

IIHMR UNIVERSITY
Institute of Health Management Research
MBA Hospital and Health Management
Batch-23 (2018-2020)
First Year
Essential Epidemiology
Term Examination



Time - 3 Hours

MM-70

Roll Number

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Roll Number (in words)

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Section

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Date

D	D	M	M	Y	Y	Y	Y
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Signature of Invigilator _____

Marks obtained

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Signature of Examiner _____

Note:

1. Please read the question carefully before start attempting.
2. The question paper contains 18 printed pages. All questions are to be attempted.
3. The question paper contains 2 sections. **Section A** contains 15 marks and **Section B** contains 55 marks. **Section B** has 8 questions and **Section A** has 15 questions.
4. Both sections will be handed over simultaneously.
5. Section A has to be solved and returned to the invigilator within first 30 mins.

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D	D	M	M	Y	Y	Y	Y
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5. Section A has to be solved and returned to the invigilator within first 30 mins.

Section B

Q 1. Please read following table carefully and give the answers.

Hypothetical data: Maharashtra state, 2017				
	Population (in thousands)	Live births	Deaths	Deaths < 1 years
Men	58,243	935,900	467,958	23,400
Women	54,131	850,800	425,415	21,350
Total	112,374	1,786,700	893,373	44,750

Based on the above description. Answer the following questions

a) Write down formula for crude birth rate? (1 mark)

b) Calculate crude death rate for Maharashtra state for year 2017 from given data. (1 mark)

c) Write down formula and calculate infant mortality rate for Maharashtra state for year 2017 from given data. (2 mark)

d) What is current infant mortality rate and maternal mortality ratio of India? Also mention the source of information (3 mark).

Based on above description answer the following questions

- b) Prepare 2x2 table for this study. (4 marks)

- c) Calculate and interpret the appropriate measure of association between chewing tobacco and stomach cancer. (4 marks)



Q 3. Define and differentiate with giving example of each condition

(Please attempt any 2 question of the 3).

- a) Control, elimination and eradication (3 marks)
- b) Incidence and prevalence (3 marks)
- c) Disease, illness, and sickness (3 marks)



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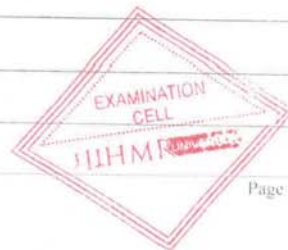


Q 4. In a study with the objective to determine the effect of daily meditation on the health behavior among patients following a skin cancer diagnosis. Researchers randomly allocated study participants (total study participants - 310) into 2 groups. The first patient group (160) received training on **meditation practices and a self learning manual** on meditation. The second patient group (150) received **only the self learning manual** on the 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. Researchers found that 120 and 30 persons improved behaviour in the meditation training group and self-learning group only, respectively (Note: this is a hypothetical example). Please answer following questions:

a) Identify the appropriate study design. (1 mark)

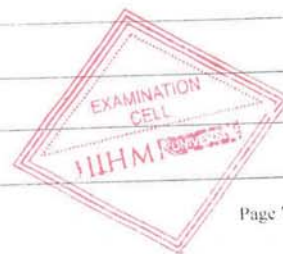
b) Prepare 2x2 table for the effect of the meditation training on the patient health behavior. (4 marks)

c) Calculate and interpret the treatment efficacy of the meditation on the patient behavior following diagnosis of skin cancer. (4 marks)



- d) Describe the difference between relative risk and treatment efficacy using appropriate example. (2 marks)

- e) What is the purpose of **randomization** in the Randomized Controlled Trials. How **randomization** affects the validity of the study? (2 marks)



Q 5. Answer the following questions.

a) Explain Ecological fallacy with an appropriate example (2 marks)





a). Identify the study design used in the description given above and give justification in support of your answer. (2 marks)

b). Write two advantages of a follow up study which is given in the question. (1 mark)

c) Draw 2x2 table based on the data given above (3 marks)

d). Calculate appropriate measure of association and interpret your answer. (3 marks)

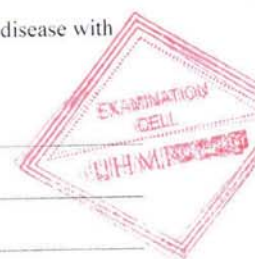


Handwriting practice lines (10 lines).

