COVENANT UNIVERSITY

TUTORIAL KIT

PROGRAMME: DSS

ALPHA SEMESTER

200 LEVEL

Raising A New Generation Of Leaders

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List of Contents

COVENANTUNIVERSITY

CANAANLAND, KM 10, IDIROKO ROAD

P.M.B 1023, OTA, OGUN STATE, NIGERIA.

TITLE OF EXAMINATION: B.Sc EXAMINATION

COLLEGE: CBS

SCHOOL: SOCIAL SCIENCES

DEPARTMENT: ECONOMICS AND DEVELOPMENT STUDIES

SESSION: 2014/2015 **SEMESTER:** ALPHA

COURSE CODE: DSS 211 **CREDIT UNIT:** 2

COURSE TITLE: INTRODUCTION TO POPULATION STUDIES I

INSTRUCTION: **Instruction:** Answer Question **No.1** and any other **TWO**

TIME: 2 HOURS

1(a) Outline the principal types of data collection methods in demography.   (2marks)

 (b) List four contributors to the development of population theory.   (2marks)

 (c) List six major achievements of population experiences of developing nations?

                                                                                    (6marks)

 (d) List five multi-disciplinary areas covered by the field of Demography.   (5marks)

 (e) Outline the features of a population and housing census.   (4marks)

 (f) List five census terminologies you know.   (5marks)

 (g) State the four stages of demographic transition theory.   (4marks)

 (h) Mention two international agencies where demographers can work.   (2marks)

                                                                        Total=30marks

2 (a) Discuss briefly the major controversies surrounding past censuses in Nigeria (10marks)

  (b) Highlight the major reasons attributed to low birth rate and high death rate in 1750AD. (10marks)

                                                            Total=20marks

3 (a) What is vital statistics?   (2marks)

  (b) Discuss the importance of vital statistics in Nigeria   (8marks)

  (c) Discuss the history of Nigeria's census   (10marks)

Total=20marks

4 (a) What are the major achievements that the developed nations' population experiences has brought to the longevity of human lives? (10marks)

(b) State the major types of demographic errors with examples (4marks)

(c) How can we detect demographic errors? (6marks)

Total=20marks

5 (a) Define the following terms:

(i)	Sample survey	(2marks)
(ii)	Population Register	(2marks)
(iii)	Post enumeration survey	(2marks)
(iv)	Census functionaries	(2marks)
(v)	Record system	(2marks)

(b) The contributions of early writers to the development of population theory cannot be over-emphasized. Discuss (10mrks)

Total=20marks

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TIME: 2 HOURS

MARKING GUIDE TO DSS211 ALPHA SEMESTER 2014/2015 SESSION

PREPARED BY: DR AKANBI MOSES AYOKUNLE

1(a) The principal types of data collection methods in demography are:

> Direct and Indirect methods. **(2marks)**

(b) The four contributors to the development of population theory include:

Romans, The Hebrews, The Moslems, The Greeks and The Chinese

Tick 4, each answer carry 0.5 mark= (2marks)

(c) The six major achievements of population experiences of developing nations are:

1. Importation of Modern medical technology
2. Supply of pipe-borne water
3. Sewage system
4. Hospitals, dispensaries and clinics
5. Education on personal hygiene
6. New dresses etc   **Tick all, each answer carry 1 mark= (6marks)**

(d) The five multi-disciplinary areas covered by the field of Demography are:

Reproductive Health, Public Health, Public Policy, Social Statistical Analysis, Biostatistics, Monitoring and Evaluation, Development, Environmental issues, fertility, Mortality and Migration
Tick 5, each answer carry 1 mark= (5marks)

(e) The features of a population and housing census are:

(1) Individual enumeration;   (2.) Universality within a defined territory

(3.) Simultaneity   (4.) Defined periodicity   **Tick 4, each answer carry 1 mark= (4marks)**

(f) The five census terminologies include:
Population census, Enumeration, Post-enumeration, Census functionaries, de jure, de facto, a household, Questionnaire form, Census night etc;   **Tick 5, each answer carry 1 mark= (5marks)**

(g) The four stages of demographic transition theory are:

First stage: Marginal difference that is, high birth and death rates.

Second stage: High birth rate and reduction in mortality.

