UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2021

Course: Advanced Database Management Systems	**Semester: I**
Program: M. Tech. (CSE)	**Time : 03 hours**
Course Code: CSEG 7002	**Max. Marks: 100**

SECTION A

1. Each Question will carry 4 Marks

Q1	Discuss the term function dependency with the help of an example.	CO1
Q2	Differentiate between strict and rigorous two phase locking protocol.	CO2
Q3	Consider a relation scheme R = (A, B, C, D, E, H) on which the following functional dependencies hold: {A–>B, BC–> D, E–>C, D–>A}. What are the candidate keys of R?	CO1
Q4	Explain the functionality of OLAP and discuss the shared features of OLAP.	CO4
Q5	Generate the B+ -tree of order 3 by inserting 89, 9 and 8.	CO1

SECTION B

1. Each question will carry 10 marks
2. Instruction: Write short / brief notes

Q6	Transaction coordinator play an important role in distributed transactions? Justify this statement.	CO5
Q7	Analyse the decision tree method of query processing and discuss how it helps in query optimization.	CO1
Q8	Define the precedence graph method of serializability with an example and show all the steps of precedence graph that used in in the example.	CO2
Q9	Under which situations will it be beneficial to have replication or fragmentation of data?	CO5

Section C

1. Each Question carries 20 Marks.
2. Instruction: Write long answer.

Q10	a) Explain why log records for transactions on the undo-list must be processed in reverse order, whereas redo is performed in a forward direction. b) Disk space allocated to a file as a result of a transaction should not be released even if the transaction is rolled back. Explain why and explain how ARIES ensures that such actions are not rolled back. **OR** Explain the purpose of the checkpoint mechanism. How often should checkpoints be performed? Explain how does the frequency of checkpoints affect	CO3

	a) System performance when no failure occurs? b) The time it takes to recover from a system crash. c) The time it takes to recover from a media (disk) failure?	
Q 11	Give a brief introduction to data mining process with its types and steps used. Also discuss the required technological drivers used in data mining	**CO4**