



ST JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU -27
UG(MATHEMATICS)- IV SEMESTER
SEMESTER EXAMINATION: APRIL 2023
(Examination conducted in May 2023)
MTOE 10 –How to make right decision

(For current batch students only)

Time: 2 Hours

Max Marks: 60

This paper contains THREE printed pages.

Answer any SIX full questions from the following.

10X6=60

1. And you thought the big problem was getting her to say "yes"! You chose the time and the place, you had the ring ready, and it all went exactly according to the script. While still basking in the warm fuzzy afterglow of this momentous occasion, your intended proceeded to describe her dream wedding, a relatively modest affair with only close family and intimate friends-maybe fifty or so people. This didn't set well with either your parents or hers-although they're not about to rent a stadium for the proceedings, they're envisioning something much more elaborate in the way of ceremony and celebration. Nobody asked you, but you'd just as soon ink the deal at the sub registrar's office and spend the money on a nice honeymoon. Oops, someone did just ask you, the blushing bride-to-be. With suitable reasons, mention what would you choose from the following?
 - a. A quick trip to the sub-registrar's office and a nice honeymoon?
 - b. An elaborate ceremony and celebration, as the parents seem to want?
 - c. A small wedding, as she prefers?

2. You are the owner of a small Swiss chemical firm that manufactures textile dyes. It's just after the conclusion of the Great War- World War I, although you don't yet know that another world war will follow-and business is not so good. You're trying to compete against the giant German chemical firms, and even though you have some accounts and the prospect of more, you know that it's going to be an uphill struggle. Suddenly, what could be an incredible opportunity has presented itself. All the German firms have passed on the opportunity to develop vitamins, recently discovered substances in food that have nutritional value. A deficiency in vitamin C, for instance, is the cause of scurvy, and rickets is often the result of deficiency in vitamin D. Nonetheless, there is the nagging worry that the German giants are no fools, and they must have had a good reason for passing on this one. With suitable reasons, mention what would you choose from the following?
 - a. Take the information you have gained from the German firms and try to improve your business by hiring top-flight salesmen?
 - b. Take the plunge, buy up the vitamin patents, and concentrate on manufacturing and marketing them?
 - c. Get your feet wet by manufacturing and test-marketing vitamin's while simultaneously maintaining your chemical business?

3. Your husband has always been a great driver and you've always felt comfortable when he took the wheel for either a trip to the grocery store or a long expedition. However, a ten-year record of perfect safety just came to an end when he failed to look both ways and plowed into a car that had just finished making a turn. The damage to both vehicles appeared to be relatively minor, but he was undoubtedly responsible for the accident, and the driver of the other vehicle has hired a lawyer and is suing for compensation for injuries. Your car will take a week or so to be repaired, and in the meantime, your husband has points on his driver's license and has to kiss the "good

driver" insurance discount goodbye. When the two of you went to visit some friends last evening, he uncharacteristically asked you to drive, and he is clearly reluctant to get behind the wheel. Nonetheless, he's going to have to do so- when you live in Bangalore, you've got to drive. With suitable reasons, mention what would you choose from the following?

- a. Let him choose when he wants to start driving again.
- b. Hand him the keys the next time you get back in the car as if nothing has happened?
- c. Suggest that he enroll in a course in safe driving?

4. It took a decade for Chester Carlson to get his idea to copy images using static electricity off the ground, but once Xerox made it off the runway, even the sky was not the limit. It's the middle of the 1970s, but you know you've made it when your corporate name becomes a verb, and now people say "Xerox this" rather than "Copy this." Your name is synonymous with copying, but there are other things to do in the office besides copying. Information comes into the office via telephone, is processed by computer, and is duplicated and shipped out via copying. You've got the copying leg locked up for now, but there's a small cloud on the horizon- Japanese companies are beginning to copy copiers, and companies such as Ricoh and Toshiba are nibbling at your heels. Nonetheless, if you could integrate an office to go all Xerox your bottom line would boom. AT&T seems to have the telephone input locked up, and even though these strange things called personal computers are starting to penetrate the market, IBM is still pre- eminent in office computers. What next? With suitable reasons, mention what would you choose from the following?

- a. Concentrate on making sure that Xerox remains synonymous with copying?
- b. Try to produce telephones to rival AT&T, as that's the cheaper item to produce?
- c. Try to produce computers, as they are the easier item to integrate with copiers?

5. a. A farmer wants to decide which of the three crops he should plant on his 100- acre farm. The profit from each is dependent on the rainfall during the growing season. The farmer has categorized the amount of rainfall as high medium and low. His estimated profit for each is shown in the table.