Third stage: Decline birth and death rates

Fourth stage: Birth and death rates are equal

<div align="center">

Tick 4, each answer carry 1 mark= (4marks)

</div>

(h) The two international agencies where demographers can work include: UNFPA, UNDP, USAIDS, UNICEF, UNAIDS, WHO, UNIFEM, UNIDO, UNESCO, IMF/World Bank, ILO, BANK OF AMERICA etc.   **Tick 2, each answer carry 1 mark= (2marks)**

<div align="center">

TOTAL=30MARKS

</div>

2 (a) The major controversies surrounding past censuses in Nigeria include:

1. The period or time of census planning was short
2. Loyalty to region/ state was excessive
3. Improper demarcation of Enumeration Areas (EAs)
4. Supervision and coordination of enumerators were poor
5. Processing of census data was tedious and inefficient
6. Lack of transparency, dedication and patriotism of census officials
7. Inadequate training was involved
8. Poor publicity and enlightenment programmes
9. Inefficient transport system and communication
10. Extreme politisation of census by the local, state and federal governments

Tick 10, each point with explanation carry 1 mark= (10marks)

(b) Highlight the major reasons attributed to **low birth rate** and **high death rate** in 1750AD.

REASONS FOR HIGH MORTALITY RATE
1. Poor health facilities
2. Low medical technology: there was no cure for measles, malaria, polio-mylitis; ceresbro-spinal minjitis and other diseases, hence, many people died.
3. Poor sanitation: poor sewage, environmental sanitation.
4. Famine
5. Poor drinking water
6. Poor education on personal hygiene: (poor preventive methods); during this period, there is high mortality rate and low natality rate.

<div align="center">

Tick 5, each answer carry 1 mark= (5marks)

</div>

REASONS FOR LOW BIRTH RATE
1. Sterilization (infertility): This is when someone is biologically incapable to bring forth off-springs or children.
   There are two types of sterility
   A. Primary sterility: those that can not give birth at all.
   B. Secondary sterility: those that have given birth to 1 or 2 children and could not give birth again.
2. Miscarriages: this is inability to carry the foetus to the maturity.
3. Late age of marriage: Some people marry late because of the quest for acquisition of properties; academic knowledge and lack of proposal to them.

4. Poor feeding/Malnourished food
5. Environmental factors e.g food, water, general condition of environment.

Tick 5, each answer carry 1 mark= (5marks)

Total=20marks

3 (a) What is vital statistics?

Data obtained from civil registrations are known as vital statistics. These include: births, deaths, still-births, marriages and annulment of marriages, migration and naturalization. **(2marks)**

(b) The importance of vital statistics in Nigeria include:

1. It provides reliable information for the government during programme planning, budgeting and taxation.
2. Civil registration of birth confirms the legal proof of identity and civil status including the age, parentage, proof of birth (date and place of birth), nationality and legitimacy. These records affect a wide variety of individual's rights with respect to entitlement, ancestry for inheritance, citizenship and so on.
3. It establishes the eligibility of individuals in terms of voting, education, health, military service, social insurance, pension system and other welfare benefits.
4. Police and judicial references: Vital statistics are important as legal records documenting the facts surrounding each registered event.
5. Records documenting vital events serve many administrative and government planning purposes. Birth records, migration status, etc helps in updating census data.
6. Public health or medical history: Trends in mortality, causes of death or diseases are vital in health planning or research. They serve as health indicators and provide information of the population who are at risk of certain diseases or infection.

Tick 4, each answer carry 2 mark= (8marks)

(c) The history of Nigeria's census is discussed below:

➢ The first census in Nigeria was conducted in 1866. This census did not cover the entire country but on Lagos province. This experience is the same in 1901 census.
➢ In 1911 and 1921, the whole country was counted by using tax receipts and this can not be regarded as census.
➢ In 1932, there was provincial census, but was disrupted in the East by Aba riot.
➢ The 1941 census was cancelled as a result of Second World War.
➢ The last census before independence was 1952/53. The North, the East and the West had independent regional counting at different times.
➢ The 1962 census though conducted but was later cancelled.
➢ In 1963, another census was carried out, there were controversies surrounding the outcome but the figures were adopted by the Federal Government.
➢ In 1973, there was another census but it was cancelled.
➢ In 1991, the census results were accepted yet with controversies.
➢ In 2006, the census figures were adopted by the Federal Government yet with controversies from Lagos, Kano, Imo and other states.

Tick 10, each point with explanation carry 1 mark= (10marks)

Total=20marks

4 (a) The major achievements that the developed nations' population experiences has brought to the longevity of human lives are:

1. Development of Modern (orthodox) medicines;
2. Improved water supply (pipe-borne water);
3. Development of sewage system;
4. Improved public health e.g personal hygiene;
5. Industrial revolution e.g large scale production, mechanized farming.

