

Chattogram Veterinary and Animal Sciences University
One Health Institute
Masters in Public Health (MPH)
July-December Semester Final Examination 2024
Course title: Application of GIS and IT in Public Health (Practical)
Code: GIP-602
Full marks: 20, Time: 1 hour

(Figures in the right margin indicate full marks. Answer the following questions)

Dataset: Helicobacter

Helicobacter pylori, previously known as ***Campylobacter pylori***, is a gram negative, flagellated, helical bacterium. An infection with *Helicobacter pylori* can either have no symptoms even when lasting a lifetime, or can harm the stomach and duodenal linings by inflammatory responses induced by several mechanisms associated with a number of virulence factors. Colonization can initially cause *H. pylori* induced gastritis. This data set contains data from 100 patients distributed in Chattogram division. Diagnosis of *H. pylori* was done by culture method and identification of specific gene by PCR. Use this data set to complete the following tasks:

1. Show the distribution of the population in different locations in Chattogram division in the digital map of Chattogram division. Do you think the sampling was random? Explain in favor of your opinion. 08
2. Construct a map with the given data to show the distribution of negative and positive population in different areas of Chattogram division. By visual inspection, do you see any cluster of cases? 12

(Export all maps as PDF/JEPG (save the files with question number and your roll number) and send to sharminchowdhury@cvasu.ac.bd)

Chattogram Veterinary and Animal Science University
One Health Institute
Masters in Public Health (MPH)
July-December Semester Final Examination 2024
Course Title: Health Economics, Policy-Planning and Ethics (theory)
Code: HEP-602
Full Marks: 40, Time: 2 hours

Corresponding figure next to each section indicates respective allocated marks.

Part: Health Economics (Answer two where Q3 is compulsory)

Q1. The Grossman model divides time into **four key categories**: time spent working, time spent on leisure, time spent being sick, and time spent on health maintenance. Consider an individual deciding how to allocate their time across these four activities. Explain how each category of time interacts with the others, and discuss how an improvement in health technology might change the individual's time allocation. **(10)**

Q2. The concept of supplier-induced demand suggests that physicians, as providers of medical services, may influence the demand for healthcare. Imagine a scenario where a physician faces a financial incentive to perform more procedures than necessary. Using a graphical analysis of demand and supply in the healthcare market, explain how supplier-induced demand can lead to inefficiencies.

(10)

Q3. A new health technology, Tech A, has been introduced as an alternative to the standard treatment, Tech B. The following table summarizes the costs and effectiveness (measured in quality-adjusted life years, QALYs) of both technologies:

Technology	Cost (\$)	Effectiveness (QALYs)
Tech A	50,000	3.5
Tech B	30,000	2.5

- Determine the ICER of Tech A compared to Tech B. Show your calculations. **(2.5)**
- The willingness-to-pay (WTP) threshold in this context is \$20,000 per QALY. Based on the ICER, decide whether Tech A is cost-effective compared to Tech B. Provide a brief justification. **(2.5)**
- Assume a population of 1,000 patients. Calculate the total additional cost of adopting Tech A over Tech B for the entire population. **(2.5)**
- If the cost of Tech A increases to \$60,000, recalculate the ICER. Would your cost-effectiveness decision change under the same WTP threshold. Explain. **(2.5)**

Part: Policy-Planning and Ethics (Answer any two)

Q4. What is ethics. Briefly describe principles of research ethics. Write four important articles of Helsinki declaration. (2+4+4)

Q5. Briefly describe research ethics related to vulnerable groups. Describe five issues of publication ethics. (5+5)

Q6. Write four goals of national health policy. What are the common problems of our health care delivery system. (5+5)

Q7. Draw planning cycle. Describe components of planning process. (4+6)

Q8. Write about patients' rights and doctors' responsibilities to patients. (5+5)

Final Examination MPH under OHI; CVASU

Environmental and Occupational Health- 602; Time 2 hours; Marks- 40

Question 1: Find the true or false Answer all (marks -10)

