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Question Paper Code : 80482

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2025.

Fifth/Sixth/Seventh/Eighth Semester

Computer Science and Engineering

CCS 345 — ETHICS AND AI

(Common to : Computer Science and Engineering (Artificial Intelligence and Machine Learning)/Electronics and Communication Engineering/Mechanical Engineering/Artificial Intelligence and Data Science/Computer Science and Business Systems/Information Technology)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. How ethics is understood with artificial intelligence?
2. List the difference between “morality” and “ethics” in AI.
3. Name two international initiatives that promote ethical AI practices.
4. What do you meant by ethical harm?
5. Write about algorithmic bias in AI.
6. What is meant by “transparency” in autonomous systems?
7. Why robo ethics in important in robotics?
8. What is the primary focus of ethics in science and technology?
9. List two major challenges associated with ethical issues in artificial intelligence.
10. Define the role of AI in decision-making within industrial contexts.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Describe the ways AI can impact societal trust, especially in terms of data privacy and autonomous decision-making. (6)
- (ii) Consider an AI application for environmental monitoring. How would you apply ethical principles to ensure that the AI's energy consumption is minimized and its environmental impact is positive? (7)

Or

- (b) (i) Explain how AI development practices could consider the psychological impacts on users to avoid negative dependencies or emotional manipulation. (7)
- (ii) Explain the role of ethics in addressing AI's impact on the legal system, particularly with issues related to accountability and liability. (6)
12. (a) (i) Describe the main ethical concerns associated with AI in healthcare robots, particularly in patient privacy and autonomy. (6)
- (ii) How do ethical frameworks guide the development and deployment of autonomous vehicles, especially regarding pedestrian and passenger safety? (7)

Or

- (b) (i) Explain how international ethical initiatives, such as those led by the EU, aim to address concerns about privacy, bias, and accountability in AI. (6)
- (ii) Discuss the ethical implications of weaponizing AI for warfare. What are some potential harms and concerns related to AI in military applications? (7)
13. (a) (i) Explain the importance of a model process for addressing ethical concerns during the design of AI systems. (6)
- (ii) Discuss the ethical implications of data privacy in AI, particularly concerning personal data usage and consent. (7)

Or

- (b) (i) Describe the purpose of an ontological standard for ethically driven robotics and automation systems. (7)
- (ii) Explain how algorithmic bias can affect the fairness of AI systems and give an example. (6)

14. (a) (i) Describe the importance of professional responsibility in robotics and AI development, especially in safety-critical applications. (6)
- (ii) Explain the relationship between ethics and morality in robotics, using examples of robot behavior in healthcare or assistance roles. (7)

Or

- (b) (i) Outline the concept of “harmonization of principles” in the development of AI and robotic technologies and its significance. (6)
- (ii) Describe how moral theories, such as utilitarianism or deontology, apply to decision-making in robotics. (7)
15. (a) (i) Describe the difference between national and international strategies for AI regulation and governance. (7)
- (ii) Explain the potential opportunities AI presents for ethical advancements in healthcare and medicine. (6)

Or

- (b) (i) Describe the societal issues raised by the application of artificial intelligence in medicine, especially concerning patient privacy and autonomy. (7)
- (ii) Outline the main components of a national strategy for AI and how they aim to address ethical concerns. (6)

PART C — (1 × 15 = 15 marks)

16. (a) In a hospital setting, AI-driven healthcare robots assist doctors by collecting data, conducting initial assessments, and even suggesting treatment plans. However, a recent study finds that these robots may show unintentional biases against certain age groups or demographics, leading to unequal care recommendations.
- (i) Examine the ethical concerns associated with deploying these healthcare robots. (5)
- (ii) Analyze the effectiveness of current international ethical initiatives that aim to address these biases and concerns in healthcare AI systems. (5)
- (iii) Suggest improvements to these ethical initiatives to ensure equitable healthcare delivery for all patients, regardless of demographic factors. (5)

Or

- (b) A university is implementing robot tutors to aid in personalized learning for students. While the robot tutors are effective in delivering content, they raise questions about the reduction in human interaction in education, dependency on robotic systems, and the long-term impact on students' social skills.
- (i) Analyze this scenario using moral theories like utilitarianism and deontology to evaluate the ethical implications of using robots in education. (5)
 - (ii) Apply robo ethics principles to outline the responsibilities of educational institutions when integrating robotic tutors, considering both benefits and potential ethical concerns. (5)
 - (iii) Propose a robo ethics taxonomy for classifying educational robots based on their level of interaction and autonomy, detailing how this could guide ethical standards in educational settings. (5)