(b) The major types of demographic errors with examples include:

(1.) Coverage errors for example; under-enumeration and over-enumeration
(2.) Content errors: (a) processing errors for example coding, tabulation, data entry etc.   (b) Age errors for example; Age heaping, Age shifting, Digital preference.
Tick all 2, each point with examples carry 2 marks= (4marks)

(c) We can detect demographic errors in the following ways:

1. Internal comparison
2. Comparison with a preceding census
3. Comparison with independent collateral data
4. Comparison of urban and rural population
5. Comparison of data within political division
6. The use of balancing equation **Tick all 6, each point carry 1 mark= (6marks) Total=20marks**

5   (a) We define the following terms as follows:

➢ Sample survey: It seeks to collect information only from a fraction of the population and they are employed to arrive at estimate of demographic characteristics, size, distribution, mortality, fertility and migration.

➢ Population Register: In those countries which possess a system of continuous registration. It is possible to maintain a separate card for each individual from the time of his birth (immigration) to his death (emigration) and to continually update the record by recording such additional registration data. These include: marriage, divorce, birth of children, occupation etc, these are called Population register. The countries that are using population register include: Holland, Belgium, Finland, Norway, Iceland, Italy, Germany, Israel, Japan and Russian Federation. However, a regular census provides an accurate check of the data because census returns can be merged against the population register.

➢ Post enumeration survey: PES is ideal after every main census; it is usually conducted 3 to 5 months after census to check the accuracy of the census figures. The PES has become one of the most important tools/survey techniques for checking the accuracy of census enumeration. The fact that a small, well-designed and well administered sample survey can produce more accurate measurement than feasible in a much larger operation required for a census gives credence to the use of PES. It is a useful vehicle for checking the reliability of the census figure, the PES is always conducted shortly after the main census. This is as close as possible to the date of the census so that the two sets of data collected can be comparable. This is done to capture every individual already enumerated in the census before migration or death takes place.

- ➤ Census functionaries: are persons who carry out enumeration activities during the census and will not be available in their usual place of residence at the time of enumeration. They include: enumerators, supervisors and certain coordinators, some members of the National Population Commission, monitors, national and international observers etc, who are on census related duties and will not return to their respective usual residence during the enumeration period.
- ➤ Record system: This is documenting of vital events that are used for administrative and government planning purposes. Birth records, migration status are helpful in updating census data. In-fact, data from vital events could be useful in measuring population size, trends for projections, population estimation, census planning, census evaluation and sampling frame of household surveys.

<center>Tick all 5, each point with explanation carry 2marks= (10marks)</center>

(b) The contributions of early writers to the development of population theory cannot be over-emphasized. Discuss   (10mrks)

(1.) **ROMANS:** The Romans viewed population question in the perspective of great empire rather than a small city state. They were less conscious than the Greek of possible limits in population growth and more alert to its advantages for military and related purposes. In a nut shell, the Romans paid less attention to population than the Greeks.

(2.) **THE HEBREWS:** The Hebrews sacred book placed much emphasis on procreation and multiplication and for this reason; unfruitfulness was regarded as a serious misfortune. The early and medieval Christian writers considered question of population almost from moral and ethical standpoint. The doctrines of Early and medieval Christian writers were mainly populationists but less than those of Hebrew writers. On the other hand, they condemned polygamy, divorce, abortion, infanticide and Child exposure while on the other hand, they glorified virginity and sexual chastity and frown on second marriage.

(3.) **THE MOSLEMS:** The view of Moslems resembled those of Christians and Hebrew authors. IBN KHALDUN is an Arab author and he believed that a densely settled population was conducive to higher levels of living since it permitted a greater division of labour, the more effective use of resources and military and political security.

(4.) THE GREEKS: Early Greek writers were more concerned with formulation of policies and rules for population rather than with theories about it. The Greek pre-occupied themselves with optimum population with respect to the 'Polis' that is, the Greek City States. They considered the problems of population size, not in economic terms but more from the perspective of defence, security and democratic government. Their thought was that population should be self-sufficient and thus possess enough territory to supply its needs but must not be so large to make constitutional law possible.