- a. Acclimatization is the ability of our body to adapt to work in a healthy environment.
- b. Population health can fit under the umbrella of one health.
- c. Zoonotic diseases can be transmitted from human to animal and animal to human both ways.
- d. Chemoprophylaxis can prevent malaria transmission.
- e. Toxins may include some medicines that are helpful in small doses, but poisonous in large amounts.
- f. Antigenic shift is responsible for development of new bacterial serotype.
- g. Level of Arsenic in drinking water should be >0.05 mg/l.
- h. Dengue serotype 2 is prevalent in 2023 and 2024 outbreak in Chittagong.
- i. Ship breaking works related with development of mesothelioma in lungs
- j. Tuberculosis is common among garment factory workers.

Question 2: Multiple choice questions; Answer all with T or F (Marks -10)

1. Principle of management of zoonotic diseases
 - a. Diagnosis of zoonotic conditions
 - b. Treatment
 - c. Destruction
 - d. Quarantine
 - e. Immunization
2. Relationship of Pets, Livestock and Wildlife
 - a. Benefits our psychological health
 - b. Benefits our mental health
 - c. Benefits our social health
 - d. Benefits our environmental health
 - e. All are true
3. High risk animals for rabies are
 - a. Bats
 - b. Raccoons
 - c. Foxes
 - d. Cats
 - e. Wild dogs
4. What are the true and false for the occupational cancers
 - a. Wood workers- Hodgkins Lymphoma
 - b. Petrochemical workers- Stomach
 - c. Printing workers- Brain
 - d. Rubber industry workers- Urinary Bladder
 - e. Coal miners- Lungs
5. Microbiological standard of safe water
 - a. No sample should contain E. coli in 100 ml
 - b. No sample should contain more than 3 coliform organism per 100 ml
 - c. Not more than 5% samples throughout the year should contain coliform in 100 ml and
 - d. No two consecutive samples should have coliform organisms in 100 ml.
 - e. All are true
6. Role of climate change in the spread of vector-borne diseases
 - a. Temperature increase
 - b. Decrease rainfall
 - c. Extended mosquito season
 - d. Human behavior
 - e. Use of pesticides
7. Following are some true statements
 - a. $15-20^{\circ}\text{C}$ temperature is most comfortable for human
 - b. Heat stroke, hyperpyrexia and heat exhaustion are some humidity related diseases

- c. Frost bite, limb ischemia and gangrene are some heat related conditions
 - d. 20-30°C temperature of environment is good for Plasmodia and Dengue
 - e. High humidity related with mosquito breeding
8. Following are different types of occupation
- a. Primary activities include agriculture and animal husbandry
 - b. Secondary activities include forestry, building and construction work etc.
 - c. Tertiary activities include transport and communications
 - d. Teachers and vets are Sedentary workers
 - e. Primary activities are common in developed countries.
9. Needs of a good work environment
- a. Cleanliness is a dire need
 - b. Unfixed daily work hours are a need for a good work environment
 - c. Rest and pause of work needed at three hours interval
 - d. Insurance coverage is available in our country for risky works
 - e. All are true
10. Following are some findings in pesticide poisoning
- a. Headache
 - b. Vomiting
 - c. Itching
 - d. Frothy mouth
 - e. Convulsions

Question 3: Case study; any four; (Marks-4X3=12)

A 55 years old ship breaking worker has cough and shortness of breath for last 3 years. It is progressive and problem varies with workload and seasonal changes. He is working as a cutter master in the ship yards for last 30 years. He says that he rarely uses any PPE while working in the yard. He cannot meet the family need with his income and his health cost is increasing day by day. He rarely gets any assistance from his working authority regarding his health issues.

- a. What are the working environment of the workers in different factories including ship breaking yards where workers have different health risks?
- b. Why PPE is not commonly practiced in risky work places? How it can be improved?
- c. What measure can be taken to improve health conditions of the workers where they had exposure related complications?
- d. Do you think law enforcement can improve the conditions? If yes how?
- e. Do you think our health facilities are enough to take the health issues of different occupational hazards? Write your opinions.

