

IIHMR UNIVERSITY
Institute of Health Management Research
MBA Hospital and Health Management
Batch-22 (2017-2019)
Health Management
Applied Epidemiology
Term Examination

**Time - 3 Hours****MM-70**

Roll Number

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Roll Number (in words)

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Section

Health

Date

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Signature of Invigilator_____

Marks obtained

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Signature of Examiner_____

Note (Please read carefully before start attempting the paper):

1. The question paper contains 17 printed page.
2. All questions *are to be attempted*.
3. This paper has two sections A and B.
4. The question paper contains 2 sections. **Section A** contains 20 marks and **Section B** contains 50 marks. Section B has 8 questions and Section A has 15 questions.
5. Any kind of overwriting and changing answers will amount to Zero marks.
6. **Section A has to be solved and returned to the invigilator within first 30 mins.**

Section B

Q 1. Local health department got information from community health volunteer on 15th April that since yesterday days four cases diarrhea had occurred in the Rampura village. District IDSP Unit started the investigation. Same day, the physician from the primary Health Center reported that 20 people with vomiting and diarrhea had visited the clinic since yesterday and all were found to be from the Rampura village.

Based on the above description. Answer the following questions

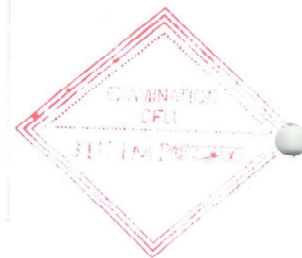
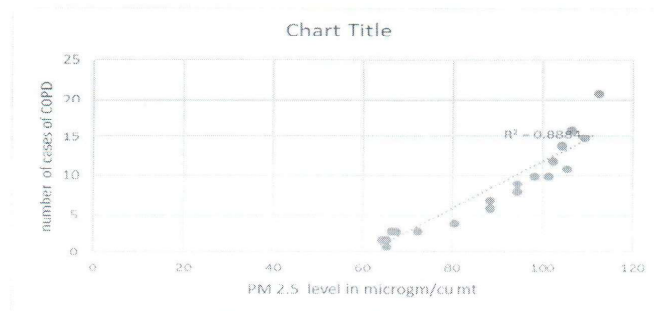
- a) What should be the next steps in investigating this potential outbreak? (2 marks)

- b) Write down a case definition that could be used in investigating this outbreak. Why case definition is needed in investigating outbreak. (1 marks)

- c) Who should be part of the disease outbreak investigation team and what should be their major roles and responsibilities? (1 marks)

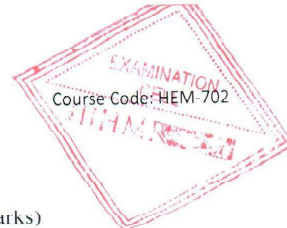
- d) Why should outbreak of a disease be investigated? (1 marks)

Q 2. Air Quality Surveillance Programme was launched in a certain community. In order to ascertain the health impact of poor air quality on Chronic Obstructive Pulmonary Disease was taken as health outcome measure. The chart below depicts findings from preliminary analysis



Based on above description answer the following questions

- a) Interpret this chart. (2 marks)



b) Write the epidemiological hypothesis based on interpretation of this chart. (1 marks)

c) How can you test the epidemiological hypothesis you formed? (1 marks)

d) Besides the use depicted above, what are the other uses of data from disease surveillance system? (1 marks)

Q 3. Read carefully the information given below from a year long follow up study of pregnant mother until live births.

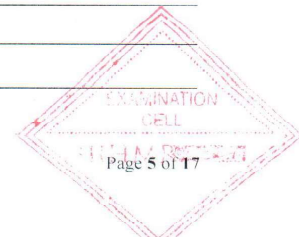
	values	Names (disease or exposure)
Number of mothers, total (N)	3,000	
Proportion with disease in total	10.0 %	low birth weight
Proportion exposed of total	50.0 %	organic food consumption
Proportion of disease among those who are not exposed	11.6%	

a) Calculate the effect of organic food consumption on risk of low birth weight in the selected population. (2.5 marks)

b) Calculate attributable risk of low birth weight if mothers don't consume the organic foods. (2.5 marks)

c) Differentiate relative risk and attributable risk with an example. (2.5 marks)

d) Write down five disadvantages of this study design. (2.5 marks)



Q 4. Answer the following questions.

a) Explain Ecological fallacy with appropriate example (3 marks)

b) Can cross sectional study be used to calculate incidence of disease? Support your answer with appropriate reason (2 marks)

