

**TRIBHUVAN UNIVERSITY**

2082 (New Course)

Bachelor / Education /8<sup>th</sup> Semester

Full Marks: 40

ICT.Ed.489 Big Data and Data Analysis

Time: 3 hrs.

*Candidates are required to give answers in their own words as far as practicable. The figures in the margin indicate full marks.*

Attempt all questions

Group "B"

6 X 5 marks = 30

1. ✓ What are the five characteristics (5Vs) of Big Data? Explain briefly.

2. ✓ What is MapReduce in Hadoop? Explain its two main phases.

OR

Demonstrate how Hive can be used in educational data analysis.

3. ✓ How do you apply the ETL process to prepare raw student survey data for analysis?

4. ✓ Define main components of Power BI. Explain the process of connecting Power BI to a data source.

5. ✓ What steps will you follow to create a NumPy array of student marks and calculate its mean, maximum, and standard deviation?

OR

How would you apply Matplotlib to create a customized bar chart showing the number of students in each grade category (A, B, C, D, F)?

6. ✓ How can you use PySpark to load a large dataset of student attendance and filter out students with less than 75% attendance?



**TRIBHUVAN UNIVERSITY**

2082 (New Course)

Bachelor / Education / 8<sup>th</sup> Semester  
Ed.482 Classroom Pedagogy

Full Marks: 60  
Time: 3 hrs.

Candidates are required to give answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all questions

Group "B"

6 X 5 marks =30

1. Explain the scope and importance of pedagogy in classroom instruction.
2. Describe the role of a teacher in active classrooms.

OR

What is classroom organization? What are the determining factors of its structure?

3. List out the essential elements of lesson structure? Why it is necessary for a daily lesson plan?
4. Describe the concept and importance of Personalized System of Instruction (PSI).

OR

What do you mean by 'concept teaching'? Describe the model of concept teaching.

5. State the strategies of learner engaged learning categories. Describe any one of them.
6. Define the 'Pens in the middle' strategy. What things to be considered while using this strategy?

Group "C"

2 X 10 marks =20

7. What are the essential qualities of a good teacher? Describe them in relation to global IT practices with suitable examples.

OR

'The problem-based learning strategy not only identifies the problem, but also suggests ways out for the problem.' Do you agree with this statement? Justify your argument with examples.

8. What are the similarities and differences between review and reflection? Why are both of them important for classroom instruction? Present your arguments with examples.



**TRIBHUVAN UNIVERSITY**

2082 (New Course)

Bachelor / Education / 8<sup>th</sup> Semester

Full Marks: 40

ICT.Ed.484 Artificial Intelligence in Education

Time: 3 hrs.

*Candidates are required to give answers in their own words as far as practicable. The figures in the margin indicate full marks.*

**Attempt all questions**

**Group "B"**

**6 X 5 marks = 30**

1. Analyze the role of knowledge agents in adaptive learning platforms.

**OR**

Explain how learning agents differ from simple agents in the context of education.

2. Describe the working of the Depth first search algorithm and its application in education.
3. Explain the difference between supervised and unsupervised learning.
4. Define rule-based knowledge representation methods. Use Bayes' theorem to find how likely a student is to pass the exam if they attended most classes.
5. Describe how text classification is used in educational applications.

**OR**

Compare the use of NLTK and Hugging Face for building NLP applications.

6. Describe key ethical concerns in educational AI systems, including bias, privacy and equity.



# TRIBHUVAN UNIVERSITY

2082 (New/Old Course)

Bachelor / Education / 8<sup>th</sup> Semester

ICT.Ed.486 System Administration using Linux

Full Marks: 40

Time: 3 hrs.

*Candidates are required to give answers in their own words as far as practicable. The figures in the margin indicate full marks.*

Attempt all questions

Group "B"

6 X 5 marks = 30

1. Which command is better for searching a large text file: `grep` or `less`, and why? Explain.

OR

Compare `find` and `locate` commands for file searching.

2. Which file-sharing protocol (FTP, NFS, Samba) is most secure for internal file exchange, and why? Explain.

3. A Linux system halts during boot at kernel loading. What components should be checked? Explain with necessary steps.

4. Should user accounts be created with `sudo` access by default? Support your answer.

5. Evaluate the trade-offs of using static vs. dynamic IP configuration in a small office network.

6. Develop a basic firewall script that blocks all incoming connections except ports 22 (SSH), 80 (HTTP), and 443 (HTTPS).

OR

Explain how Dovecot interacts with Postfix in a mail server setup.