(5.) **THE CHINESE:** They believed that excessive population growth may reduce output per worker, depress level of living for the masses and engender strife. Some of these writings suggest that among the authors 'Confucious' had some concept of optimum population as far as the population engaged in agriculture is concerned. They held the government primarily responsible for maintaining such an optimum population by moving people from overpopulated to under-populated areas. Government action was reinforced at times by spontaneous migration. Secondly, the Chinese believes that mortality increases when food supply is insufficient, that premature marriage made for high mortality rate that war

checks population growth and that costly marriage ceremonies reduce the marriage rate. In-spite of these views, they still support population increase.

Tick all the 5 Answers, each point with explanation carry 2marks= (10marks)

Total=20marks

TOTAL MARKS OBTAINABLE= 70

CANAANLAND, KM 10, IDIROKO ROAD

P.M.B. 1023, OTA, OGUN STATE, NIGERIA

TITLE OF EXAMINATION: B. SC DEGREE EXAMINATION

COLLEGE: BUSINESS AND SOCIAL SCIENCES

SCHOOL: SOCIAL SCIENCES

DEPARTMENT: ECONOMICS & DEV'T STUDIES

SESSION: 2014/2015   SEMESTER: ALPHA

COURSE CODE: DSS 213   CREDIT UNIT: 2

COURSE TITLE: INTRODUCTION TO POPULATION GEOGRAPHY

COURSE COORDIDATOR: DR AZUH DOMINIC

COURSE LECTURERS: DR AZUH DOMINIC

MARKING GUIDE

1. i. Relevance of pop data in Nigeria:-10 marks

 pivot of eco planning, aids better understanding of pop phenomena, pop data have wide application in various spheres of life such as edtnal planning, planning for houses, manpower and labour planning, health, regional and spatial settlement, establishment of firms and production units, commercial enterprises, provision of amenities- water, cooking gas, etc, creation of political constituencies, allocation of revenue allocation.

ii. impt of pop age –sex structure – 10 marks.

1. - helps in an elaborate study of any population and thus makes comparisons possible

2. - data on population structure and characteristics are useful in the preparation of inventories of human resources necessary for effective development planning

3. -When reliable information on births and deaths is not available from the civil registration system, it may be obtained by utilizing the data on the age-sex distribution of the population available from a census.

4. -Data on the distribution of population attributes provides material for the study of the social and economic structure of the population and the changes in this structure.

iii. Instruments used in primary data collection in pop studies – 10 marks

a. Questionnaire- A questionnaire is a set of systematically arranged questions used by a researcher to get needed information from respondents. Questionnaire can be administered through face –to-face self-administered, telephone, the postal/mail, questionnaire and the group administered questionnaire.

b. 2. In-depth Interview
This is a form of data collection used in qualitative research. It combines structure with flexibility, interactive in nature, involves the use of probe and other probe techniques to penetrate and achieve depth answers and finally it generates knowledge.

c. 3. Focus group discussion
Involves data generation by interaction among participants, group size is typically around 6-8 participants. Here, participants present their own views and experience and also hear from other people. Interaction prompts others to reveal more information concerning the theme of the research topic.

2a). Factors affecting pop distribution in Africa- 10marks

i. Geo factors- availability of natural resource deposits, water, landforms, climate, soil fertility/productivity

ii. Economic factors- trade and commerce for resource and ability to obtain income, urbanization, industrialization

iii. Social and cultural factors- education, health and employment opportunities, better amenities of life, religious centers.

iv. Political unrest, wars, social legislation and government policies on migration and settlement.

b. Population profiles-this is the graphic representation of pop profiles of a country based on the past and current patterns of fert, mort and migration affecting the pop age –sex composition. There are three main profiles, viz.

1. Expansive (Rapid growth) : larger number of people in the younger ages. Example , Mexico has an "expansive" population, with each cohort larger than the cohort born before it.

2. Constructive (Slow growth): smaller numbers of people in the younger ages. Example, US, recent cohorts have been progressively, smaller, causing the age structure to change from "expansive" to "constructive"

3. Stationary (Zero growth): roughly equal numbers of people in all age ranges, tapering off gradually at the older ages. Example Sweden's population, with roughly equal numbers in all age ranges, can be classified as nearly "stationary.

3   i . Why are birth rates high in Africa? – child labour, old age support, family lineage, prestige factor, insurance factor for dead ones, religion, culture, poverty, illiteracy, low age at marriage, low level of economic development, young pop nature, etc.

ii. limitation- birth control, legislation on raising age at marriage, ed of women, pop ed, raising of living stds, provision of employment, legalize abortion, raising the status of women and women empowerment, old security measures, etc

v. The candidate should draw map of Nigeria and show the 6 geo political zones.

vi.   The candidate should state the states of the federation.

