Sub: Statistics   Class -11   F. M. 70

Duration: 3hrs 15 mins   Date: 08/08/2018

Group-A

1.Choose the correct answer.   1x10=10

i)Monthly income   of workers of a factory is

a) attribute ii)discrete variable   iii)continuous variable iv)none of these

ii)Frequency density is necessary for drawing

a)Ogive ii) Histogram iii)Column diagram iv)step diagram

iii)   Mode depends on the change of

a)origin only   b) scale only   c) Both origin and scale iv)neither origin nor scale

iv)If the relation between two variables x and y be 5x+7y=28 and median of y be 3 then the median of x be

a)1.4   b)-4.2   c)3   iv)$\frac{13}{7}$

v)The mean of 21 matural number is

a)10   b)11   c)231   d)210

vi)Colour of flower is

a)discrete variable   b) attribute   c) continuous variable   d)none of these

vii)The harmonic of the reciprocals of first seven positive intigers is

a)$\frac{1}{6}$ b)$\frac{1}{4}$ c) 3   d) none of these.

viii)The vertical axis in case of an ogive shows

a)Absolute frequency   b) class boundary   c) frequency density   d) Cumulative frequency

ix)A train ran at x km/hr from A to B and returned from B to A at y km/hr.The average speed in km /hr is

a) $\frac{x+y}{2}$ b) $\sqrt{xy}$ c)$\frac{2xy}{x+y}$ d) none of these

x)The sum of the deviations of $x_1, x_2, x_3\ldots\ldots x_n$ from their Arithmetic mean is

a) zero   b) one   c) negative   d)Positive

Group-B

2. Answer the following questions.   1x8=8

i)If $2u = 5x$ and the harmonic mean of x is 0.4 then find the harmonic mean of u.

ii) What is frequency density?

iii)Give an example of Primary data.

iv) Write two merits of diagrammatic representation.

v)How do you find class-mark of a class-Interval?

vi) Suppose each value of a variable x lies between p and q ,both values inclusive..show that $p \leq$ mean of $x \leq$ q.

vii) What type of data can be represented through Step diagram?

viii) If the observed values of the variable are equal. Then what will be their mean?

Group-C

3. Answer the following.   2x4=8

i)The Find out arithmetic mean of $1, 2, 2^2, \ldots\ldots 2^9$.

ii)Write down the difference between Discrete data and continuous data.

iii)Write down characteristics of a good questionnaires.

iv)Define ordinal data with example.

Group-D

4. answer the following. $\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad$ 3x8=2

i)If the geometric mean of n_1 values of a variable is g_1 and n_2 values be g_2,Then find the geometric mean of combined data interms of g_1 and g_2.

ii) Describe different parts of a table.

iii)Write the advantages of mail questionnaire method.

iv)Write disadvantages of Direct personal observation method.

v)Prove that the logarithm of the geometric mean of a set of values of a variable is the arithmetic mean of their logarithms.

vi)If A.M and G.M of two positive real numbers are 25 and 15 respectively,Then find their H.M.

vii)Find the G.M of n observations a, ar, ar^2,…………ar^{n-1}.

viii)write the steps of drawing Oive.

Group-E

5. Answer the following questions. $\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad$ 5x4=20

i)If a variable x takes te values 1,2,…..,r with F_1, F_2,F_3…..$F_r(=n)$ $\quad$ as the corresponding less than type cumulative frequencies,Then prove that

mean of x =(r+1) $- \frac{1}{n}\sum_{i=1}^{r} Fi$

ii)If the values of a variable are in geometric progression then Prove that A.M , G.M and H.M are also in geometric progression.

iii)Find the arithmetic mean of 7,77,777,……….upto pth term.

iv)In a frequency table the upper boundary of each class interval has a constant ratio to the lower boundary. Show that geometric mean (G) may be expressed as

log G=A $+ \frac{k}{n}\sum_{i=1}^{r} fi(i-1)$

where n=$\sum_{i=1}^{r}$ fi ,A is the logarithm of the classmark of the first interval and k is the logarithm of the ratio between upper and lower boundaries.

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9/8/18

ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION

First Term Examination– 2018

Sub: Statistics Model Answer   Class -11   F. M. 70

Duration: 3hrs 15 mins   Date: 08/08/2018

Group-A

1.Choose the correct answer.

i)Monthly income   of workers of a factory is

 Ans: c)continuous variable

ii)Frequency density is necessary for drawing

Ans. b) Histogram

iii)   Mode depends on the change of

Ans. c) Both origin and scale

iv)If the relation between two variables x and y be 5x+7y=28 and median of y be 3 then the median of x be

Ans. a)1.4

v)The mean of 21 matural number is

Ans.   b)11

vi)Colour of flower is

Ans.b) attribute

vii)The harmonic of the reciprocals of first seven positive intigers is

Ans. b)$\frac{1}{4}$

viii)The vertical axis in case of an ogive shows

 Ans. d) Cumulative frequency

vii) What type of data can be represented through Step diagram?

