Program: B.B.A (III)
Course Title: Basic Statistics
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Q1:
1. Statistics is the word which use to measure DATA
2. Figures belongs with QUANTITATIVE data
3. Attributive study of the data belongs with QUALITATIVE DATA
4. STRATIFICATION is the process which separate data in homogeneous groups.
5. The graph which construct on behalf of continuous group of data is called as HISTOGRAM
6. The Grading score of the students belongs with PERCENTAGE SUBDEIVIDED RECTANGULAR measurement scale.
7. Today’s temperature was recorded at 32⁰ F, lies in the category of TEMPERATURE measurement scale.
8. Statistics has very limited number of usage in advance research studies (F)
9. Number of dots in a single line is very good example of countable data (T)
10 Qualitative data do not belong with the field of Statistics. (F)

Question 02 (a): Describe the relevant fields and branches of Statistics
Ans: Following are the relevant fields of statistics.
**1. Mathematics**

 The formulas used in math are reliable, but to get more precision and exactness, statistics methods are important. In fact, it is called the branch of applied math. There are common techniques that both the fields have adopted from each other such as statistical methods, namely probability, dispersion, etc., used in math and mathematical concepts like integration and algebra are used in former.

**2. Business**

Business students must be aware of the importance of statistics in the field. There are times when a businessman has to make quick decisions, and this can be done by using its concepts which make the decision-making easy. He strategizes the marketing, finance, production, resource through it. What are the tastes and preferences of consumers? What should be the quality? What should be the target market? All these questions are answered using statistical tools.

**3. Economics**

 There are so many concepts of economics that are completely dependent on statistics. All the data collected to find out the national income, employment, inflation, etc., are interpreted through it. In fact, theory of demand and supply, relationship between exports and imports are studied through this subject. The perfect example of this is census; the bureau uses its formulas for calculating a country’s population.

 **4. Country’s Administration**

 Many national policies are decided using statistical methods, and administrative decisions are taken based on its data. Statistics provides most accurate data which helps government to make budgets and estimate expenditures and revenues. It is also used to revise the pay scale of employees in case cost of living is rising.

 **5. Astronomy**

When scientists measured the distance between sun and earth, or moon and earth, they did not use any measurement scale or ruler for that. It was these statistical methods that helped them to find out the best answers and estimates that are possible. It is difficult to measure the mass, size, distance, density of objects in the universe without any error, but statistics formulas do this with the best probability.

 **6. Banking**

When someone deposits his money in banks, the idea is that he will not withdraw the amount in the near future. So, banks lend this money to other customers to earn profit in the form of interest. They use statistical approach for this service. They compare the number of people making deposits against the number of people requesting loans and at the same time ascertaining the estimated day for the claim.

 **7. Accounting and Auditing**

Although accounting needs exactness in calculating the profit and loss of the business, certain decisions can be taken according to approximation which is done through statistics. For example, sampling may be used to find out the current trends in the market as it does not require any precision.

 **8. Natural and Social Science**

 Almost all fields of science such as biology, chemistry, physics, etc., use statistical methods for experimenting and analyzing their results. In biology, it is used in biostatistics, biometrics, which includes investigating about medicines, pharmacy, agriculture, fishery, etc.

- BRANCHES OF STATISTICS
Two branches, descriptive statistics and inferential statistics, comprise the field of statistics.
-Descriptive Statistics
The branch of statistics that focuses on collecting summarizing and presenting a set of data.

EXAMPLE:
The average age of citizens who voted for the winning candidate in the last presidential election the average length of all books about statistics the variation in the weight of 100 boxes of cereal selected from a factory’s production line.

INTERPRETATION:
Descriptive statistics forms the basis for analysis and discussion in such diverse fields as securities trading the social sciences, government the health sciences and professional sports. A general familiarity and widespread availability of descriptive methods in many calculating devices and business software can often make using this branch of statistics seem deceptively easy.

-Inferential Statistics:
The branch of statistics that analyzes sample data to draw conclusions about a population.

EXAMPLE:
A survey that sampled 2,001 full or part time workers ages 50 to 70 conducted by the American Association of Retired persons (AARP) discovered that 70% of those polled planned to work past the traditional mid-60s retirement age. By using methods discussed in section 6.4, this statistic could be used to draw conclusion about the population of all workers ages 50 to 70 .

INTERPRETATION:
When you use inferential statistics, you start with a hypothesis and look to see whether the data are consistent with that hypothesis. Inferential statistical methods can be easily misapplied or misconstrued, and many inferential method require the use of a calculator or computer.