4a   i. Live birth - complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy which after such separation breathes or shows any other evidence of life such as breathing of the heart, pulsation of the umbilical cord or movement of voluntary muscles whether or not the umbilical cord has been cut or placenta is attached.

          ii. Death – Death is the permanent disappearance of all evidence of life at any time after birth has taken place or post –natal cessation of vital functions without capacity of resuscitation

          iii. Population momentum refers to the tendency of a population to continue to grow after replacement level fertility has been achieved. Due to past high fertility which leads to a high concentration of people in the youngest ages.

          iv. Age specific fertility rate- is the total no of live births in a year to women of a particular age or age group per 1000 married women of the same age or age group.

vii.   Population pyramid - graphic representation of age and sex distribution of inhabitants in a place or an age –sex bar graph which depicts the proportion or no of persons in each age and sex category.

b. Problems associated with sources of population data-

 Financial constrain, Illiteracy,low political support, administrative/logistic constraints Subjectivity & Unreliability, lack of skill manpower, cultural dogmatism.

5.i. Rationale for Nigeria's pop policy: - improving living standards and the quality of life, promoting health and welfare, reducing the population growth rate and achieving balanced rural-urban development.

ii. Limitations of population policy-

i.   Lack of credible census- In 1988 when the first national population policy was made there was no credible census tantamount to failure. This is because census data gives birth to accurate targets.

ii.   Inadequate trained human resources at all levels constitute a big problem in implementing population policy.

iii.   Lack of political will on the part of government to take sound steps towards achieving the population targets. Even the national policy is ambiguous in stating its strategies and thereby making implementation difficult.

iv.   Inadequate advocacy to guarantee the required support from the grassroots.

v.   Low socio-economic forces prevent the implementation of population policy as it constitute constraints limiting the use of family planning, education of women and persistent low paid employment outside homes.

vi.   Lack of consideration for various cultural factors- cultural practices exhibit inertia against population policy acceptance. Culture and religion still encourage negative behavior towards family planning, value of sons, gender equity/discrimination, female subjugation and female inheritance.

vii.   Ambitious and unrealistic targets in view of our politics of numbers in national issues.

viii.   Poor quality of life
Poor health system
Illiteracy
Poor enlightenment/Pop Ed
Lack of social security measures
High mortality rates- MMR, IMR
Lack of effective legislation on population regulation

iii. Why do people migrate? Pop pressure on existing opportunities, natural calamities, religious conflicts, opportunities for gainful employment, education, health, marital/parental factors, quest for better amenities, better opportunities for economic activities.

iv. Consequences of migration at the place of origin-

Brain drain, loss of manpower, leads to uneven distribution of pop, retards devt, reduce agricultural productivity, leads to separation of families and psychological stress, reduction on per capita income, detrimental to eco growth, increase in dependency ratio, reduce std of living and quality of life.

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TITLE OF EXAMINATION: B.Sc. DEGREE EXAMINATION

COLLEGE: CBS   DEPARTMENT: ECONOMICS AND DEVT. STUDIES
SESSION: 2014/2015   SEMESTER: ALPHA EXAMINATION
COURSE CODE: DSS 212   COURSE TITLE: STATISTICAL METHODS AND
SOURCES 1

INSTRUCTIONS: ANSWER QUESTIONS   1, 2 and ANY OTHER ONE (1)
TIME ALLOWED: **TWO HOURS**   **21st November, 2014**

Question (1): The final grades in mathematics of 80 students at State University are recorded in the accompanying table.

68 84 75 82 68 90 62 88 76 93 73 79 88 73 60 93 71 59 85 75

61 65 75 87 74 62 95 78 63 72 66 78 82 75 94 77 69 74 68 60

96 78 89 61 75 95 60 79 83 71 79 62 67 97 78 85 76 65 71 75

65 80 73 57 88 78 62 76 53 74 86 67 73 81 72 63 76 75 85 77

With reference to this table, find;

a) The highest grade
b) The lowest grade
c) The range
d) The number of students who received grades of 75 or higher
e) The percentage of students who received grades higher than 65 but not higher than 85

(2 marks each)

Question (1b): Find the median of the following set of distribution

Daily wages in Rs	100-200	200-300	300-400	400-500	500-600	600-700
No of workers	4	6	20	10	5	5

(5 Marks)

Question (1c): Given below is the sample of monthly rents for 70 efficiency apartments presented here as grouped data in the form of a frequency distribution.

