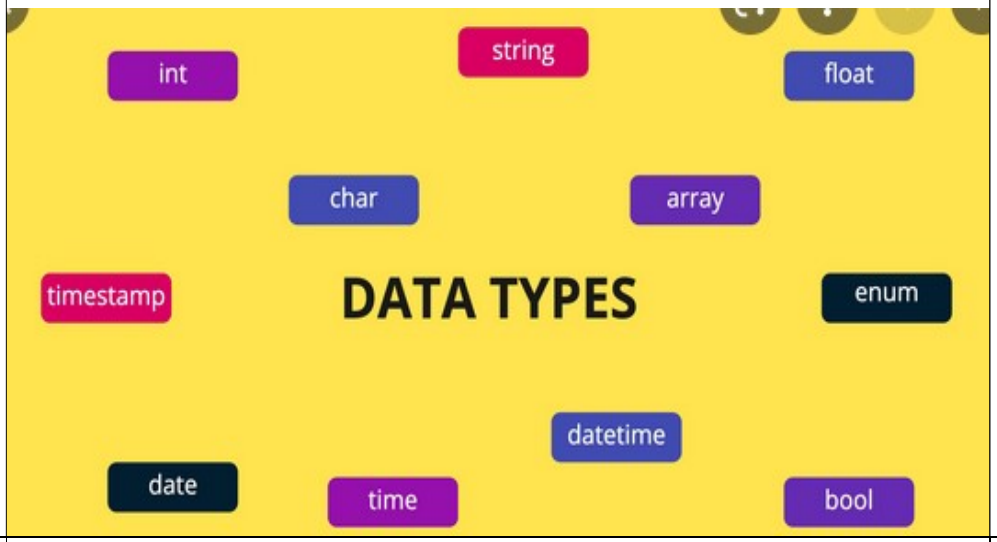
Internal Assesment Test - I

Sub:	Emerging Exponential Technologies							Code:	20MBA301
Date:	26-12-2022	Duration:	90 mins	Max Marks:	50	Sem:	III	Branch:	MBA

	SET - 3	Marks	OBE CO	OBE RBT
	Part A - Answer Any Two Full Questions (2* 20 = 40 marks)			
1 (a)	What is Data Mining? Data mining is a key part of data analytics overall and one of the core disciplines in data science, which uses advanced analytics techniques to find useful information in data sets. At a more granular level, data mining is a step in the knowledge discovery in databases (KDD) process, a data science methodology for gathering, processing and analyzing data. Data mining and KDD are sometimes referred to interchangeably, but they're more commonly seen as distinct things.	[03]	CO1	L1
(b)	What is the next big thing in technology? Technology today is evolving at a rapid pace, enabling faster change and progress, causing an acceleration of the rate of change. However, it is not only technology trends and emerging technologies that are evolving, a lot more has changed this year due to the outbreak of COVID-19 making IT professionals realize that their role will not stay the same in the contactless world tomorrow. And an IT professional in 2023-24 will constantly be learning, unlearning, and relearning (out of necessity if not desire). Artificial intelligence will become more prevalent in 2023 with natural language processing and machine learning advancement. Artificial intelligence can better understand us and perform more complex tasks using this technology. It is estimated that 5G will revolutionize the way we live and work in the future. What does this mean for you? It means staying current with emerging technologies and latest technology trends. And it means keeping your eyes on the future to know which skills you'll need to know to secure a safe job tomorrow and even learn how to get there. All bows to the worldwide pandemic, most of the global IT population is sitting back, working from home. And if you wish to make the most of your time at home, here are the top 18 emerging technology trends you should watch for and make an attempt at in 2023, and possibly secure one of the jobs that will be created by these new technology trends, that includes: 1. Computing Power 2. Smarter Devices 3. Datafication 4. Artificial Intelligence and Machine Learning	[07]	CO1	L1

	5. Extended Reality 6. Digital Trust 7. 3D Printing 8. Genomics 9. New Energy Solutions 10. Robotic Process Automation (RPA) 11. Edge Computing 12. Quantum Computing 13. Virtual Reality and Augmented Reality 14. Blockchain 15. Internet of Things (IoT) 16. 5G 17. Cyber Security			
(c)	Explain Data Science Life Cycle. A data science lifecycle is defined as the iterative set of data science steps required to deliver a project or analysis. There are no one-size-fits that define data science projects. Hence you need to determine the one that best fits your business requirements. Each step in the lifecycle should be performed carefully.  	[10]	CO3	L2
2 (a)	Mention three emerging technologies used in Business Decisions? Augmented and Virtual Reality. ... Metaverse. ...	[03]	CO1	L1