Question 4: Short question; Any four; (Marks-2X4=8)

- a. Draw and label the one health umbrella.
- b. How climate changes influence resurgence of zoonotic diseases?
- c. How and what extent occupation and carcinoma is interrelated?
- d. How pesticides influence the food safety?
- e. Name six zoonotic diseases with their causative agents and vectors.

Subject Molecular Epidemiology
MS in Public Health (One Health)
Subject: Molecular Epidemiology
Course code: MOE 602, July-December 2024

Total marks: 40

Time: 2 hours

(Figures in the right margin indicate full marks. Answer any four questions)

- | | | | |
|---|---|--|------|
| 1 | a | Define DNA. Mention salient feature of DNA double helix with a diagram. | 5.0 |
| | b | Explain DNA replication and transcription with diagram | 5.0 |
| 2 | a | What do you mean by transgenic animals? Mention different methods of production of transgenic animals. | 10.0 |
| 3 | a | Explain the term selectable marker and insertional inactivation and how these are utilized in elucidating gene sequence. | 10.0 |
| 4 | a | What is the meaning of restriction endonuclease? How you can convert sticky end to blunt end vice versa? | 5.0 |
| | b | Differentiate cloning vector from expression vector. | 5.0 |
| 5 | a | Explain different purification process of nucleic acids. | 10.0 |

ONE HEALTH INSTITUTE
Chittagong Veterinary and Animal Science University
Second Semester Master in Public Health Final Examination 2024

Course code: ECO-602

Time:

Course Name: Ecology

Full marks: 20

Answer any **FOUR** of the following questions.

- | | | | |
|----|----|--|-----|
| 1. | a) | How does one health approach human, animal, and environmental health? Why is studying ecology important for planning a public health system? | 1+1 |
| | b) | Explain the relevance of transdisciplinarity in addressing complex health issues at the intersection of the environment, society, and health. | 2+1 |
| 2. | a) | Mention three major principles of ecosystems, and relate them to functioning and stability of an ecosystem? | 2 |
| | b) | Define biomass and relate it to trophic levels. Why does biomass decrease at higher trophic levels? Illustrate the concept using a food pyramid diagram. | 3 |
| 3. | a) | Draw the Nitrogen cycle. How are we disrupting this cycle and with what consequences? | 2 |
| | b) | Explain the Laws of Maximum and Minimum. How these laws influence the distribution and abundance of species in an ecosystem. | 3 |
| 4. | a) | What are ecosystem services? How do they contribute to human well-being? | 1+1 |
| | b) | How does habitat fragmentation affect public health? Explain using the example of Lyme disease transmission in the Northeastern United States. | 2+1 |
| 5. | a) | What is climate change? How it differs from climate variability? | 1+1 |
| | b) | Is current climate change anthropogenic? List impacts of climate change on human health by giving examples of climate-sensitive infectious diseases. | 1+2 |
| 6. | a) | Define biodiversity. How do anthropogenic activities impact biodiversity, and what are the implications for One Health? | 1+1 |
| | b) | Mention three major public health issues related to specific ecosystem changes in Bangladesh. | 3 |
| 7. | a) | How the COVID-19 pandemic proves the importance of One Health approach? | 2 |
| | b) | Discuss the role of human-animal interactions and environmental factors in the emergence and spread of zoonotic diseases like COVID-19. | 3 |

Chattogram Veterinary and Animal Sciences University (CVASU)

One Health Institute

MPH Program

Session: July - December, 2024, **Semester:** 2nd (602)

Examination: Final Term

Course Title: Communication & Behavior (Practical)