Ans. Frequency distribution interms of cumulative frequency.

viii) If the observed values of the variable are equal. Then what will be their mean?

Ans.The same observed value.

Group-C

3. Answer the following.

i)The Find out arithmetic mean of $1, 2, 2^2, \ldots \ldots 2^9$.

Ans.sum=$\frac{1+2+2^2+\cdots\ldots 2^9}{10}=\frac{1024-1}{10}$=1023/10 = 102.3

ii)Write down the difference between Discrete data and continuous data.

Ans. Discrete variable can take isolated values with in a range .Data on discrete variable is called discrete data.

Continuous variable can take any value with in a range. Data on continuous variable is called continuous data.

iii)Write down characteristics of a good questionnaire.

Ans.a) It should be put in simple languages

b)It should not create any doubt.

c)Should not hurt sentiments of people.

d)There should be few questions to check the consistency of the replies.

iv)Define ordinal data with example.

Ans.When there is clear ordering in attribute that is called ordinal data.

Example- educational status : Primary education - Secondary education - Higher secondary education – Graduation - post graduation.

v)Prove that the logarithm of the geometric mean of a set of values of a variable is the arithmetic mean of their logarithms.

Ans.suppose we have n values $X_1, X_2, X_3 \ldots X_n$ of a variable x and X_G denotes GM

$X_G = (\prod_{i=1}^{n} xi)^{1/n}$

Taking log on both the sides we have

$\log X_G = \log (\prod_{i=1}^{n} xi)^{1/n}$ or $\log X_G = \frac{1}{n}\sum_{i=1}^{n} \log xi$

vi)If A.M and G.M of two positive real numbers are 25 and 15 respectively,Then find their H.M.

Ans. $(x_1 x_2)^{1/2} = 15$,

Or, $(x_1 x_2) = 225$ therefore HM $= \frac{2 \times 225}{50} = 9$

$\frac{x_1 + x_2}{2} = 25$

Or, $x_1 + x_2 = 50$

viii)write the steps of drawing Ogive.

Ans. To represent continuous data interms of cumulative frequency we use Ogive.

Along y axis we put cumulative frequency and along x axis we plot class boundaries.

In case of less than type cumulative frequency they are plotted against upper boundary and in case of more than type frequency they are plotted against lower boundary.

<div align="center">Group-E</div>

5. Answer the following questions.

i)If a variable x takes te values 1,2,.....,r with $F_1, F_2, F_3 \ldots F_r(=n)$ as the corresponding less than type cumulative frequencies,Then prove that

mean of x $= (r+1) - \frac{1}{n}\sum_{i=1}^{r} Fi$

Ans. Let the $F_1, (F_2 - F_1), (F_3 - F_2) \ldots (F_r - F_{r-1})$ as the frequencies corresponding to the values 1,2,3,....r

$\sum_{i=1}^{n} xifi = 1 F_1 + 2.(F_2 - F_1) + 3 (F_3 - F_2) + \ldots + r(F_r - F_{r-1})$

         $= F_1 + (2F_2 - 2F_1) + (3F_3 - 3F_2) + \ldots + (rF_r - rF_{r-1})$

observation	class Mark	frequency
$x - cx$	$\dfrac{cx+x}{2} = x'$	f_1
$cx - c^2x$	$\dfrac{c(cx+x)}{2} = cx'$	f_2
$c^2x - c^3x$	c^2x'	f_3
$\vdots$		$\vdots$
$c^{n-1}x - c^n x$	$\dfrac{c^{n-1}(cx+x)}{2} = c^{n-1}x'$	f_n

$$\log G = \frac{1}{n}\left(\sum \log x_i^{f_i}\right) = \frac{1}{n}\left(\sum_{i=1}^{n} f_i \log x_i\right)$$

$$= \frac{1}{n}\left[\log x_i'^{f_1} + \log(cx')^{f_2} + \ldots \log(c^{n-1}x')^{f_n}\right]$$

$$= \frac{1}{n}\left[f_1 \log x' + f_2 \log(cx') + f_3 \log(c^2 x')\right.$$
$$\left. + \ldots + f_n \log(c^{n-1} x')\right]$$

