

Question Paper

Exam Date & Time: 08-Feb-2021 (10:00 AM - 01:15 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

MANIPAL SCHOOL OF INFORMATION SCIENCES, MANIPAL
FIRST SEMESTER MASTER OF ENGINEERING - ME (HEALTHCARE DATA ANALYTICS) DEGREE EXAMINATION -
FEBRUARY 2021

Healthcare Data Management [HDA 601]

Marks: 100

Duration: 180 mins.

MONDAY, FEBRUARY 8, 2021

Answer all the questions.

- 1) Explain about Architecture of Healthcare system? TLO 1.1 (10)
- 2) Differentiate between Public health vs Epidemiology? TLO 1.2 (10)
- 3) In a certain noisy factory, workers are given earplugs and are expected to wear them. An industrial hygienist inspecting the plant found that 100 of the 500 workers in the factory were not wearing the earplugs because they regarded them as uncomfortable and as a nuisance. When all the workers were given a hearing test, it was found that 16 of the earplug wearers and 40 of the non-wearers had developed significant hearing loss. All had normal hearing at their preemployment exams 1 year earlier, when the plant opened. (10)
 - a. What was the risk ratio of hearing loss in non-wearers as compared to wearers?
 - b. What was the risk of hearing loss associated with not wearing earplugs?
 - c. What proportion of the hearing loss in the non-wearers was associated not wearing earplugs?
 - d. If the associations above were causal and everyone wore their earplugs, what reduction in hearing loss would occur in the factory population as a whole?
 - e. What proportion of the hearing loss in all the workers was associated with not wearing earplugs?TLO 1.2
- 4) A. CALCULATE SPINA BIFIDA RATES Of 129 600 children born in Cape Town between January 1, 1992 and December 31, 1994, 212 were diagnosed with spina bifida at birth. (10)
 - a) Which measure of disease occurrence can be calculated - prevalence or incidence rate?(2 Marks)
 - b) Calculate this as an annual rate. (2 Marks)B. CALCULATE BREAST CANCER RATE In a mass screening of 5 000 women, 25 of them were found to have breast cancer. During the next five years, 10 more women from the original screened group of 5 000, developed breast cancer. Which measure of disease occurrence can be calculated? Calculate this. (6 Marks)
TLO 3.1
- 5) Consider a database with the following relations and write the SQL query statements (10)

loan (loan-number, branch-name, amount)
customer (customer-name, customer-street, customer-city)
depositor (customer-name, account-number)
borrower (customer-name, loan-number)
account (account-number, branch-name, balance)
branch (branch-name, branch-city, assets)

 - a. List in alphabetic order(Descending) the names of all customers having a loan in Perryridge branch
 - b. Find all customers who have a loan, an account, or both (use set operations)
 - c. Find all customers who have both a loan and an account (use set operations)
 - d. Find all customers who have an account but no loan (use set operations)

- e. Find the names of all branches where the average account balance is more than \$1,200 (Use Having clause) TLO 2.1
- 6) Draw an ER diagram for Library Management System. TLO 2.1 (10)
- 7) A. following the survey, 12 cases of measles are notified. Assume that the midyear estimate of the population of Under-5s has increased to 26 000. !Calculate the number of notifications per 100 000 population. Is this an incidence or a prevalence rate? Explain your answer. (4 Marks) (10)
B. Lung cancer is the leading cause of cancer death for both men and women in the United States. More people die of lung cancer than of colon, breast, and prostate cancers combined. Lung cancer is fairly rare in people under the age of 40. The average age of people found to have lung cancer is 60. In 2004 there will be about 173,770 new cases of lung cancer in the United States. About 160,440 people will die of this disease. The population of the United States in 2004 is 292,287,454.
a. Calculate the annual incidence rate of lung cancer in the US in 2004? (2 Marks)
b. Calculate the mortality rate of lung cancer in the US in 2004? (2 Marks)
c. Why is the mortality rate of lung cancer so high? (2 marks)
Explain about Electronic Medical records with examples? TLO 2.1
- 8) What is client-server DBMS architecture? Explain 2-tier client-server architecture TLO 2.1 (10)
- 9) Discuss the advantages of DBMS over traditional file based storage. TLO 2.2 (10)
- 10) Discuss the No SQL Db and CAP theorem TLO 2.2 (10)

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