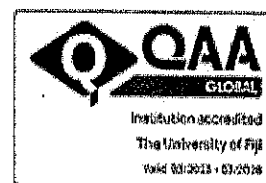


The University of Fiji
(An Entity of Arya Pratinidhi Sabha of Fiji)



Umanand Prasad School of Medicine and Health Sciences
Semester 2, 2025

FINAL EXAMINATION PAPER

**BPHC 205: DISEASE SURVEILLANCE AND OUTBREAK
INVESTIGATIONS, EMERGING AND RE-EMERGING DISEASES AND
NEGLECTED TROPICAL DISEASES**

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 four (4) sections A, B, C and D. All questions are compulsory to answer **except** section A and D have choices.
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):

Section	Question	Content	Marks	Suggested Time
A	1-50	Multiple Choice	50	75 minutes
B	51-52	Short Answer Questions	20	40 minutes
C	53-58	Long Answer Questions	20	40 minutes
D	59-61	Essays (Choose Any ONE out of Three)	10	25 minutes
		TOTAL	100	180 Minutes

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Section A: Multiple Choice (Total 50 Marks)

Each question is worth 1 mark. There is no negative marking.

1. What is the difference between morbidity and mortality?
 - a. Morbidity is the number of deaths caused by a disease, while mortality is the number of people affected by the disease
 - b. Morbidity and mortality are interchangeable terms that describe the same thing
 - c. Morbidity is the number of people affected by a disease, while mortality is the number of deaths caused by the disease
 - d. Morbidity and mortality refer to different types of diseases, with morbidity referring to infectious diseases and mortality referring to non-infectious diseases
2. Which of the following is an example of a zoonotic disease?
 - a. Tuberculosis
 - b. Influenza
 - c. Malaria
 - d. Ebola
3. Which of the following is an example of a non-communicable disease?
 - a. Tuberculosis
 - b. Influenza
 - c. Diabetes
 - d. Measles
4. Epidemiologists are interested in learning about
 - a. The causes of disease and how to cure or control them
 - b. The frequency and geographic distribution of diseases
 - c. The causal relationships between diseases
 - d. All of the above
5. Diseases that are always present in a community, usually at a low, more or less constant frequency, are classified as having a _____ pattern.
 - a. Outbreak
 - b. Epidemic
 - c. Endemic
 - d. Pandemic
6. Which of the following statements is true concerning epidemic diseases?
 - a. They are not usually very contagious
 - b. They usually appear and disappear seasonally
 - c. At the end of an epidemic, a disease spreads at an increasing rate and then abruptly disappears
 - d. All of the above
7. A disease vector is a(n) _____.
 - a. Organism that transmits a disease
 - b. Symptom of a disease
 - c. Environmental condition associated with a disease
 - d. Organism which has a toxin

8. Which of the following is NOT one of the three key factors in the epidemiologic triangle?
 - a. Host
 - b. Time
 - c. Environment
 - d. Agent
9. What is the difference between incidence and prevalence?
 - a. Incidence refers to the proportion of the population with a disease, while prevalence refers to the number of new cases of a disease in a population over a period of time
 - b. Incidence refers to the number of new cases of a disease in a population over a period of time, while prevalence refers to the proportion of the population with a disease
 - c. Incidence and prevalence are the same thing
 - d. Incidence and prevalence are measures of mortality
10. Which of the following is NOT an example of passive surveillance?
 - a. Contact tracing of Balevuto resident deaths
 - b. Outpatient visits to Zens clinic
 - c. Community outreach for NCDs
 - d. All visits to the accident and emergency department for Aspen Hospital
11. Zoonoses include all but one of the following
 - a. Salmonella
 - b. Ebola
 - c. Rabies
 - d. Syphilis
12. Which of these external partners are NOT part of the One Health approach in Fiji?
 - a. Biosecurity Authority of Fiji
 - b. Ministry of Agriculture
 - c. Ministry of Environment
 - d. Ministry of Trade and Tourism
13. What is the primary purpose of disease surveillance?
 - e. To develop new vaccines
 - f. To monitor and respond to disease trends
 - g. To treat infected individuals
 - h. To enforce quarantine laws
14. Which of the following is a key component of outbreak investigation?
 - a. Ignoring initial reports to avoid panic
 - b. Establishing a case definition
 - c. Waiting for media coverage
 - d. Focusing only on laboratory results

15. Which surveillance method relies on symptom patterns before diagnosis?
- Passive surveillance
 - Syndromic surveillance
 - Active surveillance
 - Sentinel surveillance
16. Which organization coordinates global outbreak responses?
- IMF – International Monetary Fund
 - WHO – World Health Organisation
 - WTO – World Trade Organisation
 - UNDP- United Nations Development Fund
17. What is the first step in an outbreak investigation?
- Implement control measures
 - Establish the existence of an outbreak
 - Interview patients
 - Notify the media
18. Which of the following is an emerging infectious disease?
- Tuberculosis
 - Monkeypox virus
 - Measles
 - Cholera
19. Which factor contributes most to the re-emergence of infectious diseases?
- Improved sanitation
 - Antimicrobial resistance
 - Increased vaccination
 - Better diagnostics
20. Which of the following is a re-emerging disease?
- COVID-19
 - Dengue
 - Ebola
 - Measles
21. Which of the following is a characteristic of emerging diseases?
- Caused by well-known pathogens
 - Limited to endemic regions
 - Increasing in incidence or geographic range
 - Always preventable by vaccines
22. Which of the following is a re-emerging vector-borne disease?
- Zika virus
 - Malaria
 - Nipah virus
 - Influenza

