CBCS SCHEME

BBT358A

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Question Paper Version : A

Third Semester B.E./B.Tech. Degree Examination, June/July 2025
Biolab Management and Risk Assessment

Time: 1 hr.] [Max. Marks: 50

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the **fifty** questions, each question carries one mark.
2. Use only **Black ball point pen** for writing / darkening the circles.
3. **For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.**
4. Darkening two circles for the same question makes the answer invalid.
5. **Damaging/overwriting, using whiteners** on the **OMR** sheets are strictly prohibited.

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1. What does SOP stand for in the context of laboratory management?
   a) Scientific Observation Protocol
   b) Standard Operating Procedure
   c) Sample Organization Process
   d) Safety Oversight Program

2. Which layout type allows for easy supervision and control of the entire lab?
   a) Cellular layout
   b) Process layout
   c) Functional layout
   d) Line layout

3. FIFO (First-In-First-Out) is a principle commonly applied in laboratory management. What does it mean?
   a) The first item purchased is the first to be used
   b) The latest item purchased is the first to be used
   c) Items are used randomly
   d) The heaviest item is used first

4. What is the role of a reorder point in laboratory inventory management?
   a) To indicate when to dispose of items.
   b) To identify the point at which new stock should be ordered
   c) To calculate the average usage of items
   d) To track the market value of items

5. Which of the following best describes the concept of data integrity in laboratory documentation?
   a) Making up experimental data
   b) Ensuring that recorded data is accurate and reliable
   c) Hiding mistakes in the documentation
   d) Randomly changing recorded results

6. What does the term "Biosafety Level (BSL)" refer to in the context of laboratory safety?
   a) The speed of laboratory equipment.
   b) The level of protection needed for handling specific biological agents.
   c) The number of researchers in a laboratory
   d) The brightness of laboratory lighting

7. BSL-4 laboratories are designed for handling.
   a) Agents with no known risk to humans
   b) Agents that pose a high risk of life threatening disease
   c) Agents with minimal impact on the environment
   d) Agents only found in agricultural settings

8. What is the first step in planning a biological experiment?
   a) Data analysis
   b) Literature review
   c) Experiment execution
   d) Hypothesis formulation

9. What does the term "inventory management" refer to in the context of biolab storage?
   a) Arranging equipment in alphabetical order
   b) Tracking and managing the stock of laboratory materials
   c) Arranging the laboratory shelves
   d) Labeling storage units with creative means

10. What is the purpose of a Chemical Hygiene Plan (CHP) in a biology laboratory?
    a) To ban the use of chemicals
    b) To ensure the safety of laboratory personnel
    c) To reduce laboratory expenses
    d) To streamline waste disposal procedures

11. In a microbiology lab, an experiment involves the use of Genetically Modified Organisms (GMO's)? What regulatory steps should biolab manager ensure are in place before conducting such experiments?
    a) Skip regulatory approvals for expedited research
    b) Follow biosafety guidelines but skip ethical approach
    c) Obtain necessary regulatory approvals and ethical clearance
    d) Ignore regulatory steps as GMO's pose no risk

12. What is risk in the context of risk assessment?
    a) Certainty of success
    b) Probability of an adverse event
    c) Positive outcome only
    d) Random occurrence

13. Which factor is primarily associated with a hazard in risk assessment?
    a) The potential harm or adverse health effect
    b) The frequency of occurence
    c) The overall impact on the environment
    d) The finanacial implications

14. What is the probability of an event that is certain to occur?
    a) 0
    b) 0.5
    c) 100%
    d) 1

15. How is the probability of occurrence usually expressed in risk assessment?
    a) As a percentage
    b) As a monetary value
    c) As a qualitative description (eg : low, medium, high)
    d) As a binary value (yes or no)

16. What is risk mitigation?
    a) Accepting the risk without taking any action
    b) Reducing the probability or impact of a risk
    c) Ignoring the risk completely
    d) Transferring the risk to another party

17. What is the role of a Biological Safety Officer (BSO) in the risk management process?
    a) Conducting experiments
    b) Monitoring laboratory expenses
    c) Providing expertise in biosafety and risk assessment
    d) Managing administrative tasks

18. Which of the following is a key consideration when selecting risk control measures?
    a) Cost-effectiveness
    b) Complexity
    c) Speed of implementation
    d) All of these

19. Which of the following is NOT a potential outcome of a risk review?
    a) Updating the risk register
    b) Closing the project immediately
    c) Modifying risk mitigation strategies
    d) Reassessing the project timeline

20. What does HACCP stand for,
    a) Hazardous Analysis and Critical Control Points
    b) Hazardous Assessment and Critical Control Processes
    c) Hazard Analysis and Critical Control Points
    d) Hazard Analysis and Control Processes

21. In risk assessment, how does likelihood differ from severity?
    a) Likelihood refers to the impact of a risk, while severity refers to the probability
    b) Likelihood and Severity are the same concepts
    c) Likelihood is the probability of a risk occurring, while severity is the impact
    d) Likelihood and severity are terms used interchangeably

22. In a BSL-2 laboratory, what type of protective clothing is typically required for laboratory personnel?
    a) Lab coat and gloves
    b) Lab coat, gloves and safety goggles
    c) Lab coat, gloves, safety goggles and a face mask
    d) Lab coat, gloves, safety goggles and a face shield

