



The University of Fiji
(An Entity of Arya Pratinidhi Sabha of Fiji)



SCHOOL OF SCIENCE AND TECHNOLOGY

Semester 1, 2026

FINAL EXAMINATION PAPER

**ITC115: INTRODUCTION TO SOFTWARE
ENGINEERING**

Important Instructions to Students:

1. Read the questions, instructions carefully and answer the questions.
2. You are allowed an **extra 10 minutes reading time** (during this time, you are not allowed to write with pen) and **180 minutes (3 Hours) to complete this paper**.
3. Silent, non-programmable calculators are allowed, but not supplied.
4. Write all your answers in the answer booklet provided. If you need extra sheets, please ask from the supervisor. Write your name, course code and student identification number in the answer booklet and in the attendance sheet.
5. This paper contains three (3) sections A, B and C. All questions are compulsory to answer.
6. Write all your answers legibly. The marker has the right to award zero for answers that are not legible.
7. This is a **Closed Book Examination**. The University views plagiarism, cheating and dishonest practice as serious offences and if found, offenders are penalized.

Examination Paper Content (Format):

<u>Section</u>	<u>Question</u>	<u>Content</u>	<u>Marks</u>	<u>Suggested Time</u>
A	1-30	Multiple Choice Questions	30	54 minutes
B	31-38	Programming Questions	30	54 minutes
C	39 -52	Open-Ended Questions	40	72 minutes
		TOTAL	100	180 Minutes

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Write the best answer in the answer sheet provided.

1. Which of the following is the correct Python syntax to display "Hello World"?

- A. echo("Hello World")
- B. print("Hello World")
- C. printf("Hello World")
- D. display("Hello World")

2. What is the output?

```
x = 5
y = 2
print(x + y)
```

- A. 52
- B. 7
- C. 10
- D. 3

3. Which symbol is used for exponentiation in Python?

- A. ^
- B. **
- C. //
- D. %%

4. Which statement allows decision making?

- A. loop
- B. if
- C. function
- D. print

5. What is the output?

```
x = 10
if x < 5:
    print("Yes")
```

- A. No output
- B. Yes
- C. Error
- D. 10

6. Which loop is best when the number of repetitions is known?

- A. while
- B. if
- C. for
- D. function

7. What is the output?

```
for i in range(3):  
    print(i)
```

- A. 1 2 3
- B. 0 1 2
- C. 0 1 2 3
- D. 3 2 1

8. What does range(1,5) produce?

- A. 1,2,3,4
- B. 1,2,3,4,5
- C. 0,1,2,3,4
- D. 5,4,3,2

9. What is the output?

```
sum = 0  
  
for i in range(1,4):  
    sum += i  
print(sum)
```

- A. 3
- B. 6
- C. 10
- D. 4

10. What is the output?

```
def greet():  
    print("Hi")  
  
def display()  
    greet()
```

- A. greet
- B. Hi
- C. Error
- D. None

11. What is the output?

```
def add(a,b):  
    return a+b  
  
def main()  
    print(add(2,3))
```

- A. 23
- B. 5
- C. a+b
- D. Error

12. What is the output?

```
for i in range(2,6,2):  
    print(i)
```

- A. 2 4
- B. 2 4 6
- C. 1 3 5
- D. 6 4 2

13. Which of the following is a valid variable name?

- A. 2name
- B. my-name
- C. my_name
- D. class

14. What type does input() return?

- A. int
- B. float
- C. str
- D. bool

15. What is the output?

```
x = int("5")  
print(x * 2)
```

- A. 10
- B. 55
- C. Error
- D. 25

16. What is the output?

```
x = 1
```

```
while x < 4:  
    print(x)  
    x += 1
```

- A. 1 2 3
- B. 1 2 3 4
- C. 0 1 2 3
- D. Infinite

17. What is the output?

```
print(len("Python"))
```

- A. 5
- B. 6
- C. 7
- D. Error

18. What is string concatenation?

- A. Adding numbers
- B. Joining strings
- C. Dividing text
- D. Comparing strings

19. What is the output?

```
print("3" + "4")
```

- A. 7
- B. 34
- C. Error
- D. 12

20. What is the output?

```
print(3 * "Hi")
```

- A. HiHiHi
- B. 3Hi
- C. Error
- D. Hi3

21. Which of these is NOT a Python keyword?

- A. if
- B. while
- C. loop
- D. def

22. What is the output?

```
nums = [10,20,30]
```

```
print(nums[1])
```

- A. 10
- B. 20
- C. 30
- D. Error

23. Which software development phase involves writing code?

- A. Analysis
- B. Design
- C. Implementation
- D. Maintenance

24. What is Requirements Engineering (RE)?

- A. Writing code for software
- B. Designing hardware systems
- C. Discovering, analyzing, documenting, and validating system requirements
- D. Testing completed software