23. Which of the following is classified as a neglected tropical disease (NTD)?
- HIV/AIDS
 - Leishmaniasis
 - Influenza
 - Tuberculosis
24. What is a common feature of NTDs?
- High global funding
 - Affect affluent populations
 - Limited attention and resources
 - Easily eradicated
25. Which helminthic disease is considered an NTD?
- Soil helminthiasis
 - Toxoplasmosis
 - Giardiasis
 - Trichomoniasis
26. Which strategy is most effective in controlling NTDs?
- Isolation of patients
 - Mass drug administration
 - Individual treatment only
 - Travel restrictions
27. Which of the following NTDs is transmitted by a vector?
- Soil-transmitted helminths
 - Leprosy
 - Lymphatic filariasis
 - Trachoma
28. Which of the following causes a food-borne illness?
- Botulism
 - Malaria
 - Lymphatic filariasis
 - Dengue
29. Which of the following is spread via droplet route?
- Cholera
 - Tuberculosis
 - Severe Acute Respiratory Syndrome
 - HIV
30. Which Pacific Island country experienced a significant measles outbreak in 2019 due to low vaccination coverage?
- Fiji
 - Samoa
 - Tonga
 - Vanuatu

31. Which surveillance strategy is most effective in remote Pacific communities with limited laboratory access?
- Syndromic surveillance
 - Genomic surveillance
 - Passive surveillance
 - Environmental surveillance
32. Which organization supports integrated disease surveillance in Pacific Island countries?
- UNAIDS
 - Pacific Community (SPC)
 - CDC
 - Red Cross
33. Which mosquito-borne virus has re-emerged in Pacific Island nations such as Fiji and the Solomon Islands?
- Zika virus
 - Dengue virus
 - West Nile virus
 - Yellow fever virus
34. Which re-emerging bacterial disease is a growing concern in Pacific Island nations due to overcrowding and poor housing?
- Tuberculosis
 - Typhoid fever
 - Cholera
 - Pertussis
35. Which helminthic NTD is endemic in parts of Papua New Guinea and Solomon Islands?
- Onchocerciasis
 - Lymphatic filariasis
 - Guinea worm disease
 - Hookworm
36. Which fungal pathogen has caused healthcare-associated outbreaks in Australia and is a concern for Pacific hospitals?
- Candida albicans
 - Aspergillus fumigatus
 - Candida auris
 - Cryptococcus gattii
37. Which of the following diseases requires Biosafety Level 4 containment during laboratory handling?
- Influenza
 - Dengue
 - Ebola
 - Cholera

38. Which pathogen is most commonly associated with waterborne outbreaks and is resistant to chlorination?
- Cryptosporidium parvum
 - Vibrio cholerae
 - Plasmodium falciparum
 - Candida auris
39. Which disease was declared eradicated in 1980 but remains a concern for bioterrorism?
- Anthrax
 - Smallpox
 - Botulism
 - HIV
40. Which of the following organisms is a multidrug-resistant fungal pathogen causing hospital outbreaks?
- Candida albicans
 - Candida auris
 - Cryptococcus neoformans
 - Aspergillus fumigatus
41. Which vector-borne disease is caused by a helminth and is increasingly reported near primate habitats?
- Malaria
 - Dengue
 - Necator gorillae infection
 - Yellow fever
42. Which bacterial disease is associated with intentional release and has been used in bioterrorism events?
- Cholera
 - Plague
 - Anthrax
 - Botulism
43. Which of the following diseases is caused by a carbapenem-resistant bacterial strain and poses a major hospital threat?
- MDR Tuberculosis
 - CRE (Carbapenem-resistant Enterobacteriaceae)
 - Cryptococcosis
 - Influenza
44. Which disease is monitored globally through genomic surveillance due to its rapid mutation rate?
- Cryptosporidiosis
 - Cholera
 - COVID-19
 - Botulism

45. Which disease is caused by *Yersinia pestis* and has historically caused pandemics?
- Plague
 - Dengue
 - Anthrax
 - Malaria
46. Which disease is caused by a protozoan and is a leading cause of morbidity in tropical regions?
- Cryptococcosis
 - Malaria
 - Botulism
 - Cholera
47. Which of the following diseases is a re-emerging threat due to declining vaccination rates?
- Influenza
 - Dengue
 - Smallpox
 - Cholera
48. Which disease is caused by a neurotoxin and requires immediate public health notification due to its severity?
- Botulism
 - HIV
 - Cryptosporidiosis
 - MDR Tuberculosis
49. Which fungal disease is common in immunocompromised individuals and can be detected via antigen testing?
- Candida auris*
 - Cryptococcosis
 - Aspergillosis
 - Histoplasmosis
50. Which viral disease is transmitted by *Aedes* mosquitoes and is endemic in many tropical regions?
- Influenza
 - Dengue
 - Ebola
 - HIV

Section B: Short Answer Questions (Total 20 Marks)

51. Match the following infectious agents with the corresponding vectors which aid their transmission. Vectors can be matched once, more than once, or not at all.

