


<b>Name:</b> <b>Enrolment No:</b>			
<p align="center"><b>UNIVERSITY OF PETROLEUM AND ENERGY STUDIES</b>  <b>End Semester Examination, May 2025</b></p>			
<b>Course: Stream Processing</b> <b>Program: B. Tech-CSE-BD</b> <b>Course Code: CSBD 3010</b>		<b>Semester: VI</b> <b>Time: 03 hrs.</b> <b>Max. Marks: 100</b>	
<b>Instructions: Explain in short (60-70 words).</b>			
<p align="center"><b>SECTION A</b>  <b>(5Qx4M=20Marks)</b></p>			
S. No.		Marks	CO
Q 1	Explain the concept of DStream with the help of an example.	4	CO1
Q 2	Describe any two actions in Spark with a suitable example of each.	4	CO2
Q 3	Briefly discuss the difference between stream-stream join and stream static join.	4	CO3
Q 4	Explain the concept of real time ETL in association with streaming.	4	CO3
Q 5	Discuss how machine learning works with live streaming and data analytics.	4	CO4
<p align="center"><b>SECTION B</b>  <b>(4Qx10M= 40 Marks)</b></p>			
<b>Instruction: Write brief notes(100-150 words).</b>			
Q 6	Discuss spark structured streaming model in detail. In addition to that describe its components also.	10	CO1
Q 7	Clarify the concept of messaging queuing and event processing in terms of stream processing.	10	CO1
Q 8	Discourse the concept of check pointing and write ahead logs in terms of stream processing. <p align="center">OR</p> Differentiate between structured and unstructured data in context with data streaming.	10	CO2
Q 9	Discuss the advantage of spark structured API features existing in spark SQL which supports streaming with the help of an example.	10	CO2
<p align="center"><b>SECTION-C</b>  <b>(2Qx20M=40 Marks)</b></p>			
<b>Instruction: Write long answer (Up to 350 words while explaining).</b>			

Q 10	Demonstrate the significance of directed acyclic graph in context with data streaming. Explain the significance of arbitrary stream processing.	<b>(10+10=20)</b>	<b>CO4</b>
Q 11	<p>Deliberate any use case of watermarking operator and significance of loose bounds on late data arrival. Discuss the concept of window-based aggregation in detail.</p> <p style="text-align: center;">OR</p> <p>Discuss a use-case of stream processing in real time business analytics. Elaborate regarding its functionality.</p>	<b>(10+10=20)</b>	<b>CO3</b>