Q 5. In given Table data from study to assess validity of the FI Screen considering HFSS tool as gold standard to identify the families at risk of Food Insecurity. The HFSS is a gold standard tool. Answer the questions given below the table:

TABLE 2 Cross-tabulation of Overlap Between the 18-Item HFSS and the FI Screen in Identifying Food-Insecure Households

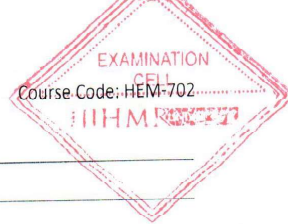
	Identified by the HFSS,	Not Identified by the HFSS,	Total,
Identified by the FI screen	6614	3977	10 591
Not identified by the FI screen	228	19 279	19 507
Total	6842	23 256	30 098

a) How many families are at food insecurity? (2 marks)

[illegible]

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This image shows a single sheet of white paper with horizontal blue or green ruling lines, typical of notebook paper. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.



Q 6. Develop a search strategy for following research question to use in the “PubMed”. (3 marks)

“Explore the role of physical activity-based intervention in prevention of diabetes mellitus”

Q 7. A multi-year randomized controlled trial of the association between daily meditation and health behavior among patients following a skin cancer diagnosis. Researchers randomly allocated study participants into 2 groups. The first patient group received weekly classes on meditation practices as well as a self-taught manual on meditation. The second patient group received only the self-taught manual on meditation. Data were collected at set intervals following the intervention to assess the patients’ health behaviors. Studied health behaviors included data on the patient’s diet, exercise, and mental health (Note: this is a hypothetical example).

- a) In this example, why was it ethical for the researchers to allocate one group to receive weekly classes on meditation practices as well as a self-taught manual on meditation while the other group received only the self-taught manual on meditation? (2.5 marks)

- b) Identify sources of the possible biases in this study? (2.5 marks)

c) In this example study, would stratified random allocation have been useful? (2 marks)

d) Why do participants need informed consent for an RCT? (2 marks)

Q 8. Read the table 1 and 2 carefully from a Cohort study. In Table 1 cross tabulation of birth weight and developmental delay of child was done. In table 2, stratified analysis of birth weight and developmental delay was done, controlling for blood lead level. (5 marks)

Table 1. Cross tabulation between birth weight and developmental state of child

Development	Birth weight		Total
	Low	Normal	
Delayed	140	77	217
Normal	220	283	503
Total	360	360	720

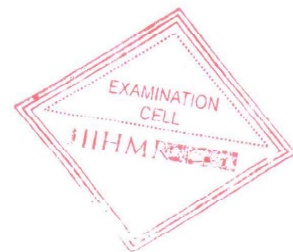
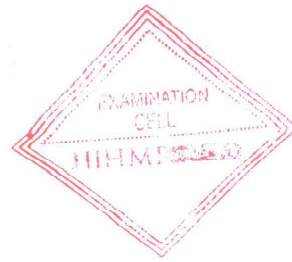


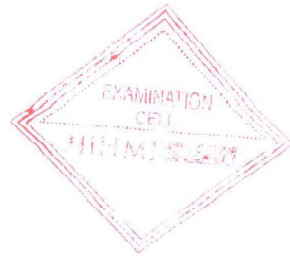
Table 2. Stratified of birth weight and developmental delay, controlling for blood lead level.

Comment whether the lead level acts as a confounder and explain it how did you decide its role as a confounder.

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This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook or composition paper.









Section - A

Time - 30 Minutes

Maximum Marks - 20

Roll No.	
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Note:

- 1) All questions are compulsory. In MCQs, encircle **OR** use $\sqrt{\quad}$ mark to answer.
- 2) Q 1 to 10 has 1.5 mark each, and Q 11 to 15 has 1 mark each.
- 3) **Section A has to be completed and returned to the invigilator within first 30 minutes.**

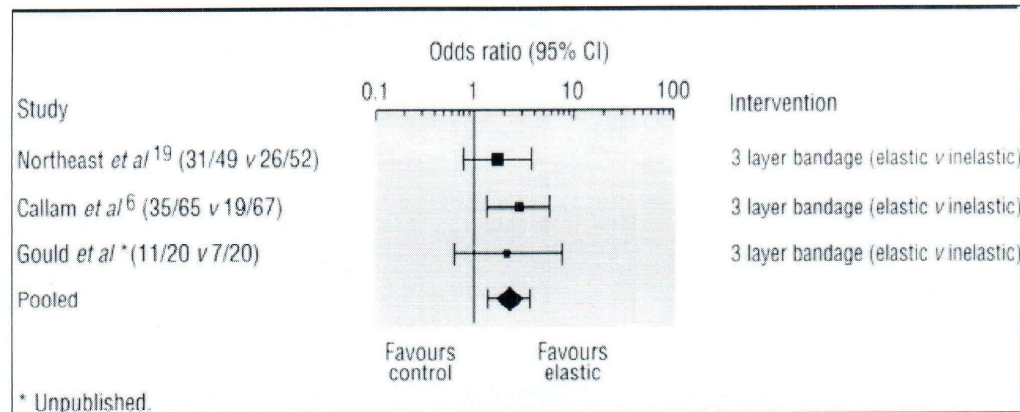
Questions 1 through 5 are based on the following information.