Q2 (b): How could you elaborate the “Importance and Applications of Statistics.
Ans: statistics is perhaps a subject that is used by everybody. The following functions and uses of statistics is most diverse field serve to indicate its importance.
1. Statistics assists in summarizing the larger sets of data in a form that is easily understandable.
2. Statistics assists in the efficient design of laboratory and field experiments as well as surveys
3. Statistics assists in a sound and effective planning in any field of inquiry.
4. Statistics assists in drawing general conclusion and in making predictions of how much of a thing will happen under given condition.
5. Statistics techniques being powerful tools for analyzing numerical data are used in almost every branch of learning. In the biological and physical sciences, genetics, agronomy, anthropometry, astronomy, physics, geology etc, are the main area where statistical techniques have been developed and are increasingly used.
6. A businessman, an industrialist and research workers all employ statistical methods in their work. Banks, Insurance companies and Governments all have their statistical departments.
7. A modern administrator whether in public or private sectors, leans on statistical data to provide a factual basis for decision.
8. A politician uses statistics advantageously to lend support and credence to his arguments while elucidating the problems he handles.
9. A social scientist uses statistical methods in various areas of socio-economics life of a nation. It is sometimes said that “a social scientist without an adequate understanding of statistics, is often like the blind man groping in a dark room for a black cat that is not there”.

APPLICATIONS
1. Actuarial Science:
Is the discipline that applies mathematical and statistical methods to asses risks in the insurance and finance industries.
2. Biostatistics:
Is a branch of biology that studies biological phenomena and observations by means of statistical analysis and includes medical statistics.
3. Business analysis:
Is a rapidly developing business process that applies statistical methods to data sets (often very large) to develop new insights and understanding of business performance and opportunities.
4. Chemo metrics:
Is the science of relating measurements made on a chemical system or process to the state of the system via application of mathematical or statistical method.
5. Demography:
Is the statistical study of all populations. It can be very general science that can be applied to any kind of dynamic population that is one that changes over time or space.
6: Econometrics:
Is a branch of economics that applies statistical methods to the empirical study of economic theories and relationships.
7. Environmental statistics:
Is the application of statistical methods to environmental science. Weather, climate, air and water quality are included as are studies of plants and animal population.
8. Epidemiology:
Is the study of factors affecting the health and illness of populations, and serves as the foundation and logic of interventions made in the interest of public health and preventive medicine.
9. Geostatistics
Is a branch of geography that deals with the analysis of data from disciplines such as petroleum geology, hydrogeology, hydrology, meteorology, oceanography, geochemistry, geography.
10. Operations research:
Is an interdisciplinary branch of applied mathematics and formal science and uses methods such as mathematical modeling, statistics, and algorithms to arrive at optimal or near optimal solutions to complex problems.
11. Population ecology:
Is a sub-field of ecology that deals with the dynamic of species populations and how these populations interact with the environment.
12. Quantitative psychology:
Is the science of statistically explaining and changing mental processes and behaviors in humans.
13. Psychometrics:
Is the theory and techniques of educational and psychological measurement of knowledge, abilities, attitudes and personality traits.
14. Quality control:
Reviews the factors involved in manufacturing and production; it can make use of statistical sampling of product items to aid decision in process control or in accepting delivers.
15. Statistical finance:
An area of econo\_physics, is an empirical attempt to shift finance from its normative roots to a positivist framework using exemplars from statistical physics with an emphasis on emergent or collective properties of financial markets.
16. Statistical mechanics:
Is the application of probability theory which includes mathematical tools for dealing with large populations, to the field of mechanics , which is concerned with the motion of particles or objects when subjected to a force.
17. Statistical physics:
Is one of the fundamental theories of physics and uses methods of probability theory in solving physical problems.
18: Statistical thermodynamics:
Is the study of the microscopic behavior of thermodynamic systems using probability theory and provides a molecular level interpretation of thermodynamic quantities such as work, heat, free energy and entropy.

Q3 (a): “The initial techniques which are usually prefer during transformation of data towards information are mostly recommendable during presentation of data.” Elaborate the above mentioned statement precisely

Q3 (b): b) Construct an appropriate frequency distribution for the following data related to an experimental yield.

93, 89,75, 97,75,47, 73, 40, 100, 42, 39, 75, 13, 39, 89, 78, 32, 72, 51, 21, 92, 45, 29, 58, 16, 31, 6, 82, 76, 10, 10, 32, 2, 25, 98, 94, 93, 91, 68, 20, 19, 61, 37, 98, 72, 61, 72, 19, 81, 78.

c) Construct the followings about the Question 3 (b).  Simple Bar Graph & Histogram

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| --- | --- | --- |
| **Data** | **Tally Chart** | **Frequency** |
| 1-10 | IIII | 4 |
| 11-20 | IIII | 5 |
| 21-30 | III | 3 |
| 31-40 | IIIIII | 7 |
| 41-50 | III | 3 |
| 51-60 | II | 2 |
| 61-70 | III | 3 |
| 71-80 | IIII IIII | 10 |
| 81-90 | III | 4 |
| 91-100 | IIIIIIII |  9 |
| Total  | 50 |