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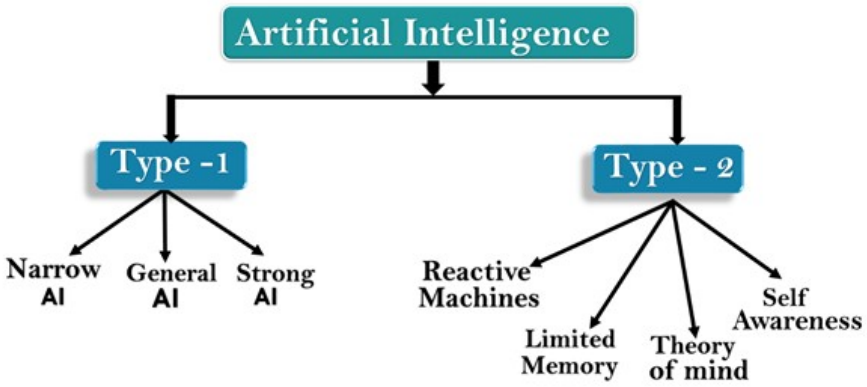
Internal Assesment Test - I

Sub:	Emerging Exponential Technologies							Code:	20MBA301
Date:	06-02-2023	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)	Discuss five programing languages used in AI. • Python. Python is one of the most powerful and easy programming languages that anyone can start to learn. • Java. Java is also the most widely used programming language by all developers and programmers to develop machine learning solutions and enterprise development. • Prolog • Lisp • R • Julia • C++	[03]	CO2	L2
(b)	Explain different type of AI 	[07]	C01	L2
(c)	Artificial Intelligence is about replacing human decision making with more sophisticated technologies' – Justify The rise of artificial intelligence will make most people better off over the next decade, but many have concerns about how advances in AI will affect what it means to be human, to be productive and to exercise free will Digital life is augmenting human capacities and disrupting eons-old human activities. Code-driven systems have spread to more than half of the world's inhabitants in ambient information and connectivity, offering previously unimagined opportunities and unprecedented threats. As emerging algorithm-driven artificial intelligence (AI) continues to spread, will people be better off	[10]	CO4	L5

	than they are today? Some 979 technology pioneers, innovators, developers, business and policy leaders, researchers and activists answered this question in a canvassing of experts conducted in the summer of 2018. The experts predicted networked artificial intelligence will amplify human effectiveness but also threaten human autonomy, agency and capabilities. They spoke of the wide-ranging possibilities; that computers might match or even exceed human intelligence and capabilities on tasks such as complex decision-making, reasoning and learning, sophisticated analytics and pattern recognition, visual acuity, speech recognition and language translation. They said "smart" systems in communities, in vehicles, in buildings and utilities, on farms and in business processes will save time, money and lives and offer opportunities for individuals to enjoy a more-customized future. Many focused their optimistic remarks on health care and the many possible applications of AI in diagnosing and treating patients or helping senior citizens live fuller and healthier lives. They were also enthusiastic about AI's role in contributing to broad public-health programs built around massive amounts of data that may be captured in the coming years about everything from personal genomes to nutrition. Additionally, a number of these experts predicted that AI would abet long-anticipated changes in formal and informal education systems. Yet, most experts, regardless of whether they are optimistic or not, expressed concerns about the long-term impact of these new tools on the essential elements of being human. All respondents in this non-scientific canvassing were asked to elaborate on why they felt AI would leave people better off or not. Many shared deep worries, and many also suggested pathways toward solutions. The main themes they sounded about threats and remedies are outlined in the accompanying table.			
2 (a)	Differentiate IoT and IIoT Both have the common feature of smart connected devices. The difference is how they are used. While IoT is typically used by consumers or end-users, IIoT is used for industrial purposes such as manufacturing, monitoring, and supply chain management.	[03]	CO1	L2
(b)	Discuss different misconceptions about Artificial Intelligence. 1. AI does not require humans 2. AI will take our jobs 3. AI is dangerous for humans 4. AI works exactly like a human brain 5. AI is 100% objective 6. Leverage the potential of AI for your business Explain all the above with examples	[07]	CO4	L2
(c)	illustrate the applications of IOT at smart home.	[10]	C04	L4

1. Lighting

Lighting in the house may now be adjusted automatically to meet the demands of the individual. For example, if people begin watching a movie, the lights may be set to decrease automatically so that they do not become distracted from the storyline. When you go inside your house, the lights may automatically switch on without you having to click a button.