	Artificial Intelligence. ... Quantum Computing. ... Blockchain. ... The Internet of Things. ... Synthetic Biology. ... Cloud Computing.			
(b)	Explain different data types and its representation.  	[07]	CO1	L2
(c)	Explain data science and its application in Business Management. Data science is the process of building, cleaning, and structuring datasets to analyze and extract meaning. It's not to be confused with data analytics, which is the act of analyzing and interpreting data. These processes share many similarities and are both valuable in the workplace. Data science requires you to: Form hypotheses Run experiments to gather data Assess data's quality Clean and streamline datasets Organize and structure data for analysis 1. Gain Customer Insights Data about your customers can reveal details about their habits, demographic characteristics, preferences, aspirations, and more. With so many potential sources of customer data, a foundational understanding of data science can help make sense of it. For instance, you may gather data about a customer each time they visit your website or brick-and-mortar store, add an item to their cart, complete a purchase, open an email, or engage with a social media post. After ensuring the data from each source is accurate, you need to combine it in a process called data wrangling. This might involve matching a customer's email address to their credit card information, social media handles, and purchase identifications. By aggregating the data, you can draw conclusions and identify trends in their	[10]	CO4	L2

behaviors.

Understanding who your customers are and what motivates them can help ensure your product meets their job to be done and your marketing and sales efforts are working. Having and understanding reliable customer data can also inform retargeting efforts, personalized experiences for specific users, and improvements to your website and product's user experience.

2. Increase Security

You can also use data science to increase the security of your business and protect sensitive information. For example, banks use complex machine-learning algorithms to detect fraud based on deviations from a user's typical financial activities. These algorithms can catch fraud faster and with greater accuracy than humans, simply because of the sheer volume of data generated every day.

Even if you don't work at a bank, algorithms can be used to protect sensitive information through the process of encryption. Learning about data privacy can ensure your company doesn't misuse or share customers' sensitive information, including credit card details, medical information, Social Security numbers, and contact information.

"As organizations become more and more data-centric, the need for ethical treatment of individual data becomes equally urgent," Tingley says in Data Science Principles.

It's the combination of algorithms and human judgment that can move businesses closer to a higher level of security and ethical use of data.

Related: 9 Fundamental Data Science Skills for Business Professionals

3. Inform Internal Finances

Your organization's financial team can utilize data science to create reports, generate forecasts, and analyze financial trends. Data on a company's cash flows, assets, and debts are constantly gathered, which financial analysts can use to manually or algorithmically detect trends in financial growth or decline.

For example, if you're a financial analyst tasked with forecasting revenue, you can use predictive analysis to do so. This would require calculating the predicted average selling price per unit for future periods and multiplying it by the number of units expected to be sold during those periods. You can estimate both the average selling price and number of expected units sold by finding trends in historic company and industry data, which must be qualified, cleaned, and structured. This is data science at work.

Additionally, risk management analysis can be used to calculate whether certain business decisions are worth the potential downsides. Each of these financial

	analyses can offer valuable insights and drive business decisions. 4. Streamline Manufacturing Another way you can use data science in business is to identify inefficiencies in manufacturing processes. Manufacturing machines gather data from production processes at high volumes. In cases where the volume of data collected is too high for a human to manually analyze it, an algorithm can be written to clean, sort, and interpret it quickly and accurately to gather insights. For example, industrial automation company Oden Technologies created a machine-learning tool called Golden Run, which collects manufacturing data, identifies times of highest efficiency, and provides recommendations for replicating that high-efficiency state. As the algorithm gathers more data, it provides better recommendations for improvement. By using data science to become more efficient, companies can cut costs and produce more goods. 5. Predict Future Market Trends Collecting and analyzing data on a larger scale can enable you to identify emerging trends in your market. Tracking purchase data, celebrities and influencers, and search engine queries can reveal what products people are interested in. For instance, clothing upcycling has been on the rise as an environmentally conscious way to refresh a wardrobe. According to research by Nielson, 81 percent of consumers feel strongly that companies should help improve the environment. Clothing retailer Patagonia, which has been using recycled plastic polyester since 1993, leaned into this emerging trend by launching Worn Wear, a site that's specifically designed to help customers upcycle used Patagonia products.			
3 (a)	What is Big Data? Big data refers to data that is so large, fast or complex that it's difficult or impossible to process using traditional methods. The act of accessing and storing large amounts of information for analytics has been around for a long time.	[03]	CO1	L1
(b)	Explain Five Vs of Big Data five characteristics: volume, value, variety, velocity, and veracity. Volume: the size and amounts of big data that companies manage and analyze	[07]	CO4	L2

