Date: 25th August 2020   Time: 10.15 a.m. – 12.15 p.m.   Duration: 02 hours

Answer all questions   **Index Number:** ....

1.

   1.1   List three characteristics of z curve   (15 marks)

   1.2   List three interval scale variables   (15 marks)

   1.3   The HDL levels of a group of men (n=100) and women (n=100) were measured. In men, the average HDL level was 55mg/dL (*SD* =10 m/dL). In women, the average HDL level was 60 mg/dL (*SD*=5mg/dL).

       1.3.1 Calculate the 95% CI for the population mean of HDL level in men.   (20 marks)

       1.3.2 Calculate the 95% CI for the population mean of HDL level in women.   (20 marks)

       1.3.3 Explain whether there is a significant difference of the mean HDL levels between men and women?   (10 marks)

   1.4   Explain the following terms.   (10 marks)

       1.4.1 Quota sampling

       1.4.2 Stratified sampling   (10 marks)

2.   A study was conducted to determine whether there is any association between choice of medical Laboratory services and level of education in people living in Galle. A total of 200 individuals were surveyed and 120 participants preferred government medical laboratory services and 80 preferred private medical laboratory services. Out of the 120 participants who preferred government medical laboratories, 50 had higher educational qualifications. Out of the 80 participants who preferred private medical laboratories, 40 had higher educational qualifications.

   2.1   Sate null and alternative hypothesis.   (20 marks)

   2.2   Draw a 2x2 table for the above data and calculate expected frequencies   (40 marks)

   2.3   Test the hypothesis at 5% significance level   (20 marks)

   2.4   What can you conclude from the results?   (20 marks)

3. Read the following abstract and answer the questions given below

Title: Effects of Hormonal Contraceptives on Haematological Parameters among Women in the Cape Coast Metropolis, Ghana

Background: The widespread use of hormonal contraceptives gives grounds for assessing their influence on various biochemical parameters of the human system since its safety has become controversial. This study assessed the effects of hormonal contraceptives on hematological parameters among users in the Cape Coast Metropolis.

Materials and Methods: A simple randomized case-control study approach was used to recruit 94 healthy women of which 54 were hormonal contraceptive users and 40 healthy age-matched non-contraceptive users served as controls. Venous blood samples were taken for full blood count (FBC) analyses using an automated haematology analyzer. Data was analyzed using SPSS (V.22.0). Data was expressed in means (Mean ±SD) for the different variables. T-test statistic was used to compare the mean scores of two groups whilst one-way ANOVA was used to compare more than two groups. Pearson correlation was used to determine association between the various parameters. P-value <0.05 was considered statistically significant.

Results: The study observed mean red blood cell (RBC) count to be significantly higher among hormonal contraceptive users compared to non-users (P=0.030). Additionally, the duration of contraceptive usage had an influence on the blood cell parameters in various ways, with a significant negative correlation between duration of contraceptive use and red cell distribution width (RDW) (r= -0.303, P= 0.026).

Conclusion and Recommendation: Hormonal contraceptives cause significant increase in red blood cell (RBC) count among users. Its effects also depend largely on duration of contraceptive use.

3.1	What is the objective of the research?	(20 marks)
3.2	List 4 variables studied in this study and identify the scale of measurement in each of these variables.	(20 marks)
3.3	List 3 statistical test that have been used to analyses data.	(15 marks)
3.4	Explain in your own words the meaning of "P-value <0.05 was considered statistically significant."	(15 marks)
3.5	Explain in your own words what is meant by "a significant negative correlation between duration of contraceptive use and red cell distribution width (RDW) (r= -0.303, P= 0.026)".	(30 marks)

4. Read the following abstract and answer the questions given below

Title: Prevalence of Anemia among Pregnant Women Registered at Antennal Clinic of Ondo Specialist Hospital, Ondo State, Nigeria

Abstract

Anemia remains a major risk factor for unfavorable outcome of pregnancy both for the mother and the fetus. It is the world's second leading cause of disability and one of the most serious global public health problems among children and pregnant women. Its diagnosis remains a challenge in poor and underfunded hospitals and primary health centers. This study is a hospital-based cross-sectional study conducted

in Ondo Specialist Hospital, Ondo town to assess anemia among pregnant women attending antenatal care clinic from August to October 2015. One hundred and fifty pregnant women were enrolled in this study. Data were collected using pretested questionnaire, which contains socio-demographic characteristics of the pregnant women. Blood samples were collected to measure hemoglobin and Packed Cell Volume (PCV) levels. Data were entered and statistical analysis was performed using SPSS version 20.0 software. Association between variables was done using chi square, and statistical significance was considered at $p < 0.05$. The mean age of pregnant women was 28.92 ± 4.89 years and the prevalence of anemia obtained in this study using the Tallquist, Hemoglobin cyanide methods and PCV was 36%, 36.7% and 47.3% respectively, based on the World Health Organization criterion for the diagnosis of anemia in pregnancy (hemoglobin <11.0 g/dl; PCV <33%). Our study revealed a high prevalence of anemia in pregnant women and calls for more health intervention including health education about causes of anemia and its risk factors. Antenatal care follow-up should also be improved on.

4.1 What is the objective of the research? (20 marks)

4.2 Explain in your own words "The mean age of pregnant women was 28.92±4.89 years" (20 marks)

4.3 List 3 variables used in this study. (15 marks)

4.4 List the names of the methods the authors had used to identify the prevalence of anemia and what proportion of participants were positive under each method (15 marks)

4.5 What is the sample size? (10 marks)

4.6 How many participants had PCV less than 33%? (20 marks)