23. Which of the following BSL is recommended for the handling of samples suspected of Mycobacterium tuberculosis?
    a) BSL-1
    b) BSL-2
    c) BSL-3
    d) BSL-4

24. Which type of filter is commonly used in BSCs to capture and remove airborne particles?
a) Carbon filter
b) Electrostatic filter
c) Glass Fiber filter
d) HEPA filter

25. Specimens of Ebola and Marburg virus for cell culture identification should be handled in which of the following BSL.
a) BSL-1
b) BSL-2
c) BSL-3
d) BSL-4

26. What is a potential environmental hazard associated with Genetically Modified Organisms (GMOs)?
a) Increased biodiversity
b) Pest resistance
c) Unintended gene flow
d) Soil fertility improvement

27. Which of the following is a risk associated with the release of genetically modified organisms into the wild?
a) Enhanced ecosystem stability
b) Gene transfer to non-target organisms
c) Decreased competition among species
d) Improved resistance to diseases

28. The Cartagena protocol on Biosafety primarily deals with,
a) Food safety
b) Animal welfare
c) Human health regulations
d) Environmental risks associated with Genetically Modified Organisms (GMOs).

29. The Nagoya protocol addresses issues related to,
a) Climate change
b) Biodiversity and access to genetic resources
c) Nuclear proliferation
d) Cyber security

30. Which organization provides guidelines and recommendations for biosafety practices on a national level in the United States?
a) Centers for Disease control and Prevention (CDC)
b) World Health Organization
c) Environmental Protection Agency (EPA)
d) Occupational Safety and Health Administration (OSHA)

31. Which of the following is a key consideration in the safety assessment of infection organisms?
a) Virulence
b) Color
c) Odor
d) Taste

32. Which of the following factors is considered during the risk assessment of infections agents?
a) Economic impact
b) Genetic diversity
c) Mode of transmission
d) Aesthetic appeal

33. Which aspect is not typically included in the safety assessment of genetically altered microbes?
a) Potential for horizontal gene transfer
b) Ecological consequences
c) Economic benefits
d) Persistence in the Environment

34. What is the primary goal of safety assessment for transgenic plants?
a) Increase Crop yield
b) Enhance flavor and aroma
c) Ensure environmental and human safety
d) Reduce Water consumption

35. What is a common concern among consumers regarding GMOs in food?
a) Increased nutritional value
b) Potential allergic reactions
c) Enhanced natural flavours
d) Reduced environmental impact

36. What is the first step in the risk assessment process?
a) Risk identification
b) Risk analysis
c) Risk evaluation
d) Risk treatment

37. In regulatory terms, what does "Substantial Equivalence" refer to?
a) Identical composition
b) Similar function and safety profile
c) Exclusive patent protection
d) Revolutionary break through

38. Which of the following is a key component of the risk assessment process?
a) Risk avoidence
b) Risk communication
c) Risk denial
d) Risk Concealment

39. What is the purpose of allergen labeling on food products?
a) To enhance flavor
b) To provide cooking instruction
c) To alert consumers to potential allergens in the product
d) To increase shelf life

40. A research laboratory is working with a highly infectious virus. What biosafety level (BSL) would be most appropriate for handling this virus?
a) BSL-1
b) BSL-2
c) BSL-3
d) BSL-4

41. What is the primary goal of risk assessment using omics approaches?
a) Identify individual genes
b) Evaluate the overall health of an organism
c) Measure protein concentrations only
d) Examine non-genetic factors exclusively

42. In Omics-based risk assessment, what does the term "metabolmics" refer to?
a) Study of gene variations
b) Analysis of protein interactions
c) Profiling small molecules in a biological sample
d) Examination of cell structures

43. In the context of omics, what does the term "biomarker" typically refer to?
a) Genetic mutations
b) Observable traits only
c) Measurable indicators of biological processes or conditions
d) Non-Specific factors

44. How can the breach of health privacy impact social relationships?
a) Enhanced trust b) Improved communication
c) Stigmatization and discrimination d) Increased collaboration

45. Which international regulation focuses on the protection of personal data, including health information?
a) HIPAA b) GDPR c) FERPA d) COPPA

46. What ethical principle is crucial in biomedical research to ensure participant well-being?
a) Autonomy b) Beneficence c) Non-maleficence d) Justice

47. What is the long-term temperature goal set by the Paris Agreement to limit the increase in global average temperature?
a) 1.5 degrees Celsius above pre-industrial levels
b) 2.0 degrees Celsius above pre-industrial levels
c) 2.5 degrees Celsius above pre-industrial levels
d) 3.0 degrees Celsius above pre-industrial levels

48. Which of the following sectors is a major contributor to greenhouse gas emissions on a global scale?
a) Agriculture b) Transportation c) Industry d) All of these

49. In India, which policy focuses on promoting renewable energy and energy efficiency to reduce greenhouse gas emissions?
a) National Action plan on climate change (NAPCC)
b) National Green Tribunal Act
c) Integrated Energy Policy
d) National Solar Mission

50. Which of the following is an example of a qualitative risk characterization method?
a) Monte Carlo Simulation b) Decision Trees
c) Risk Matrix d) Sensitivity Analysis

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