$$= \frac{1}{n}\left[f_1 \log x' + f_2 \log c + f_2 \log x' + 2 f_3 \log c\right.$$
$$\left. + f_3 \log x' + \ldots + f_n \log c^{n-1} + f_n \log x'\right]$$

$$= \frac{1}{n}\left[\log x'(f_1 + f_2 + \ldots f_n) + \log c(f_1 \times 0 + 1 \times f_2\right.$$
$$\left. + 2 f_3 + \ldots (n-1) f_n\right]$$

$$= \frac{1}{n}\left[\log x' \times n + \log c \sum (i-1) f_i\right]$$

$$= \log x' + \frac{\log c}{n} \sum (i-1) f_i$$

$$= A + \frac{K}{n} \sum (i-1) f_i$$

GROUP-A

1. Choose the correct alternative (MCQ):   1×24=24

    i. Who is the 'Father of History'?
       a. Thucydides
       b. Herodotus
       c. Zeus
       d. Hisronus

    ii. Who wrote the Iliad and Odyssey?
       a. Homer
       b. Vyas
       c. Zeus
       d. Socrates

    iii. Name the oldest literary text of India
       a. Vedas
       b. Arthashastra
       c. Rajtarangini
       d. Samhita

    iv. Sangam literature was written in
       a. Tamil
       b. Telgu
       c. Sanskrit
       d. Malyalam

    v. Allahabad inscription of Samudragupta was composed by
       a. Harisena
       b. Banabhatta
       c. Aryabhatta
       d. Vyasa

    vi. Punched marked coins were called
       a. Karshapana
       b. Satvahana
       c. Karshanana
       d. Matsayana

    vii. Who authored Buddhacharita?
       a. Ashvagosha
       b. Bhasa
       c. Kalidasa
       d. Panini

    viii. Megasthenes wrote
       a. India
       b. Indina
       c. Indica

d. Industan

ix. Which was a grammar book of ancient India?
   a. Brihat Samhita
   b. Meghdoota
   c. Indica
   d. Astadhyayi

x. The memoir of Babur is known as
   a. Baburi
   b. Tuzuk-i- Jahangiri
   c. Tuzuk-i- Baburi
   d. Almanama

xi. The last of the geological era in which the present day people are living is
   a. Cenozoic
   b. Mesozoic
   c. Paleozoic
   d. Archaen

xii. The characteristic feature of the Harappan urbanism were
   a. Granaries were found here
   b. They had a great bath
   c. They imported tea from China
   d. They build Pyramids
      Choose the correct option
   i. a,b correct c,d incorrect
   ii. a, b, c cotrrect d incorrect
   iii. a, correct b,c,d incorrect
   iv. All are correct

xiii. Peking Man was a
   i. Homo Habilus
   ii. Homo Sapiens
   iii. Homo Sapiens Sapiens
   iv. Homo erectus

xiv. Homo Sapiens means
   a. Clever man
   b. Upright man
   c. Wise man
   d. Modern man
      Fill in the blank

xv. Palaeolithic means _____ in English
   a. New stone
   b. Old stone
   c. Dry stone
   d. Wet stone

xvi. Mesopotamia means
   a. Land between 2 deserts
   b. Land between 2 rivers
   c. Plateau
   d. Lake area

xvii. The Egyptian script is called
   a. Cuneiform
   b. Pictorial

c. Hieroglyphic

d. Devnagri

xviii. The first metal to be discovered was

a. Bronze

b. Tin

c. Iron

d. Copper

xix. The oldest epic in the world is

a. Ramayan

b. Mahabharat

c. Gilgamesh

d. Iliad

xx. The Olympic games first started in the year

a. 776 B.C

b. 76 B.C.

c. 76 A.D.

d. 776A.D

xxi. The original non-aryan inhabitants of Greece were

a. Dorians

b. Aeolians

c. Aegeans

d. achaeans

xxii. The Spartans were the

a. Ionian Greeks

b. Dorian Greeks

c. Achaens

d. Aeolians

xxiii. Julius Caesar was assassinated in the year

a. 44 B.C.

b. 44 A.D.

c. 414 B.C.

d. 14 B.C.

xxiv. Who is regarded as the 'Father of Greek Medicine'?

a. Hippocrates

b. Apollo

c. Sappo

d. Dionysus

GROUP-B

2. Answer the following questions.(alternatives to be noted).   1×16=16

i. What is Pre- History?

ii. What are fossils

iii. What is Palaeontology?

iv. What is Epigraphy?

v. Name the 2 epics of India.

vi. Under which king was the Sangam literature composed.

