



JK Lakshmipat University, Jaipur
Department of Computer Science and Engineering
Ethics in AI (CS1145)
End-Term, Date: May 06, 2026

Time: 2 hours Semester VI BCA & B.Tech. CS+AI, CSE, ECE Max marks: 30

Please read the following instructions carefully.

- There are 5 questions, printed on both sides.
- **No marks** for providing just expressions/answers unless accompanied with correct justification and/or derivation.
- In case of any doubt, make your assumption, write it clearly and continue.
Do not call your instructor.

1. (2+2+2+4 points) Three important fairness criteria are independence, separation and sufficiency.

- Independence is defined as: Decision d independent of sensitive features c . Write down a mathematical expression capturing the idea.
- For a property the following equation holds true. Explain the equation.

$$P_{c=i}(d = 0|y = 1) = P_{c=j}(d = 0|y = 1)$$

- Write the corresponding equation for the third property.

Discuss an example to illustrate the relevance of all the three fairness criteria mentioned above. (CO1, CO2, CO3, CO5)

2. (2+1+2 points) Is test accuracy a good indicator of whether a model is ready to be deployed? Argue considering the husky vs wolf classification. Are decision trees always interpretable? Write LIME algorithm. (CO3, CO5)

3. (3+2 points) Write three sources of bias with examples of each kind that can impact machine learning algorithms. It is generally considered bad to classify people based on the groups they belong. Hence, it is tempted to define individual fairness rather than group. Argue how achieving individual fairness may lead to defining groups. (CO2, CO3, CO5)

4. (1+3+1 points) A wellness application X requires users to provide their name, phone number, blood sugar levels, and GPS location. Upon sign-up, the app displays a single screen with a "Continue" button. Below the button, in 8-point font, it states: "By continuing, you agree to our Privacy Policy, which allows us to share data with third-party researchers and insurance providers to enhance your experience." The full Privacy Policy is accessible only via a hyperlink to an external website. A user later complains that they never specifically agreed to their medical data being sent to an insurance company. (CO4)

- (a) Evaluate whether X's notice meets the statutory requirements.
 - (b) Apply the criteria of Free, Specific, Informed, Unconditional, and Unambiguous to X's consent mechanism.
 - (c) If the user disputes the consent, explain which party bears the Burden of Proof under the Act.
5. (1+2+2 points) What do you understand by "Provider" and "Deployer" under the EU AI Act? When does the AI Act apply to a deployer who is established outside the EU? (CO1, CO4)