Rent (₦)	Frequency
420-439	8
440-459	17
460-479	12
480-499	8
500-519	7

Find the;

(a) Mean **(5 Marks)**

(b) Variance **(5 Marks)**

(c) Standard Deviation **(5 Marks)**   **(20 Marks)**

Question (2): solve the following;

  (a) suppose we have the following;
      P (A) = 0.5
      P (AUB) = 0.6
      Find;
      (i)   P(B), if A and B are mutually exclusive
      (ii)   P(B), if A and B are independent

(iii)   P(B),given that $P\left(A/B\right) = 0.4$

(iv)   Given $P\left(B/A\right) = 0.4$

(v)   If the probabilities are respectively 0.86, 0.35 and 0.29 that a family (randomly chosen for a sample survey in a large metropolitan area) will own a colour T.V. set, a black/white T.V. set or both kind of T.V. set. What is the probability that such a family will own either kind of set?

(2 Marks Each)

(10 Marks)

(b) Simplify the following;

U = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
A= {2, 4, 6, 8, 10}
B= {1, 2, 3, 5, 8}
Find;

(i) (A   B) U B
(ii) A U (A   B)
(iii)(A   B) U (A   B)
(iv)A U (B   B)   **($2^{1/2}$ Marks Each)**

(10 Marks)

Question (3a):

(a) State the various sources of statistical data and its limitations
(b) Name and explain any 3 methods of collecting Quantitative primary data

(5 Marks Each)

Question 3b: Find the mean for the following frequency distribution by an Assumed Mean Method.

Class Frequency	Class Frequency
20-40	9

40-60	11
60-80	14
80-100	6
100-120	8
120-140	15
140-160	12

(10 Marks)

Question 4a: A factory worker counted the numbers of nuts in each of several packets. The results are shown in the table

Number of nuts	Frequency
6	8
7	12
8	36
9	18
10	15
11	10

Find:

(a) The range **(2 Marks)**

(b) P_{80} (where represent Percentile)   **(5 Marks)**

 (c) Quartile Deviation **(3 Marks)**   **(10 Marks)**

Question 4b: In a company having 80 employees, 60 earn $=$10.00 per hour and 20 earn $=$13.00 per hour.

   a) Determine the mean earnings per hour.**(2 Marks)**
   b) Would the answer in part (a) be the same if the 60 employees earn a mean hourly wage of $=$10.00 per hour? **Prove your answer. (4 Marks)**

c) Do you believe the mean hourly wage to be typical (representative)? **(4 Marks)**

(10 marks)

MARKING GUIDE

Question (1): The final grades in mathematics of 80 students at State University are recorded in the accompanying table.

68 84 75 82 68 90 62 88 76 93 73 79 88 73 60 93 71 59 85 75

61 65 75 87 74 62 95 78 63 72 66 78 82 75 94 77 69 74 68 60

96 78 89 61 75 95 60 79 83 71 79 62 67 97 78 85 76 65 71 75

65 80 73 57 88 78 62 76 53 74 86 67 73 81 72 63 76 75 85 77

With reference to this table, find;

(a) The highest grade
(b) The lowest grade
(c) The range
(d) The number of students who received grades of 75 or higher
(e) The percentage of students who received grades higher than 65 but not higher than 85

SOLUTION:

50-54	53
55-59	57, 59

60-64	60, 60, 60, 61, 61, 62, 62, 62, 62, 63, 63
65-69	65, 65, 65, 66, 67, 67, 68, 68, 68, 69
70-74	71, 71, 71, 72, 72, 73, 73, 73, 73, 74, 74, 74
75-79	75, 75, 75, 75, 75, 75, 75, 76, 76, 76, 76, 77, 77, 78, 78, 78, 78, 78, 79, 79, 79
80-84	80, 81, 82, 82, 83, 84
85-89	85, 85, 85, 86, 87, 88, 88, 88, 89
90-94	90, 93, 93, 94
95-99	95, 95, 96, 97

(a) 97

(b) 53

(c) 97-53 = 44

(d) 44

(e) 49/80 = 61.2%

Question (1b): Find the median of the following set of distribution

Daily wages in Rs	100-200	200-300	300-400	400-500	500-600	600-700
No of workers	4	6	20	10	5	5

Solution:

To locate median class we have to calculate cumulative frequencies.