(10 Marks)

Tropical Disease	Vector
a) Malaria	i) Snails
b) Human African Trypanosomiasis	ii) Aedes mosquito
c) Lymphatic Filariasis	iii) Anopheles mosquito
d) Dengue Fever	iv) Tick
e) Lyme Disease	v) Triatomine bugs
f) Chagas Disease	vi) Tsetse fly
g) Chikungunya	vii) Rodents
h) Plague	
i) Angiostrongyliasis	
j) Zika	

52. Match the following 'MODES of transmission of Infection' with the correct definitions. Modes of transmission may be selected once, more than once, or not at all.

(10 Marks)

Definition	Mode of transmission
a) When microorganisms are transferred by direct physical contact with an infected or colonised human	i) Fomite Transmission
b) Transmission of microorganisms through contaminated door knobs or furniture	ii) Airborne transmission
c) When infectious agents are carried by dust or droplet nuclei suspended in air and are $< 5\mu\text{m}$ in size.	iii) Direct contact transmission
d) Transmitted when food products are not processed appropriately	iv) Indirect contact transmission
e) Transmitted when there is contamination of drinking water with sewage	v) Vehicle transmission
f) Transmitted through sharing of contaminated needles for intravenous drug use	vi) Vector borne transmission
g) Infections caused by animals or insects	vii) Abiotic vehicle transmission
h) Transmission of microorganism through cooling towers and water fountains	viii) Bloodborne transmission
i) Transfer of microorganisms via contaminated gloves or medical equipment	ix) Foodborne transmission
j) Transmitted via insect bites	

Section C: Long Answer Questions (Total 20 Marks)

53. Explain the difference between emerging infectious disease and re-emerging infectious diseases and give 1 example of each. (2 Marks)
54. Identify 2 environmental factors and explain how they contribute to determine 'risk' or 'susceptibility' to disease in individuals. (2 Marks)
55. Apart from person-to person contact, describe two other methods that facilitate typhoid outbreaks in the community. (2 Mark)
56. Animals also share our susceptibility to some diseases and environmental hazards. Because of this, they can sometimes serve as early warning signs of potential human illness. For example, birds often die of West Nile virus before people in the same area get sick with West Nile virus infection. Provide an example of two zoonoses which affects animals and is capable of being transmitted to humans. (2 Marks)
57. Describe the impact of disease in food animals to human health and the economy. (2 Marks)
58. Match the following Diseases with the correct genus and species names of the corresponding pathogens. (10 Marks)

Tropical Disease	Microorganism
a) Yaws	i) <i>Neisseria gonorrhoeae</i>
b) Cholera	ii) <i>Mycobacterium tuberculosis</i>
c) Lymphatic filariasis	iii) <i>Samonella typhi</i>
d) Plague	iv) <i>Sarcoptes scabiei</i>
e) Helminthiasis	v) <i>Vibrio cholerae</i>
f) Tuberculosis	vi) <i>Wuchereria bancrofti</i>
g) Scabies	vii) <i>Yersinnia pestis</i>
h) Malaria	viii) <i>Treponema pallidum</i>
i) Typhoid	ix) <i>Ascaris lumbricoides</i>
j) Gonorrhoea	x) <i>Plasmodium spp.</i>

Section D: Essay Questions (Total 10 Marks)

You have a choice to answer **One** out of the Three questions [1/3] below. Each essay question is worth 10 marks and should be structured clearly, systematically and coherently to attain full marks. Answers submitted in point form are NOT acceptable.

59. Antimicrobial-resistant microbes: Using an example of an emerging infectious disease, illustrate how disease can quickly spread through communities, the food supply, healthcare facilities, and the environment (soil, water), making it harder to treat certain infections in animals and people. (20 Marks)
60. Vector-borne diseases are on the rise with warmer temperatures and expanded mosquito and tick habitats. Using an example of a tropical vector-borne disease, describe the re-emergence of a vector-borne illness and what characteristics have changed to facilitate new epidemics and outbreaks in endemic populations. (20 Marks)
61. Describe the Fiji Ministry of Health's efforts to address Neglected Tropical Diseases. Using an example, Describe the community efforts that have been rolled out, any interventions that have been implemented and community health messages that have been dissemination regarding prevention. If you had access to funding, what type of epidemiological study would you conduct to evaluate one or more of the community prevention efforts? (20 Marks)