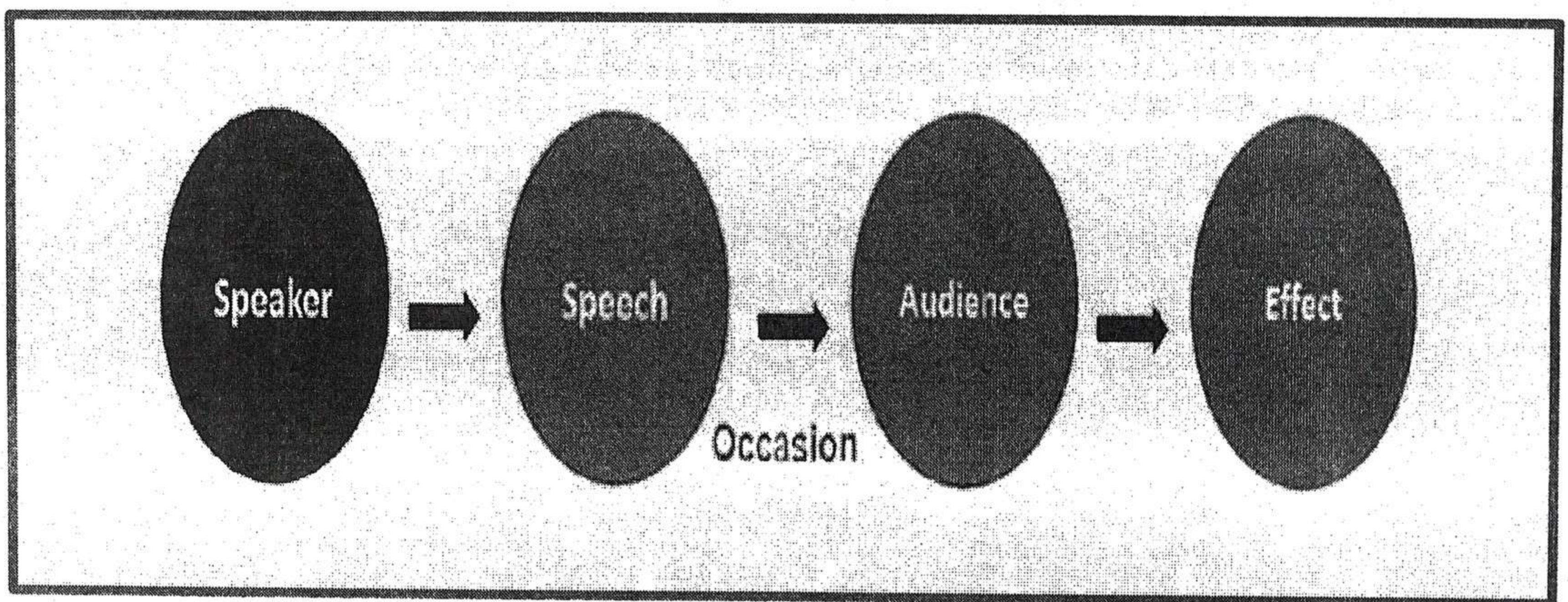
Course Code: COB-602

Total Time: 1.00 Hour

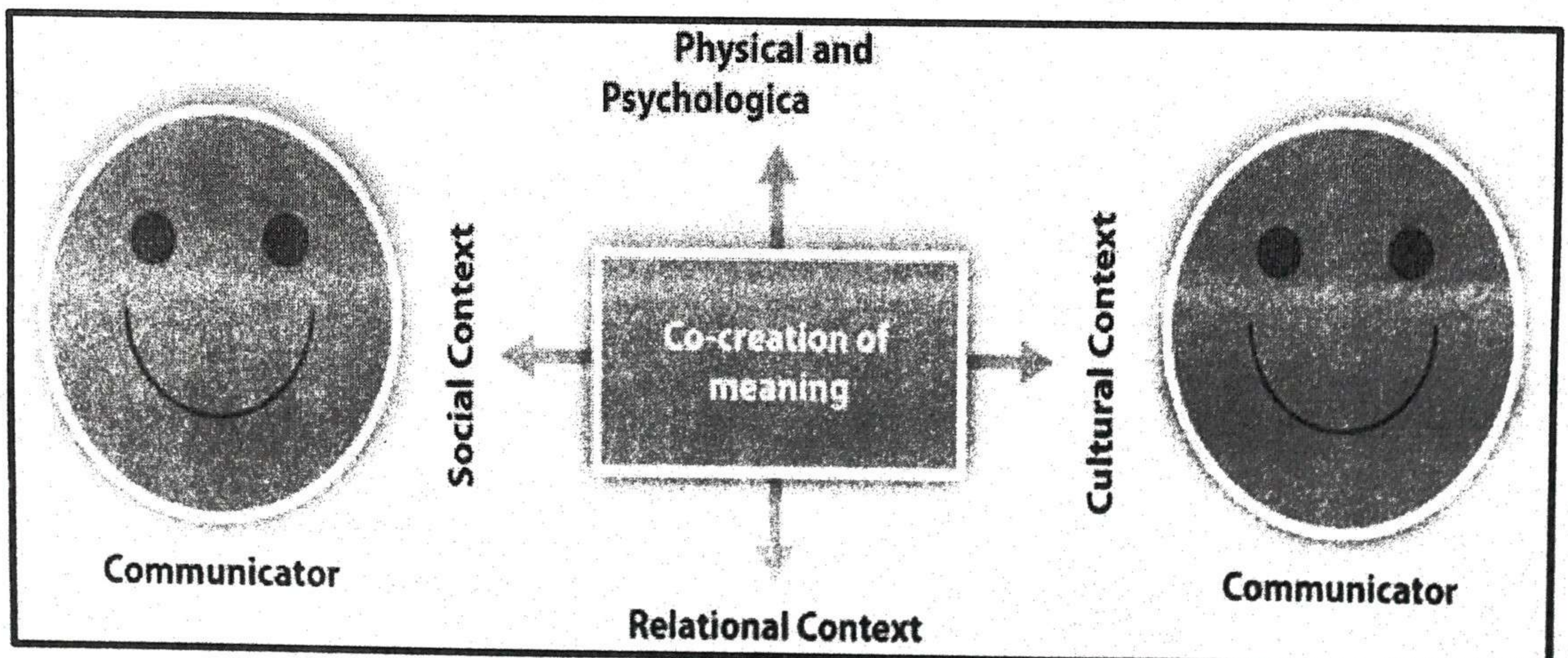
Total Marks: 20

1. Answer the following questions - (10x2 = 20)

- a). Design a Health Communication approach in Rohingya Refugee Camp as a Health Camp regarding Sanitation and Hygiene practices and associated Health Behavior among that Community People by giving priority of the following Communication Model.



- b). Explain the following Communication Model.



Chattogram Veterinary and Animal Sciences University (CVASU)

One Health Institute

MPH Program

Session: July - December, 2024, Semester: 2nd (602)

Examination: Final Term

Course Title: Communication and Behavior

Course Code: COB-602

Total Time: 2.00 Hours

Total Marks: 40

Case Study

Last year a team of WHO visited some slum areas of Dhaka City. The team observed that most of the slum community people did not use sanitary latrine, they were not following proper sanitation and hygiene practices and when they were asked about hand washing practices, the WHO team found that majority of the slum community people did not wash hands before meal and after toilet properly with soap. Some people including some young men were smoking inside the slum area. Some children were playing near drains and canals which were dirty and full of industrial wastes. Some females were collecting water for household use from a small lake which was full of wastes. Some industrial drains were connected to the lake. There were some street food shops near the slum area. The street food vendors were selling different foods which were not covered and not stored in safe containers. Different flies, insects and bees were flying over the foods. Some customers from the slum area including some children were buying foods from the street food vendors. And some children of the slum community were eating the street foods near the shops.