OR

What is the main characteristic of all the Neolithic cultures?

vii. Name the 2 important city state of Greece.

viii. What was the Gerusia?

ix. Define Oligarchy.

x. What is a republic?

xi. When and by whom was Harappa discovered?

xii. Who were the Consuls?

OR

Who were the Plebians?

xiii. Who and in which year founded Rome?

xiv. In which battle and which year was King Puru defeated by Alexander.

xv. What are microliths?

xvi. What are inscriptions?

GROUP-C

3. Answer the following questions. (Any Five)   8×5=40

i. Write a short note on Neolithic Culture.

ii. What is the importance of coins in the reconstruction of Ancient Indian History?

iii. What are the characteristic features of the Harappan Urbanism?

iv. Define the term city-state. What were the characteristic features of the city-state? (2+6)

v. What is an empire? What were its characteristic features?(2+6)

vi. Write a short note on the notion of time.

GROUP-A

1. Choose the correct alternative (MCQ):   1×24=24

   i.   b
   ii.   a
   iii.   a
   iv.   a
   v.   a
   vi.   a
   vii.   a
   viii.   c
   ix.   d
   x.   c
   xi.   a
   xii.   i
   xiii.   d
   xiv.   c
   xv.   b
   xvi.   b
   xvii.   c
   xviii.   d
   xix.   c
   xx.   a
   xxi.   c
   xxii.   b
   xxiii.   a
   xxiv.   a

GROUP-B

2. Answer the following questions.   1×16=16

   i. It is the period for which no evidence is available from written materials. It is that part of life of humanity that preceded History.

   ii. Fossils are the remains of anything living, animal or human beings, that have turned into stone. Fossils are the result of long burial by ash or rock.

   iii. It is another scientific technique that helps to study the remains of dead organisms. In this discipline human skeletons and animal bones are studied.

   iv. Study of inscriptions is called epigraphy.

   v. Ramayan and Mahabharat.

   vi. Pandya kings

   OR

   The invention of clay pottery is the characteristic of all the Neolithic cultures.

   vii. Sparta and Athens.

viii. It was a council of elders. It consisted of 2 kings and 28 members who were more than 60 years of age. Thus total number of members was 30. The 28 members were elected by the members of the Popular Assembly.

ix. It is a system of governance in which some wealthy and influential people held the reign of the government.

x. A republic is a government in which power rests with the people. Power rests with all the citizens who are entitled to vote.

xi. 1921, Dayaram Sahni.

xii. Consuls were the head executives of the Roman republic.

OR

Plebeians were that population of Rome which constituted the farmers, artisans, merchants and the common people of Rome. They hardly had any political right. Some of them were wealthy but most of them were poor.

xiii. Rome was founded in 753 B.C. by Romulus.

xiv. In the battle of Jhelum (battle of Hydaspes) in 326B.C. Puru was defeated by Alexander.

xv. Microliths are thin and small stones used after being attached with bone or wooden stick.

xvi. Inscriptions are writings engraved on stones, pillars, metals like copper, silver or any other hard material not easily perishable.

GROUP-C

3. Answer the following questions.   8×5=40

i. This age is the New stone age. Improved implements were used. There was introduction of agriculture. People now were transformed from food-gatherers to food- producers. The people now had a settled life. They built pit houses.The potters wheel was invented. Textoles were invented. During this time the people domesticated animals. There was division of labour. In paintings symbolic objects were used.

ii. Knowledge about different aspects of life.
   Knowledge about religion.
   Identification of kings and their dynasties.
   Development of art.
   Idea about the cultural life.
   Economic condition.

iii. Production of surplus in agriculture.
   Non-food producing activities.
   Craft specialization.
   Trade.
   Existence of organised government.

iv. City –state were village communities in a higher stage of development.
   Characteristic features of a city-state were :
   Protected place
   Tribal character
   Consciousness about mutual interest
   No allegiance to Confederacies
   Civil Society
   Establishment of republics.
   Absence of the ideal of unity.

v. The English word 'Empire' is derived from the latin imperare which means 'to command '. In dictionary an empire is defined as a political unit , a big territory or a large geographical area under a supreme authority of an emperor or empress.

Characteristic features of an empire.
Vastness of the empire.
A well organised administration.
Political loyalty of the subjects.
Collection of taxes.
Organisation for holding the empire together.

vi. Time is a part of the fundamental structure of the universe. It is a measurement in which events occur in sequence.
The 2 world views on time are- Cyclical where time moves in a cycle and
Linear where time proceeds in a linear path, resembling a line or thread, from the creation to the Day of judgement.