When you leave your house, the system may automatically switch down the lights to save energy, so you don't have to. Your smartphone, laptop, and other linked devices can control all of your house lights. As a result, you may set your app to turn on your light when your alarm goes off in the morning.

2. Bathrooms

In the bathroom, IoT technology may make your daily routine more enjoyable and convenient. Smart mirrors may link to other devices such as computers and smartphones, detect the faces of family members in front of them, and show information that interests those individuals, such as news articles, weather forecasts, or specific websites.

If no one is in the bathroom, special sensors can detect movement and switch off the water automatically. Smart shower controls may also recognise people and set their preferred water temperature and pressure, as well as limit the amount of time spent in the shower to save water.

Users of automated jacuzzis may relax and enjoy their bath without having to manually modify their chosen temperature and air-jet regime, or pick their favorite music, because the app will manage all of it for them.

3. Gardens

Sensors may be quite useful for people who want to cultivate their own veggies, fruit, and herbs at home. Users may check on the app to see whether the temperature is correct, if the plant is sufficiently hydrated, and if it is receiving enough sunshine.

The software can track the present status of the soil, determine whether it has adequate moisture, and, if necessary, activate a smart irrigation system.

The sensor recognises when the amount of moisture reaches the ideal level and turns off the watering system, preventing water waste. IoT technology has resulted in a true breakthrough in gardening, which will fundamentally change the way plants are grown in the future.

4. Kitchen

IoT devices can make cooking safer and easier by utilizing AI technologies. Smart sensors can monitor for smoke and carbon monoxide, as well as the temperature and humidity levels in your kitchen, to ensure

that everything is in working order.

Special built-in applications keep track of whether the user has enough food in the fridge (and reorder it if necessary), offer recipe suggestions, and assess the nutritional worth of meals. Smart spoons, for example, urge users to eat gently.

5. Security Systems

Do you always double-check that the doors and windows are shut and that the TV, computer, and other electrical equipment are turned off before leaving your house? With the aid of specific sensors, smart security systems will do it for you.

When you leave the house, these controllers can lock the entrance, close the shutters, switch off electronic gadgets, and ensure that your home is safe from human and animal intruders. Users may use the app on their phones to check on their homes and manage the temperature, humidity, and lighting remotely. You may also keep an eye on your older relatives and assist them if necessary.

6. Safety Sensors

Safety sensors are intelligent gadgets that can detect when anything is wrong in your house. They can instantly alert users to possible hazards and even take action to avert them. They only need a smartphone with Internet access and sensors put in their house.

Temperature, humidity, and gas controllers can monitor the air in your house on a regular basis and give you notifications through the Internet if the indications are outside of the ideal range.

Natural calamities, fires, water, and gas leaks may all be prevented with the use of safety sensors. If a criminal tries to enter your house, proximity and video sensors can detect it and instantly activate the alarm and alert the authorities.

7. Temperature Control

With temperature control automation, you can set the temperature in your house to the level that is most comfortable for you. Users may programme smart thermostats to manage the temperature based on their preferences and setups. These thermostats can detect your present activities and adjust the temperature as needed.

Users may, for example, use the app to automatically increase the temperature when they take a bath or shower. If they choose to work out, do yoga, pilates, or any other form of physical exercise at home, the temperature will drop to assist them stay cool.

	8. Doors and Windows Our future doors will not require keys. The smart door may utilize face recognition to unlock your home. Any visitors who are not recognised as residents must be escorted inside the building by a resident. The doors may also be set to open as you approach your house and close as you depart. They can also set off a chain reaction in other gadgets in your house. The entry door may detect the authorized users and open, followed by the light turning on; other doors in the house may then open, and the TV and coffee machine may be switched on. Smart windows can be programmed to respond to signals from other appliances as well as triggering events. You won't have to bother about closing the windows when you leave the house since the system will check for you and close them if necessary. Windows can be programmed to close or open at specific times, and shutters can open or close based on the time of day. As a result, the shutters may be raised in the morning and dropped at night. Weather conditions such as rain, snow, storms, or severe winds can potentially trigger these devices. 9. Home Routine The temperature in your home, the lighting arrangement, and the security system may all be controlled using Al and Ml technologies. The technology can provide you with news updates, locate information on the Internet, give you notifications via an app on the Internet about purchases you need to make, order you a meal, organize an appointment, and book you a trip or hotel. You may also monitor the status of your home automation system from anywhere. As a result, you may use the app while out and about, visiting your parents or friends, to ensure that everything with your lights, security, and other Internet-connected equipment is in working order.			
3 (a)	State the difference between IoT and M2M. The field of remote device networking has been revolutionized in the past several years. Two technologies that we often hear while discussing device networking are **M2M (Machine-to-Machine)** and **IoT (Internet of Things)**. They both have similar objectives: connecting smart devices without, or with the least, human involvement for capturing and transmitting the data and remote monitoring.	[03]	CO1	L2
(b)	Examine different challenges or risks associated with IoT? • Lack of visibility Users often deploy IoT devices without the knowledge of IT departments,	[07]	CO3	L3