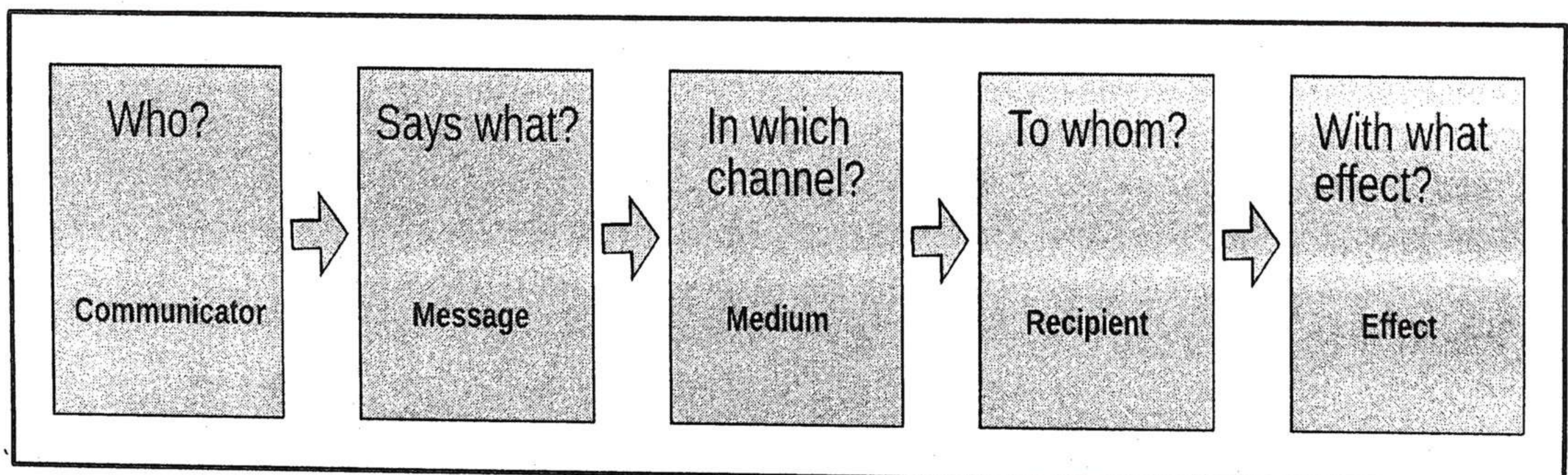
The team of WHO observed all the events mentioned in above paragraph properly. The team decided to organize a health camp near the slum area. The team planned some important events to conduct for the well-being of the slum community people.

1. Answer any 5 questions. (5x2 = 10)

- What is Health Communication? How the WHO team performed Health Communication in the camp?
- What do you know about Risky Behavior? Give some examples of Risky Behaviors from the above story.
- Do you think the slum community people are in danger in public health concern? If yes, why?
- Define BCC? Do you think BCC can change the risky behavior of the slum community people? If yes, how?
- How should the team plan the health camp for the well-being of the slum community people?

2. Answer the following question - (10x1 = 10)

- Design a Health Communication approach in Rohingya Refugee Camp as a Health Camp regarding Sanitation and Hygiene practices including associated Health Behavior among that Community People by giving priority of the following Communication Model.



3. Free hand writing: Any two (2X5 = 10)

- a) How health behaviors impact on Health Status?
- b) Importance of Health Communication
- c) Communication Barrier

4. Answer any 2 questions. (5x2 = 10)

- a) What do you mean by Communication? Write different types and forms of Communication.
- b) What do you know about Behavioral Sciences? Mention different types of Health Behavior.
- c) Mention the Determinants of Behavior. What are the stages of Behavior change?

Chattogram Veterinary and Animal Science University
One Health Institute
Masters in Public Health (MPH)
July-December Semester Final Examination 2024
Course Title: Anthropology (Practical)
Code: ANP-602
Full Marks: 20, Time: 1hour

Public health experts are concerned about a seasonal rise in the incidence of severe fever sickness with a high fatality rate in a rural part of Bangladesh. According to investigations, most cases happen in the winter, especially among households that engage in traditional practices like gathering date palm sap or eating raw sap. Laboratory studies verify that the Nipah virus, a zoonotic infection spread by bats to humans that may also spread from human to human, is the source of the outbreaks.

