JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

III B.Tech I Semester Regular Examinations, January 2026

MULESOFT INTEGRATION & DATAWEAVE

(Computer Science and Engineering)

Time: 3 Hours **Max. Marks: 70**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 9 marks.

PART - A

(25 Marks)

1. **[2M]** In the context of MuleSoft, define an "Application Network".
2. **[3M]** How does the `default` operator in DataWeave prevent Null Pointer Exceptions? Provide a brief example.
3. **[2M]** Which API-led layer is responsible for insulating upstream APIs from changes in the backend systems?
4. **[3M]** Explain the `flatten` operator. What is the output of `flatten([[1,2], [3,4]])`?
5. **[2M]** Name the standard HTTP header used to pass a tracking ID between Mule applications.
6. **[3M]** Write a DataWeave expression to rename the key `oldKey` to `newKey` in the object `{ oldKey: "value" }`.
7. **[2M]** Why is "Governance" easier to enforce in an API-led architecture compared to point-to-point integration?
8. **[3M]** Describe the `zip` operator in DataWeave. What does `['a','b'] zip [1,2]` produce?
9. **[2M]** True or False: Process APIs should contain logic specific to mobile device screen layouts. Justify your answer.
10. **[3M]** What is the difference between the selectors `payload.items` and `payload.*items` when processing XML data?

PART - B

(45 Marks)

UNIT - I

11. a) [5M] *Scenario: The Upside Down Portal.* You need to expose sensitive "Gate Status" data from a legacy mainframe to a modern React web application. Design a 3-layer API architecture for this. Define the specific role of each layer.
b) [4M] Why shouldn't the React Web App call the Mainframe System API directly? List two specific risks.

OR

12. [9M] Explain the lifecycle of a request in a distributed architecture, from the moment a user clicks "Search" on the Experience layer to the data return. Highlight specifically where the Correlation ID is generated, how it is propagated, and where it should be logged.

UNIT - II

13. [9M] *Scenario: Demodog Pack.* You have a list of creatures with different threat levels:

```
[ {"type": "Demodog", "risk": "High"}, {"type": "Turtle", "risk": "Low
   "}, {"type": "Demodog", "risk": "Critical"} ]
```

Write a DataWeave script to: 1. Filter out creatures with "Low" risk. 2. Group the remaining creatures by "type". 3. Map the result to show just the count of threats per type (e.g., `"Demodog": 2`).

OR

14. a) [5M] Explain the `map` vs `filter` operators. Can you use `map` to filter items out of an array? Why or why not?
b) [4M] Write a script using `map` and the index selector (`$$`) to transform `["Dustin", "Lucas"]` into `{"1": "Dustin", "2": "Lucas"}`.

UNIT - III

15. [9M] *Scenario: The Spy Code.* You are intercepting a transmission. The data format is XML with attributes:

```
<transmission>
  <code type="morse">...---...</code>
</transmission>
```

Write a DataWeave script to transform this into JSON:

- Extract the text content to a field named `"signal"`.
- Extract the attribute `type` to a field named `"format"`.
- Logic: If the signal is `"...---..."`, add a field `"status": "SOS"`, otherwise `"Standard"`.

OR

16. a) [5M] Discuss the concept of Custom Modules in DataWeave. How do you create a `.dwl` file and import it into your main script?
b) [4M] Write a custom function `toHawkinsTime(datetime)` that takes a UTC timestamp and shifts it to Eastern Standard Time (EST, -05:00).

UNIT - IV

17. [9M] *Scenario: The Mind Flayer's Memories.* You have an array of arrays representing memories from different hosts: `[ ["Mem1", "Mem2"], ["Mem3"] ]`. Write a script to: 1. Flatten the structure into a single list of strings. 2. Sort the memories alphabetically. 3. Convert all memories to Upper Case. Show the final output.

OR

18. a) [5M] Explain the `reduce` operator. How would you calculate the sum of the array `[10, 20, 30]` using `reduce`?
b) [4M] Using the `update` operator (or functional equivalent), show how to mask a specific field `password` in a user object by replacing its value with `"*****"`.

UNIT - V

19. [9M] You are debugging a "Gateway Timeout" (504) error that occurred in the Experience API. The logs show the error but no details. 1. How does the Correlation ID help you find the root cause in the System API logs? 2. What specific logging configuration (MDC) would make this tracking automatic in every log line?

OR

20. [9M] *Scenario: The Four Gates (Recursion).* A map object has nested sub-locations. Example: `{ "name": "Lab", "sub_locations": [ { "name": "Level 1", "sub_locations": [] } ] }`. Write a **Recursive DataWeave function** that traverses this tree and returns the total count of all locations (nodes) found in the structure.