25. Which of the following best describes a functional requirement?

- A. The speed of the system
- B. The services or functions the system should provide
- C. The hardware used
- D. The programming language chosen

26. Which is an example of a non-functional requirement?

- A. The system shall allow users to log in
- B. The system shall generate monthly reports
- C. The system shall respond within 2 seconds
- D. The system shall store customer records

27. Requirements elicitation mainly involves:

- A. Writing source code
- B. Gathering requirements from stakeholders
- C. Deploying the software
- D. Debugging software

28. A hospital system requires strict documentation and safety checks. Which model is most suitable?

- A. Agile
- B. Waterfall/Plan-Driven
- C. Scrum only
- D. Prototype only

29. A startup building a mobile app expects frequent customer changes. Which model is best?

- A. Waterfall
- B. Agile
- C. Big Bang
- D. V-Model

30. Which is the primary goal of software testing in the software process?

- A. Increase profits
- B. Discover defects
- C. Write requirements
- D. Replace design

31. Write the outputs of the following code segments:

[3 marks]

a. for num in range(2, 5):

```
    print(num, end=" ")
```

b. for value in range(0, 7, 3):

```
    print(value, end=" ")
```

c. print("%7.2f" % 8.456)

32. Explain the difference between = and == in Python.

[1 Mark]

33. Write a Python statement to accept a user's name and print "Welcome [name]".

[1 Mark]

34. Write a Python program that accepts two numbers from the user and prints:

Sum

Difference

Product

[2 Marks]

35. Write a Python program using a for loop to display the multiplication table of a number entered by the user.

[3 marks]

36. Write functions only to do the following:

[2 marks each]

- i. Accept two integer values as arguments. Display both numbers and their sum in a clearly formatted output.
- ii. Accept four float arguments and return their average.
- iii. Accepts the price of an item and a discount percentage, calculate the discount amount and final price. Write two functions: one to calculate the discount and second to display the final amount.
- iv. A student's finalGrade and attendancePercentage have already been calculated. Write a function definition that accepts these values as input and displays them appropriately.

- v. Accept the number of hours worked and hourly pay rate, calculate total wages. Write two functions: one to calculate wages and another to display the wage details.
 - vi. Accept a loan amount and interest rate, calculate the interest payable. Write two functions: one to calculate the interest and another to display the loan summary.
37. Identify and correct the error(s) in the following Python code: [3 marks]
- i.

```
for count in range(1, 6)
    print(count)
```
 - ii.

```
number = input("Enter a number: ")
while number != 0:
    print(number)
```
 - iii.

```
value = 10
if value = 10:
    print("Correct")
```
38. Write an application with appropriate functions that computes an employee's gross pay, tax deduction, provident fund deduction, and net pay. Prompt the user to enter the hours worked, hourly rate, tax rate, and provident fund rate. The program should then calculate and display all results clearly using the following formulas: [5 marks]
- Gross Pay = hours worked * hourly rate
- Tax Deduction = gross pay * tax rate
- Provident Fund Deduction = gross pay * provident fund rate
- Net Pay = gross pay – total deduction

39. The Scrum approach is a general and one of the most used agile methods. Elaborate on the approach explaining the different scrum ceremonies. [3 marks]
40. Differentiate between the waterfall development process and the incremental development process. Explain two benefits of the incremental software development process. [3 marks]
41. Define the concept of software refactoring and explain its primary goal. [2 marks]
42. Explain re-use oriented software engineering. [2 marks]
43. Differentiate between the waterfall development process and the incremental development process. Explain two benefits of the incremental software development process. [3 marks]
44. Smart cities increasingly depend on interconnected software systems for transportation, healthcare, surveillance, and utilities. Discuss the societal and engineering challenges of building reliable, secure, and ethical smart city software systems. [4 marks]
45. Explain the significance of UML (Unified Modeling Language) in system design. Discuss any three common UML diagrams and their purposes. [3 marks]
46. Discuss the importance of ethical considerations in software engineering. Provide three examples of ethical challenges software engineers may face. [4 marks]
47. Explain how cloud computing has transformed software engineering practices in development, deployment, and maintenance. [3 marks]
48. Differentiate between software validation and software evolution. Why must modern software systems continuously evolve? [2 marks]
49. Describe the purpose of user stories in Agile development. How do user stories improve communication between stakeholders and developers? [2 marks]
50. Explain pair programming in Extreme Programming (XP). Discuss its advantages and possible disadvantages in practical software projects. [3 marks]

51. Describe how prototyping supports requirements elicitation. Differentiate between throwaway prototyping and evolutionary prototyping. [2 marks]
52. Artificial Intelligence-assisted software development tools are becoming common. Discuss how AI may improve coding, testing, and maintenance while also introducing risks. [4 marks]

End of Exam