Rainfall	Estimated conditional profit(Rs)		
	CropA	CropB	Crop C
High	8000	3500	5000
Medium	4500	4500	5000
Low	2000	5000	4000

If the farmer wishes to plant only one crop, decide which should be his best crop using (i) Maximin (ii)Minimax. 5 marks

b. Discuss the different Decision Environments. 5marks

6. Read the following article. With this information, if you are one of the persons from the Government what is your Decision criterion. Specify the payoff.

Social media is a new phenomenon worldwide and is here to stay. Social media has enabled people to be connected in real time and is bringing out new facets of people interest, engagement and behaviour. From trivia to disasters, information reaches people as it happens and is keeping them engaged like never before. But how they express or react thereafter, makes social media a double-edged sword. Just yesterday, the plight of a young schoolboy from a poor family, sitting outside a Noida metro station, trying to earn some money through a weighing scale and studying at the same time, caught a commuter's attention. He took a picture and uploaded on Facebook, which went viral. In response, there have been several people who have come forward to help, including the U.P Chief Minister Akhilesh Yadav, who has promised to ensure full opportunity for the boy to study without having to work. While this may be an example of the positive impact of social media, the negative side is also gaining ground, perhaps dangerously.

In 2012, one of the early cases of misuse of social media came to the government's attention, when morphed pictures and videos of earthquake victims began to go viral on social media. Miscreants were morphing these images to show that these were Muslim victims of civil riots in Assam and Burma. This was done to provoke further riots by vested interests and it did bring a reaction.

The social media space was soon full of hate and revenge messages against Hindu migrants living in South India, which spread panic and soon there was mass exodus of people from the North East, who were forced to return back to Assam and other North eastern states. This was a clear example of the negative side of social media which helped in stoking mass hysteria in a very short time. At the individual level, social media is full of examples where a relationship gone sour results in one of the partners uploading intimate pictures, videos or information, in revenge against their former partners. Whatever the subsequent legal consequences, the damage to the victim's reputation is instant and in some cases, results in fatal consequences.

7. Despite the fact that you're only the third string running back on your high school football team, you've still managed to score an unbelievable coup by bagging a date with Lydia Macintosh (yes, *the* Lydia Macintosh!) for Friday night, just three short days from now. Now, however, you are faced with that classic logistical problem: transportation. This is critical, the Lydia Macintoshes of the world don't go on second dates with guys who take the bus. It's a standard problem for a teenage boy in a typical American family; you have to talk your parents into letting you have the family car. Ordinarily, this wouldn't be a major hassle, but they're pretty steamed about that C minus on your last algebra exam, and Friday is fast approaching. After some reflection, you have narrowed your possible actions to the following three choices. With suitable reasons, mention what would you choose from the following?

- a. Ask your father, because he basically makes the decision as to who gets the car and when?
- b. Ask your mother, the romantic of the family?
- c. Ask both of them simultaneously, say at dinner, when everyone's feeling pretty good after a good meal?

8. Read the following article. With this information, if you are one of the persons who wrote the open letter to Prime Minister Narendra Modi, what options will you bring to the decision table to achieve the same payoff you had in your mind while writing the letter. Specify the payoff.

Sedition Case Against Ramachandra Guha, Aparna Sen, Mani Ratnam Over Open Letter To PM Modi On Mob Violence (Press Trust of India. October 04, 2019) A FIR (First Information Report) has been filed in Bihar's Muzaffarpur against nearly 50 celebrities, including Ramachandra Guha, Mani

Ratnam and Aparna Sen. Muzaffarpur: An FIR (First Information Report) was lodged in Bihar's Muzaffarpur on Thursday against nearly 50 celebrities, including Ramachandra Guha, Mani Ratnam and Aparna Sen, who had written an open letter to Prime Minister Narendra Modi raising concern over the growing incidents of mob killing, police said. The case was lodged after an order was passed by Chief Judicial Magistrate Surya Kant Tiwari two months ago on a petition filed by local advocate Sudhir Kumar Ojha.

"The CJM had passed the order on August 20, accepting my petition upon the receipt of which an FIR was lodged today (Thursday) at the Sadar police station," Mr Ojha said. He said nearly 50 signatories of the letter were named as accused in his petition in which they allegedly "tarnished the image of the country and undermined the impressive performance of the Prime Minister" besides "supporting secessionist tendencies". The police said the FIR was lodged under sections of the Indian Penal Code, including those relating to sedition, public nuisance, hurting religious feelings and insulting with an intent to provoke breach of peace. The letter from Aparna Sena and others said mob killing of Muslims, Dalits and other minorities must be stopped immediately. The letter was written by 49 eminent personalities, including filmmakers Mani Ratnam, Anurag Kashyap, Shyam Benegal, actor Soumitra Chatterjee as well as vocalist Shubha Mudgal in July this year. It had said that the mob killing of Muslims, Dalits and other minorities must be stopped immediately, while stressing that there was "no democracy without dissent". It also noted that "Jai Shri Ram" had been reduced to a "provocative war cry".