Daily wages in Rs	100-200	200-300	300-400	400-500	500-600	600-700
No of workers	4	6	20	10	5	5
Cum Freq	4	10	30	40	45	50

N=50 , N/2= 25 so median class is 300-400

$Me = X_0 + \left(\frac{n}{2} - f_1\right)\dfrac{c}{f_2}$ $= 300 + \dfrac{25\text{-}10}{20} \times 100 = 300 + 75 = $ **375** (ANS)

Question (1c): Given below is the sample of monthly rents for 70 efficiency apartments presented here as grouped data in the form of a frequency distribution.

Rent (₦)	Frequency
420-439	8
440-459	17
460-479	12
480-499	8
500-519	7

Find the;

(a) Mean

(b) Variance

(c) Standard Deviation

Question (2): solve the following;

(c) suppose we have the following;
   P (A) = 0.5
   P (AUB) = 0.6
   Find;
   (vi)   P(B), if A and B are mutually exclusive

           Solution:
           P(A u B) = P(A) + P(B) – P(A n B)
            0.6   =   0.5 + P(B)
            P(B)   = 0.6 – 0.5   =   0.1

   (vii)   P(B), if A and B are independent
   (viii) Solution:
           P(A n B) = P(A) * P(B)
           P(A u B) = P(A) + P(B) – P(A n B)
            0.6   =   0.5 + P(B) – P(A) * P(B)
            0.6   =   0.5 + P(B) – (0.5 * P(B))
            0.6   =   0.5 + (1 – 0.5) P(B)
            P(B)   = 0.6 – 0.5   =   0.1   =   0.2

$$(1 - 0.5) \qquad 0.5$$

(ix)   P(B),given that $P\left(^A/_B\right) = 0.4$
        P(A u B) = P(A) + P(B) – P(A n B)
        P(A u B) = P(A) + P(B) – [P(B) * P(A/B)]
        0.6   = 0.5 + P(B) – [0.4 P(B)]
        0.6   = 0.5 + (1 – 0.4) P(B)
         P(B) = $\dfrac{0.6 - 0.5}{1 - 0.4}$ = $\dfrac{0.1}{0.6}$ = $\dfrac{1}{6}$

(x)   Given $P\left(^B/_A\right) = 0.4$
        P(A u B) = P(A) + P(B) – P(A n B)
        P(A u B) = P(A) + P(B) – [P(A) * P(B/A)]
        0.6   = 0.5 + P(B) – [0.5 * 0.4]
        0.6   = 0.5 + p(B) – (0.2)
         P(B) = 0.6 – 0.5 + 0.2 =   0.3

(xi)   If the probabilities are respectively 0.86, 0.35 and 0.29 that a family (randomly chosen for a sample survey in a large metropolitan area) will own a colour T.V. set, a black/white T.V. set or both kind of T.V. set. What is the probability that such a family will own either kind of set?

        Solution:

        Define the event occur:
        {A} = [A family will own a colour T.V set]
        {B} = [A family will own a Black/White T.V set]
        {A n B} = [A family will own both colour and Black / White T.V set]
        Then;
        P{A U B} = P(A) + P(B) – P(A n B)
                = 0.86 + 0.35 – 0.29
                = 1.21 - 0.29
                = 0.92

(d) Simplify the following;

U = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

A= {2, 4, 6, 8, 10}

B= {1, 2, 3, 5, 8}

Find;

    (v) (A   B) U B

      Solution:

      Since A = {2, 4, 6, 8, 10}

          B = {1, 2, 3, 5, 8}

         (A u B)' = {1,3,4,6,7,9,10}

      Therefore, (A   B) U B = {1,3,4,6,7,9,10} U {1, 2, 3, 5, 8}

                               = {1,2,3,4,5,6,7,8,9,10}

    (vi) A U (A   B)

      Solution:

      Since A = {2,4,6,8,10}

          A' = {1,3,5,7,9}

      A' n B = {1,3,5}

      B = {1,2,3,5,8}

      Therefore, A U (A   B) = {2,4,6,8,10} U {1,3,5}

                              = {1,2,3,4,5,6,8,10}

    (vii)   (A   B) U (A   B)

      Since A = {2,4,6,8,10}

          B = {1,2,3,5,8}

      Hence, (A   B) = {2,8}

           B' = {4,6,7,9,10}

      Therefore, (A   B) = {4,6,10}

      And   (A   B) U (A   B) = {2,8} U {4,6,10} = {2,4,6,8,10}

    (viii)   A U (B   B)