Local officials believe that bats, the virus's natural reservoirs, are contaminating the sap during harvesting. Many people in the community still eat raw sap in spite of warnings because they view it as a seasonal treat and a significant cultural custom. Initiatives to encourage safety precautions, like erecting barriers above sap-collecting, have faced resistance due to limited awareness and cultural beliefs.

Additionally, healthcare access in the area is limited, and many villagers delay seeking treatment due to economic constraints or mistrust of medical facilities. Women and children, who are more involved in caregiving and household chores, are disproportionately affected during outbreaks.

The local health department has sought your expertise to design a culturally sensitive and sustainable public health strategy to prevent and manage Nipah virus outbreaks in this community.

"As a public health anthropologist, propose a culturally appropriate intervention strategy to address the Nipah virus outbreaks in the community. Your response should include:

1. Identification of potential social, cultural, and environmental factors contributing to the Nipah virus transmission. (5)
2. A strategy to engage the community in understanding the risks and transmission pathways of the Nipah virus. (5)
3. Recommendations for preventive measures that align with local cultural practices and economic realities. (5)
4. Approaches to improve early detection of cases and healthcare access, particularly for vulnerable groups like women and children. (5)

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Masters in Public Health (MPH)
July-December Semester Final Examination 2024
Course Title: Anthropology (theory)
Code: ANP-602
Full Marks: 40, Time: 2 hours

All the questions below have equal marking weight. Corresponding figure next to each section indicates respective allocated marks.

Answer any four (4) from the following questions

In a small rural village near a growing city, the transition from traditional to urban living led to an increase in diseases such as malaria, tuberculosis, and neglected tropical diseases. Poor sanitation and inadequate healthcare systems, along with the villagers' reliance on traditional medicine, made these diseases difficult to control. A medical anthropologist conducting ethnographic investigation within the community observed that while some health practices were based on cultural beliefs, there was a lack of awareness about modern healthcare practices, which contributed to the spread of diseases.

In response, local health authorities collaborated with anthropologists to develop a health intervention program aimed at bridging the gap between traditional practices and modern medical approaches. The program included education on disease prevention, improving sanitation, and setting up mobile health clinics for better healthcare access. Over time, this approach led to a noticeable reduction in disease rates and enhanced the community's understanding of healthcare, demonstrating the critical role of anthropology in addressing public health issues in impoverished areas.

This case highlights the importance of integrating social science and health initiatives, especially in marginalized communities, where understanding cultural dynamics and local beliefs can make a significant difference in the success of public health interventions.

1. Briefly describe 'Anthropology' and 'Medical Anthropology'? When and why was the One Health Social Sciences (OHSS) Initiative launched? Discuss the importance of anthropology in One Health?" (2+2+2+4)
2. What is 'Paleoanthropology'? How did the transition from hunting-gathering societies to agricultural and urban societies influence the evolution and spread of diseases among human populations? Why do modern urban societies face a heightened risk of disease outbreaks, and what types of diseases are most prevalent in densely populated urban environments? (2+3+5)

3. What is the Qualitative Study? Describe the ethnography study. What qualities do you think a researcher needs to effectively conduct ethnographic research? How can these qualities influence both the research process and the findings? (2+2+6)
4. What do you understand by "Diseases of Poverty and Diseases of Affluence?". Explain the link between rare infectious diseases of poverty (IDPs) and the 10/90 gap in global health. How do factors like economic inequality and weak healthcare systems contribute to the burden of these diseases in low-income countries? Provide examples and suggest solutions to improve access to treatment for these diseases. (2+2+3+3)
5. What is Bioterrorism? Why are biological weapons considered more dangerous than conventional weapons? Describe the potential risks of Bioterrorism in the future and suggest ways to prevent it. (2+3+5)
6. Describe how risk-taking behaviours like unsafe sexual practices and drug use contribute to the spread of diseases. What preventive measures can help reduce the associated risks? (5+5)