Unit 5 · AI and Contemporary Technologies

WORKSHEET

Full marks 29

Name _____ Class _____ Roll no. ____ Date _____ Marks _____ / 29

1 Key words [4]

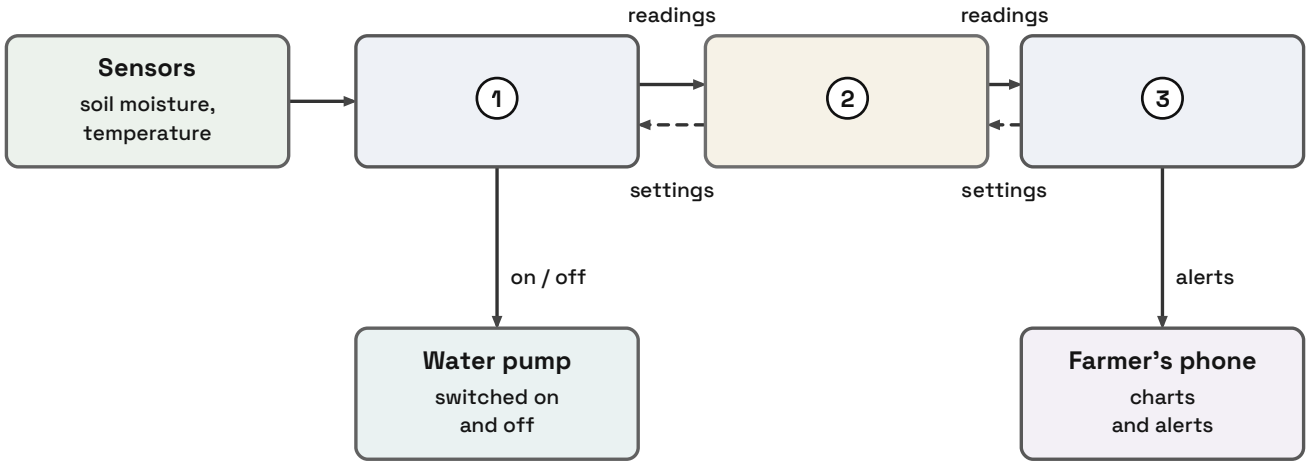
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

artificial intelligence	**augmented reality**	**cloud computing**	**e-commerce**	**e-governance**
generative AI	**Internet of Things**	**machine learning**	**supervised**	**virtual reality**

The ability of a computer to do tasks that need human intelligence is _____. When a computer improves at a task by finding patterns in data, instead of following rules written by a person, it is _____. Learning from examples that each come with the right answer is _____ learning. AI that makes new text, pictures or music from a prompt is _____. Everyday things with sensors that share their data over the internet by themselves make up the _____. Digital pictures and information shown on top of the real world, through a phone's camera, are _____. Using storage, servers and software over the internet from a provider, paid for as used, is _____. Providing government services and information to citizens online is _____.

2 Label the diagram [3]

The diagram shows an IoT system on a farm. Write the name of the part in place of 1 to 3. Each carries 1 mark.



1. _____ 2. _____

3. _____

3 Multiple choice [5]

Choose the correct option for each of the following questions.

i. In which type of learning is the training data given with the correct answers? [1]

a. supervised **b.** semi-supervised
c. unsupervised **d.** reinforcement

ii. Which is an IoT system? [1]

a. a calculator
b. a sensor that measures a river's level and sends it over the mobile network
c. a printed bus timetable
d. a computer with no network

iii. A bank's computer blocks a card payment because it is very different from the owner's usual spending. Which application of machine learning is this? [1]

a. spam detection **b.** fraud detection
c. speech recognition **d.** a social media feed

iv. An app shows the names of the peaks of the Annapurna range on top of your phone's camera picture. What is this? [1]

a. virtual reality **b.** augmented reality
c. the Internet of Things **d.** cloud computing

v. A school wants to run its own results program on a rented virtual server, installing the operating system itself. Which service is that? [1]

a. SaaS **b.** PaaS
c. IaaS **d.** none: that isn't cloud computing

4 True or false [3]

Write True or False after each sentence.

i. Gmail and Google Docs are examples of SaaS. ☐

ii. Google Drive is an example of IaaS. ☐

iii. A VR headset shows digital labels on top of the real world in front of you. ☐

iv. In unsupervised learning, a person must look at the groups the computer found and say what they mean. ☐

v. In a robot's loop, its motors and wheels are the "sense" part. ☐

vi. A chatbot can write a wrong fact as confidently as a right one. ☐

5 Match the columns [2]

Match each kind of e-governance with an example. One example in the right column is not needed.

Column A		Column B
1. G2C	☐	a. a ministry sharing data with the municipalities
2. G2B	☐	b. a family buying a phone from an online shop
3. G2G	☐	c. a citizen applying for a passport online
4. G2E	☐	d. a company filing its tax online
		e. a government teacher checking her salary and leave online

6 Short answers [6]

Write short answers to the following questions.

a. Say whether each of these uses supervised or unsupervised learning, and give a reason: i. an email filter trained on thousands of emails, each marked "spam" or "not spam"; ii. a music app that sorts a million songs into groups by how they sound, with no names given. [2]

b. A school plans to take attendance with an AI camera that recognizes students' faces. Write two ethical problems it could cause, and one way to reduce each. [2]

c. Write two limitations of e-commerce. [2]

7 Long answer [4]

Write a long answer to the following question.

Discuss the role of the Internet of Things (IoT) in the development of smart cities. Include examples of how IoT improves life in cities.

8 Think [2]

Think, then answer.

An AI app learns to spot diseased tomato leaves from 5,000 photos, all taken in bright sunshine in one farm in the Terai. A farmer in Dolakha uses it on a cloudy morning, and it gets most leaves wrong. Why? What should its makers do?

9 Activity: Train a model (not marked)

At a computer, open Google's **Teachable Machine** (teachablemachine.withgoogle.com), choose an image project, and make two classes, "Cat" and "Dog", with 5 photos in each. Press Train, then test it.

What I showed it	What it said	Right or wrong?
a new photo of a cat		
a new photo of a dog		
a cartoon dog		
a photo of a bus		