        Since A = {2,4,6,8,10}

            B = {1,2,3,5,8}

            B' = {4,6,7,9,10} but (B   B) = **{0}**

    (ix) Therefore, A U (B   B) = **{2,4,6,8,10} U {0} = {0,2, 4, 6, 8, 10}**

Question (3a):

  (a) State the various sources of statistical data and its limitations

     Solution

   Sources of statistical data

     1. Primary source / primary data

        Limitations

1. Lack of statistical awareness
2. Inadequate funding of statistical agency
3. Poor social facilities
4. Lack of adequate coordination among data collection agency
5. Cultural or religions problems
6. Inadequate statistical manpower

2. Secondary source/ secondary data

Limitation

Limitations of secondary data
1. Incompleteness
2. Irregular publications
3. Inaccuracy
4. Out datedness

(b) Name and explain any 3 methods of collecting Quantitative primary data

Methods of collecting Quantitative primary data

1. Interview method
(a) Personal interview
(b) Telephone interview
(c) Computer assisted interview
2. Questionnaire method
3. Observation method
4. Experimental method

Question 3b: Find the mean for the following frequency distribution by an Assumed Mean Method.

Class Frequency	Class Frequency
20-40	9
40-60	11
60-80	14
80-100	6
100-120	8
120-140	15
140-160	12

Solution

Assumed mean method

Let us take assumed mean $= a = 90$

Class Frequency	Class Frequency	Class marks (x_i)	Deviation $f_i d_i$ $d_i = x_i - 90$	$f_i d_i$
20-40	9	30	-60	-540
40-60	11	50	-40	-440
60-80	14	70	-20	-280
80-100	6	90	0	0
100-120	8	110	20	160
120-140	15	130	40	600
140-160	12	150	60	720
	N =ΣF= 75			220

Mean =   90 +220/75 = 92.93

Question 4a: A factory worker counted the numbers of nuts in each of several packets. The results are shown in the table

Number of nuts	Frequency
6	8
7	12
8	36
9	18
10	15
11	10

Find:

(a) The range

(b) P_{80} (where represent Percentile)

 (c) Quartile Deviation

Solution: First derive the cumulative frequency

Number of nuts	Frequency	CF
6	8	8
7	12	20
8	36	56
9	18	74
10	15	89
11	10	99

(a) The range = **11 -6 = 5**

(b) P_{80} (where represent Percentile)= 80th = $\underline{80}$ $\quad$ X $\quad$ 99 = 79.2, therefore 80th term is P80 =
10

$$100$$

(c) Quartile Deviation = $\underline{Q3 \ - Q1}$ $\quad$ = $\mathbf{Q3 =}$ $\underline{\mathbf{3N \ + 1}}$ $\quad$ = $\quad$ $\underline{3(99) + 1}$ $\quad$ = $\quad$ 74.5

$$2 \qquad\qquad 4 \qquad\qquad 4$$

$$\mathbf{Q1 =}\ \underline{\mathbf{N \ + 1}}\ = \quad \underline{99 + 1}\quad = \ 25$$

$$4 \qquad\qquad 4$$

Therefore, $\underline{Q3 \ - Q1}$ $\quad$ = $\mathbf{74.5 \ - \ 25}$ $\quad$ = $\quad$ $\mathbf{24.75}$, **therefore the quartile deviation is = 8**

$$2 \qquad\quad 2$$

Question 4b:

In a company having 80 employees, 60 earn $=$10.00 per hour and 20 earn $\quad=$13.00 per hour.

(a) Determine the mean earnings per hour**.**

$$= \ \underline{\ \ \mathbf{F}\ \ }\ = \ \underline{\ \ \mathbf{(60)(10) + (20)(13)}\ \ } \ = \ \mathbf{10.75}$$

$$\mathbf{N} \qquad\qquad \mathbf{60+20}$$

(b) Would the answer in part (a) be the same if the 60 employees earn a mean hourly wage of $=$10.00 per hour?

Solution:

YES, the result is the same. To prove this, suppose that f1 numbers have mean m_1 and that f_2 numbers have mean m_2. We must show that the mean of all the numbers is

$$= \ \underline{\ \mathbf{f_1 m_1 + f_2 m_2}\ }$$

$$\mathbf{f_1 + f_2}$$

let the f1 numbers add up to M1 and the f2 numbers add up to M2.

Prove your answer.

(c) Do you believe the mean hourly wage to be typical (representative)?

We can say that 10.75 is a "typical" hourly wage in the sense that most of the employees earn 10.00, which is too far from 10.75per hour