



10. A further dose of the same vaccine should not be given if the patient develops:
- Pain, swelling or redness of the site
  - Headache
  - Cardiovascular collapse and other anaphylactic reactions
  - Temperature above 37.5°C

**Fill in the blanks.**

[5Q × 1 = 5 marks]

11. Reverse Vaccinology was pioneered by \_\_\_\_\_.
12. In single blinding studies, \_\_\_\_\_ are kept unaware of the treatment being assigned.
13. \_\_\_\_\_ is an example of a toxoid vaccine.
14. The most common route for vaccine administration is \_\_\_\_\_.
15. One can apply for vaccine licensure after completing Phase \_\_\_\_\_ studies.

**Define the followings.**

[5Q × 1 = 5 marks]

16. Primary Pathogens:
17. Original Antigenic Sin:
18. Seroconversion:
19. Vaccine Potency:
20. Booster Vaccination:

KATHMANDU UNIVERSITY  
End Semester Examination  
March, 2022

Level : B.Tech.  
Year : IV  
Time : 2 hrs. 30 mins.

Course : BIOT 411  
Semester : II  
F. M. : 55

SECTION "B"

[7Q × 5 = 35 marks]

Attempt **ALL** questions.

1. Explain the significance of Herd Immunity with suitable example(s)
2. Write short note on fractional polio vaccine (fIPV).
3. Discuss how adjuvants help vaccines perform better.
4. How is the infant immune system distinct from adult immune system? What implications do these differences have on vaccine development for the young ones?
5. Explain in detail, the steps involved in developing vaccines through reverse vaccinology approach.
6. Explain the importance of post-marketing surveillance (phase IV studies) in vaccine development.
7. Discuss any five arguments used by anti-vaxxers to refuse vaccination. Also state the facts to justify/convince that such arguments are just myths.

SECTION "C"

Write **TWO** differences between **ANY FIVE**.

[5Q × 2 = 10 marks]

8. Vaccine for viral pathogens and Vaccine for bacteria
9. Antigenic Shift and Antigenic Drift
10. Trivalent and Bivalent Polio Vaccine
11. Vaccine effectiveness and Vaccine failure
12. Recombinant Vector Vaccine and DNA Vaccine
13. Pre-clinical study and Clinical study

Explain **WHY/HOW** for **ANY FIVE**.

[5Q × 2 = 10 marks]

14. The development of immunologic memory might not be sufficient to tackle certain pathogens.
15. BCG is a "self adjuvanted" vaccine.
16. The pathogen, *Meningococcus B* (MenB), was refractory to vaccine development by conventional approach.
17. Vaccines are subjected to greater scrutiny than other pharmaceutical products.
18. Vaccination of pregnant women can confer immunity to their newborns.
19. Route of administration influences the efficacy of any vaccine.



KATHMANDU UNIVERSITY  
End Semester Examination [C]  
April 2022

Level : B.E.

Year : IV

Exam Roll No. :

Time: 30 mins.

Course : COMP 401

Semester : I

F. M. : 10

Registration no.:

Date :

SECTION "A"

[20Q × 0.5 = 10 marks]

**Encircle the most appropriate option.**

1. Which one is the cause of the software project failure?
  - a. Increasing system complexity
  - b. Failure to use software engineering method
  - c. Both a and b
  - d. None
  
2. Odd one out from the followings.
  - a. Graphics program
  - b. Project management tool
  - c. CAD software
  - d. Traffic monitoring system
  
3. Which one isn't a general issue that affect software?
  - a. Heterogeneity
  - b. Homogeneity
  - c. Security and trust
  - d. Scale
  
4. Which one is also included in process description?
  - a. Products
  - b. Roles
  - c. Pre- and post-conditions
  - d. All
  
5. Which one is only a plan-driven model?
  - a. Waterfall model
  - b. Incremental development
  - c. Integration and configuration
  - d. All
  
6. In which one of the followings a prototype can be used?
  - a. Requirement engineering process
  - b. Design process
  - c. Testing process
  - d. All
  
7. Which one is not a principle of agile methods?
  - a. Process not people
  - b. Maintain simplicity
  - c. Embrace change
  - d. Incremental delivery
  
8. In XP, when the increments are delivered to customers?
  - a. Every 1 week
  - b. Every 2 weeks
  - c. Every 3 weeks
  - d. Every 4 weeks
  
9. Who is not a reader of user requirements?
  - a. Client managers
  - b. Software developers
  - c. System architects
  - d. Client engineers
  
10. Broadly classifying, how many types of non-functional requirements are there?
  - a. 2
  - b. 4
  - c. 3
  - d. 5

11. Which focuses on testing component interactions?
  - a. Unit testing
  - b. Component testing
  - c. Regression Testing
  - d. System testing
12. Through which interfaces sub-systems request services from other sub-systems?
  - a. Parameter interfaces
  - b. Shared memory interfaces
  - c. Procedural interfaces
  - d. Message passing interfaces
13. How many stages are there in systems engineering?
  - a. 4
  - b. 5
  - c. 6
  - d. 7
14. Which is not a characteristic of socio-technical systems?
  - a. Emergent properties
  - b. Non-deterministic
  - c. Complex relationship with organizational objectives
  - d. None
15. Which one affects schedule or resources?
  - a. Product risks
  - b. Project risks
  - c. Business risks
  - d. All
16. What is the effect of the risk: *the rate of defect repair is underestimated*?
  - a. Serious
  - b. Insignificant
  - c. Tolerable
  - d. Catastrophic
17. Which factor doesn't influence the final size of a software system?
  - a. Use of reuse systems
  - b. Programming language
  - c. Distribution of system
  - d. None
18. How many factors are there that affect software pricing?
  - a. 3
  - b. 5
  - c. 4
  - d. 7
19. The inspection check: "*Is there any possibility of buffer overflow*" falls on which fault class?
  - a. Storage management fault
  - b. Input/output fault
  - c. Data fault
  - d. Control fault
20. Reliability is not related to which one of the followings internal quality attribute?
  - a. Cyclomatic complexity
  - b. Program size in lines of code
  - c. Depth of inheritance tree
  - d. Number of error messages