Q 7. Answer the following questions.

- (a) Explain the application of the concept of chain of infection for prevention of infectious disease with an appropriate example. (2 marks)

Handwriting practice lines (15 lines).



(b) Explain the concept of herd immunity with an appropriate example. (2 marks)



Q 8. A town has a population of 10000 on 1st January 2017. The total number of cases of diabetes in this town during 2017 were 102. There was a net decrease of 1 % in population of town during 2017.

Answer the following questions.

a). Calculate the period prevalence of diabetes for the year 2017 for this town (2 marks).

(b) Write two uses of prevalence of disease (1 mark).



Additional Pages

Lined area for additional text or calculations.





Lined area for writing or drawing.



Section – A

Time - 30 Minutes

Maximum Marks – 15

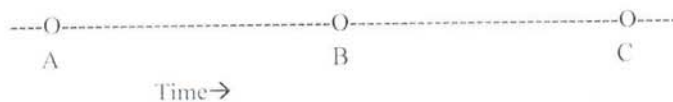
Roll No.

Note:

- 1) All questions are compulsory. In MCQs, encircle **OR** use $\surd$ mark to answer.
- 2) Question 1 to 15 has 1 mark each.
- 3) Section A has to be solved and returned to the invigilator within first 30 minutes.
- 4) Any kind of overwriting and changing answers in the Section A will amount to Zero marks.

Match the situation description with the study design (1-5).

Place appropriate design code in parenthesis next to situation description. Questions refers to timeline below, such that A precedes time B which precedes time C.



- | Design | Situation description |
|--------|--|
| 1. () | Investigator at time C selects study group with exposure at time A |
| 2. () | Investigator selects study groups at time B according to disease status and asks participants about exposure at time A |
| 3. () | Investigator at time A selects study groups according to exposure status and follows them to time C |
| 4. () | Investigators assigns exposure at time A and follows participants to time C |
| 5. () | Investigator measures exposure and disease simultaneously. |

A. Cross-sectional study; B. Case control study; C. Prospective Cohort study; D. Randomized Controlled Trial; E. Retrospective Cohort

Questions 6 through 10 are based on the following information.

Q	Statement	True OR False
6.	Person years of treatment may be used as denominator to measure treatment effectiveness.	
7.	In Randomized Control Trials, comparability of the characteristics of the study and the placebo group is essential to control the effect of confounding factors.	
8.	Epidemic curve helps in determining incubation period.	
9.	Relative Risk and Odds Ratio are measures of risk to determine the cause and effect relationship.	
10.	Pap smear to detect cervical cancer is an example of secondary prevention.	

11. Intention-to-Treat analysis of a clinical trial means which of the following?
- a) Subjects should not be enrolled unless they really intend to take the treatment being tested. This is usually proven during a "run-in" period where their compliance with taking the study drug is tested before the trial begins.
 - b) Anyone randomized into one of the study groups must be included in the final analysis in the group to which they were originally randomized, regardless of whether they adhered to the protocol or not.
 - c) Anyone randomized into one of the study groups should be included in the final analysis, only if they actually took the drug they were assigned throughout the entire study period.
 - d) All subjects must agree to be randomized and to take the treatment of the group they were assigned to.
12. When calculating incidence rate, when does a person stop being at risk for a certain outcome?
- a) When they become a case
 - b) When researchers are unable to track them
 - c) When the person dies
 - d) All of the above
13. Health Department of a city has launched a programme for promotion of healthy lifestyle among the residents of the city. This is an example of
- a) Tertiary prevention
 - b) Secondary prevention
 - c) Health Promotion
 - d) Specific Protection
14. John Snow's investigation of cholera is considered a model for epidemiologic field investigations. Which of the following technique it did not include?
- a) Comparison of a health outcome among exposed and unexposed groups
 - b) Multivariate statistical model
 - c) Spot map
 - d) Recommendation for public health action
15. A cohort study differs from a case-control study in that:
- a) Subjects are enrolled or categorized on the basis of their exposure status in a cohort study but not in a case-control study
 - b) Subjects are asked about their exposure status in a cohort study but not in a case-control study
 - c) Cohort studies require many years to conduct, but case-control studies do not
 - d) Cohort studies are conducted to investigate chronic diseases, case-control studies are used for infectious diseases

