

TRIBHUVAN UNIVERSITY  
INSTITUTE OF ENGINEERING  
**Examination Control Division**  
2082 Chaitra

| Exam.       | Regular (New Course) |               |
|-------------|----------------------|---------------|
| Level       | BE                   | Full Marks 60 |
| Programme   | BCT                  | Pass Marks 24 |
| Year / Part | III / I              | Time 3 hrs.   |

**Subject: - Web Application Programming (ENCT 302)**

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. Explain evolution of web architecture. Why do we need semantic elements? Create an HTML form that includes Student Roll Number (Number), Student Name (Text), Student Faculty (Select field with options Computer, Electronics and Electrical Engineering) and a submit button. [2+2+4]
2. Differentiate between arrow functions and normal functions in JavaScript with example. Explain JavaScript events with suitable example. [3+3]
3. Create a react component named counter with title that [8]
  - a) Displays a counter starting at 0.
  - b) Has a button labeled "Increment" to increase the counter by 1.
  - c) Updates the document title to reflect the current counter value whenever it changes.
  - d) Reset counter to 0 after reaching 10.
4. Explain the MVC architecture in web development with a neat diagram. Discuss CRUD operations and ORM concepts. [2+2+2]
5. Explain how Django handle request and response. Explain form data handling in Django with suitable example. [2+4]
6. Define REST principles and design. Compare and contrast JSON and XML for data exchange in web services with suitable example. [2+3]
7. What are data validation and serialization in web services? Explain about Microservices. [3+2]
8. Explain Cross-Site Scripting (XSS), SQL injection and Cross-Site Request Forgery (CSRF), and illustrate each with an example. [2+2+2]
9. Define a Progressive Web App (PWA). Explain CI/CD process in detail with suitable diagram. [2+3]
10. Write short notes on: (Any Two) [2×2.5]
  - a) Callbacks
  - b) DevOps
  - c) Sanitization

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