Classify each of the following situation identifying as most appropriate study designs from the given list (*Experimental Study, Randomised Control Trial, Double Blind Randomised Control Trial, Prospective Cohort, Retrospective Cohort, Case-control study, Cross-sectional study, Descriptive study, Ecological study, Not an analytical or epidemiologic study*):

Q	Situation	Answer/ study design
1.	Representative sample of residents were telephoned and asked how much they exercise each week and whether they currently have (have ever been diagnosed with) heart disease.	
2.	Occurrence of cancer was identified between April 1991 and July 2002 for 50,000 troops who served in the first Gulf War (ended April 1991) and 50,000 troops who served elsewhere during the same period.	
3.	Persons diagnosed with new-onset Lyme disease were asked how often they walk through woods, use insect repellent, wear short sleeves and pants, etc. Twice as many patients without Lyme disease from the same physician's practice were asked the same questions, and the responses in the two groups were compared.	
4.	Subjects were children enrolled in a health maintenance organization. At 2 months, each child was randomly given one of two types of a new vaccine against rotavirus infection. Parents were called by a nurse two weeks later and asked whether the children had experienced any of a list of side-effects.	
5.	Cases of viral hepatitis are monitored by the District Health Officer in his district. Each case of viral hepatitis is indicated by a dot on the map of the district. He also records the seasonal variations annually by monitoring the number of cases each month. He classifies the cases according to age, gender, occupation, source of water supply and other personal attributes.	

Questions 6 through 10 are based on the following information.

You have to mark either True or False for the statements given below the diagram. The following figure is taken from a paper entitled 'A systematic review of compression treatment for venous leg ulcers', (*BMJ* 1997; **315**: 576-580)



Q	Statement	Mark as True OR False
6.	The figure shows the results of a meta-analysis	
7.	The horizontal lines represent confidence intervals	
8.	The study by Callam <i>et al.</i> shows a significant advantage for elastic bandages;	
9.	The study by Gould <i>et al.</i> should not be included because it is unpublished.	

10. Which are methods to control for a confounding variable:

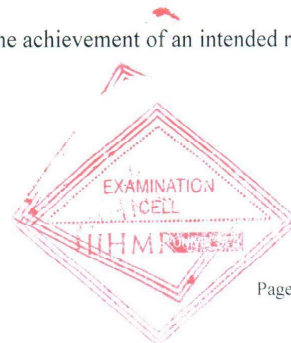
- Randomize individuals to different groups (use an experimental approach)
- Restrict / filter for certain groups
- Match in case-control studies
- Analysis (stratify, adjust)

11. Evaluations measure:

- The timeliness of a program's activities.
- The outcomes and impact of a program's activities.
- How closely a program kept to its budget.
- How well the program was implemented.

12. Indicators are:

- Only quantitative
- Written at process, output, outcome and impact level
- Used to determine what progress is being made towards the achievement of an intended result (objective)
- A and C
- B and C



13. A total of 360 patients participated in a randomised controlled trial designed to compare the effectiveness of drug X in reducing deaths with a placebo. Out of 120 patients in the treatment group, 12 patients died within three years. Out of 240 patients in the control group, 48 patients died within three years. The following measures for the risk of death within three years (correct to the nearest 1 decimal place) are true:
- a) The event rate in the control group is 0.3
 - b) The event rate in the treatment group is 0.1
 - c) The relative risk (of treatment compared with control group) is 0.25
 - d) The relative risk reduction is 67% (to the nearest %)
14. What are systematic reviews?
- a) Randomized controlled trials
 - b) Critical appraisal and syntheses of research studies
 - c) Case control studies
 - d) Protocols
15. Which of the follow is a benefit of a systematic review?
- a) It reduces researcher bias and demands the researcher is comprehensive of their approach.
 - b) It is really quick to complete.
 - c) It is cost effective as an approach.
 - d) It provides internal validity to the study.