	Value: the most important "V" from the perspective of the business, the value of big data usually comes from insight discovery and pattern recognition that lead to more effective operations, stronger customer relationships and other clear and quantifiable business benefits Variety: the diversity and range of different data types, including unstructured data, semi-structured data and raw data Velocity: the speed at which companies receive, store and manage data – e.g., the specific number of social media posts or search queries received within a day, hour or other unit of time Veracity: the "truth" or accuracy of data and information assets, which often determines executive-level confidence The additional characteristic of variability can also be considered: Variability: the changing nature of the data companies seek to capture, manage and analyze – e.g., in sentiment or text analytics, changes in the meaning of key words or phrases			
(c)	"Without big data, you are blind and deaf and in the middle of a freeway." – Examine the statement It provides information needed for anyone from the streams of data processing. This is used in research, analytics, the medical field, education, and the places where huge data is processed. It is evolved from social media, machine data, and transactional data. Before this came into existence, linear and line-by-line analysis was done on the data available. Later with the introduction of the computer, life was made easy with Excel spreadsheets. The users needed to tabulate the different records and perform the required study to derive a meaningful report. It was a game-changer in many different ways. Extensive data sets up to terabyte can be processed and analyzed. Complex queries and algorithms are applied. Reports are generated with a better outcome with almost zero failures. All these in a matter of minutes to hours, depending on the size of data fed.	[10]	CO2	L3
	Part B - Compulsory (01*10=10 marks)			
4	Alibaba China-based Alibaba Group Holding Limited (Alibaba), the world's largest retail platform as of 2017, started off in 1999 as an e-commerce company involved in overseas and domestic wholesale trade. It went on to expand its business to include consumer e-commerce, online payments, online technology marketing, a web browser, logistics, mobile apps, online entertainment, social networking, etc. Being active in so many spheres meant millions of transactions, buyers, and sellers. Alibaba captured data about the buying / selling habits, transactions, orders, etc. of these buyers and developed data mining capabilities to recover such data and build profiles of the buyers. The data thus collected was shared with the sellers to help them bring out better products for the customers and tweak their products based on demand. This led to the building of a big data driven marketing platform called Alimama, which helped advertisers with digital marketing efforts. The next step was cloud computing through Aliyun and a cloud computing platform through which customers were provided with customized landing pages and choices that suited them the most. Alibaba used	[10]	CO4	L5

these big data capabilities to develop a credit scoring system to provide financial assistance to merchants who had no credit history and to venture into micro lending and credit scoring services. It went on to develop a fraud detection management system from its huge data sources to identify suspicious activities and fraudulent users online and immediately take counter measures. Another major use of big data was in the area of detecting and blocking counterfeit and pirated goods. Big data was also used in several other areas like smart traffic management, stock market predictions, etc. As the Chinese economy grew, it became one of the largest in the world and the most advanced mobile economy. Alibaba then set its sights on international markets. Setting the agenda for Alibaba's future, Jack Ma, its founder and Chairman, wanted to build capabilities that would enable the company to venture into global e-commerce in a big way and help six million small businesses sell their products to 1.2 billion customers outside China. In the process, by 2036, Alibaba wanted to become the fifth largest 'economy' in the world. ambitions?

Will big data help Alibaba fulfill its ambitions? Evaluate the Core Competencies of a big data driven online marketplace

Yes big data help Alibaba to fulfill its ambitions.

Core Competencies of big data drive online market place are:

Big data enables e-commerce companies to improve decision making, gain a competitive advantage, enhance their performance, products, and operational processes. It also allows customer behavior analysis and prompts the discovery of actionable insights.

Although big data resources are becoming more accessible, it's easy for e-commerce companies to get overwhelmed with big data. Big data-enabled tools can already help businesses create coupons, manage blog names, and detect fraudulent behaviors in real-time. While many business aspects from operational processes and budgeting to marketing can be optimized with the help of the big data technology, many e-commerce executives are still struggling to use data science for revolutionizing their businesses.

Predictive analysis, lead scoring, and targeted personalization are just a few concepts closely related to big data. If you're new to these terms, it's important to cover the basics before moving on.

The **volume, velocity, and variety (the 3Vs)** are what make the technology called big. With the 3Vs of big data, companies have access to all sorts of information about customers' experiences, financial transactions, and the competitiveness of the marketplace.

But how can e-commerce businesses pull all of this data to work? How can they take the right information and put it to use so that it can be valuable, actionable, and make the company work better?

To help you find answers to these questions, we've gathered everything you need to know about the ways big data transforms the marketplaces. After reading this article, you'll get a better perspective of the benefits empowered by big data, and

	the major ways data science has impacted the e-commerce industry.			

Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5
CO1:	Identify different emerging technologies	1a, 1b, 2a, 2b, 3a,				
CO2:	Select appropriate technology and tools for a given task		3c			
CO3:	Identify necessary inputs for application of emerging technologies		1c			
CO4:	Understand the latest developments in the area of technology to support business		2c, 3b,		4a	

Cognitive level	KEYWORDS
L1 - Remember	list, define, tell, describe, recite, recall, identify, show, label, tabulate, quote, name, who, when, where, etc.
L2 - Understand	describe, explain, paraphrase, restate, associate, contrast, summarize, differentiate interpret, discuss
L3 - Apply	calculate, predict, apply, solve, illustrate, use, demonstrate, determine, model, experiment, show, examine, modify
L4 - Analyze	classify, outline, break down, categorize, analyze, diagram, illustrate, infer, select
L5 - Evaluate	asses, decide, choose, rank, grade, test, measure, defend, recommend, convince, select, judge, support, conclude, argue, justify, compare, summarize, evaluate
L6 - Create	design, formulate, build, invent, create, compose, generate, derive, modify, develop, integrate

PO1–*Theoretical Knowledge; PO2–Effective Communication Skills; PO3–Leadership Qualities; PO4 –Sustained Research Orientation; PO5 –Self-Sustaining Entrepreneurship*

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