	which makes it impossible to have an accurate inventory of what needs to be protected and monitored. • Limited security integration Because of the variety and scale of IoT devices, integrating them into security systems ranges from challenging to impossible. • Open-source code vulnerabilities Firmware developed for IoT devices often includes open-source software, which is prone to bugs and vulnerabilities. • Overwhelming data volume The amount of data generated by IoT devices make data oversight, management, and protection difficult. • Poor testing Because most IoT developers do not prioritize security, they fail to perform effective vulnerability testing to identify weaknesses in IoT systems. • Unpatched vulnerabilities Many IoT devices have unpatched vulnerabilities for many reasons, including patches not being available and difficulties accessing and installing patches. • Vulnerable APIs APIs are often used as entry points to command-and-control centers from which attacks are launched, such as SQL injection, distributed denial of service (DDoS), man-in-the-middle (MITM), and breaching networks • Weak passwords IoT devices are commonly shipped with default passwords that many users fail to change, giving cyber criminals easy access. In other cases, users create weak passwords that can be guessed.			
(c)	Analyze the role of IOT in Smart Farming. **Smart Agriculture** is a topic that covers the many applications of Internet of Things (IoT) technology in farming, agrotech and agriculture. The use of sensors, data collection, wireless networks, cloud platforms and data analysis is already revolutionising the farming and agricultural sectors. The primary benefits include: • Increased production. • Lower production costs. • Operational efficiencies. • Real-time and intelligent cost management. These items will either **increase revenues**, **reduce costs** – maximising your profits while also having the potential to **reduce environmental impact**. There is real momentum behind IoT technology in agriculture and farming – with many analysts predicting both the market and the adoption of Smart Agriculture technology to sky-rocket as more firms recognise the benefits. Traditional farming would be focused on acres of land, making general decisions based on historical data, experience and 'feel'. These decisions could determine	[10]	C04	L4

	the use of fertiliser, irrigation, pesticides and harvesting. With the advent of IoT; Smart Agriculture and precision farming utilise sensors, GPS, mapping and data analytics to provide accurate, real-time insights that you can use to tailor your activity and investment for maximum return. Systems can recommend calibrated doses of fertiliser, targeted irrigation and early identification of diseases or substandard conditions. Intelligent software can make recommendations, trigger alarms and allow you to visualise the data. You can access the reports and insights using a web browser, mobile or tablet device. Some applications of Internet of Things Smart Farming Technologies: • **Soil moisture** monitoring (including conductivity and pH). • IoT i**rrigation control**. Activate irrigation valves when the soil moisture drops below a certain level. • **Soil nutrient** analysis. There are a range of emerging sensors that can monitor NPK levels in soil. • **Solar radiation**. Monitor levels of solar radiation to use in digital models that predict plant growth, health and risk of disease. • **Weather stations**. The ability to monitor wind, rain, temperature and humidity are important factors in both arable and livestock farming. • **Livestock tracking**. GPS-enabled asset tracking can be attached to a collar, allowing the farmer to determine the location of their livestock. • **Autonomous farm vehicles** – reduce the human labour associated with driving and operating vehicles. • **Agricultural drones** allow farmers to survey their fields with ease; using imaging technology to recognise disease, pests or other issues relating to growth.			
	Part B - Compulsory (01*10=10 marks)			
4	**Case Study – Role of AI** If you are starting a new business, how will you use AI to promote your business with respect to the below areas: 1. Sales Forecasting 2. Get consumer insights 3. Personalized consume experience 4. Marketing 5. Customer Support 6. Dynamic Pricing Introduction Facts of the case How AI promote business with respect to all the above areas.	[10]	CO4	L4

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

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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