**AGA KHAN UNIVERSITY EXAMINATION BOARD**

**HIGHER SECONDARY SCHOOL CERTIFICATE**

**CLASS XII**

**Business Statistics Paper II**

**Time: 1 hour 30 minutes      Marks: 30**

**INSTRUCTIONS**

**Please read the following instructions carefully**.

1.      Check your name and school information. Sign if it is accurate.

> **I agree that this is my name and school.**
> **Candidate's Signature**

   **RUBRIC**

2.      There are SEVEN questions. Answer ALL questions. Choices are specified inside the paper.

3.      When answering the questions:

   Read each question carefully.
   Use a black pointer to write your answers. DO NOT write your answers in pencil.
   Use a black pencil for diagrams. DO NOT use coloured pencils.
   DO NOT use staples, paper clips, glue, correcting fluid or ink erasers.
   Complete your answer in the allocated space only. DO NOT write outside the answer box.

4.      The marks for the questions are shown in brackets ( ).

5.      You may use a scientific calculator if you wish.

Q.1. (Total 3 Marks)

Write any THREE points to highlight the importance of statistics in different fields.

_____

_____

_____

_____

_____

_____

Q.2. (Total 4 Marks)

In an under 19 cricket camp, the weights of 25 players were recorded as follows.

35, 40, 40, 40, 45, 45, 45, 44, 37, 37, 36, 50, 50, 38, 38, 39, 41, 46, 47, 47, 48, 43, 43, 42, 42

i.     Use the given table to construct the frequency distribution of the given data.     (2 Marks)

ii.    Also complete the column for cumulative frequency and class mark.     (2 Marks)

| Weight (kg) | Number of Participants | Cumulative Frequency | Class Mark |
|-------------|------------------------|----------------------|------------|
| 35 – 37     |                        |                      |            |
| 38 – 40     |                        |                      |            |
| 41 – 43     |                        |                      |            |
| 44 – 46     |                        |                      |            |
| 47 – 49     |                        |                      |            |
| 50 – 52     |                        |                      |            |

_____

_____

_____

_____

Business Statistics Model Paper XII

**(ATTEMPT EITHER PART a OR PART b OF Q.3.)**

Q.3.                                                                                          (Total 5 Marks)

a.   In the given table, Bilal recorded the time, in seconds, of 30 people to complete a race. (5 Marks)

| Time (s) | Number of People | |
|---|---|---|
| 51 – 55 | 4 | |
| 56 – 60 | 10 | |
| 61 – 65 | 11 | |
| 66 – 70 | 5 | |

Label and fill the empty column to find the second quartile of this data.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

PLEASE TURN OVER THE PAGE

Business Statistics Model Paper XII

## (**ATTEMPT EITHER PART a OR PART b OF Q.3.**)

b.    The weights (in kilograms) of 150 members of a health club, who are following a diet plan, are represented by the given frequency distribution.

   i.    Complete the given table to find the mean weight of the club members.        (4 Marks)

| Weight (kg) | Number of Members | | |
|---|---|---|---|
| 55– 64 | 22 | | |
| 65– 74 | 38 | | |
| 75 – 84 | 50 | | |
| 85 – 94 | 23 | | |
| 95 – 104 | 17 | | |
| **Total** | | – | |

_____

_____

_____

_____

_____

_____

   ii.    If each member of the club reduces 2 kg weight, find the mean of the reduced weights using your answer of part i.        (1 Mark)

_____

_____

Q.4.                                                                                                          (Total 4 Marks)

Samina is fond of reading books. She noted her reading time for the first 12 days of a month. The time noted (in hours) is as follows:

| Time (hours) | 2 | 3 | 6 | 8 | 6 | 4 | 3 | 3 | 2 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |  |  |  |  |

Complete the table to find the variance and standard deviation of her reading time.

_____

_____

_____

_____

_____

_____

_____

Business Statistics Model Paper XII

Q.5. (Total 5 Marks)

For the given data in the table, calculate Paasche's index number using base year 2010. Also interpret your result.

| Commodity | 2010 | | 2015 | | | |
|---|---|---|---|---|---|---|
| | Quantity (kg) | Price/ kg (Rs) | Quantity (kg) | Price/ kg (Rs) | | |
| Wheat | 100 | 10 | 120 | 13 | | |
| Rice | 50 | 100 | 40 | 110 | | |
| Cotton | 35 | 148 | 40 | 160 | | |
| Butter | 12 | 600 | 10 | 750 | | |
| Mutton | 48 | 500 | 35 | 600 | | |
| **Total** | - | - | - | - | | |

_____

_____

_____

_____

_____

_____

_____

_____

_____

**(ATTEMPT EITHER PART a OR PART b OF Q.6.)**

Q.6.                                                                                                          (Total 5 Marks)

a.

    i.    How many passwords of four letters are possible by using the letters of the word 'SOUTH', if

        I.    repetition is allowed?                                                                      (1 Mark)

_____

_____

        II.    repetition is NOT allowed?                                                              (1 Mark)

_____

_____

        III.    the password started with letter S?                                                (1 Mark)

_____

_____

    ii.    There were 9 persons in the waiting list to book a flight to Gilgit. If 5 seats are cancelled and are now available, then find the possible number of ways of selection of 5 people from the waiting list.                                                                      (2 Marks)

_____

_____

_____

_____

PLEASE TURN OVER THE PAGE

b.   A bag contains eleven cards. Each letter of the word MATHEMATICS is written on a separate card kept in the bag. If two cards are randomly drawn without replacement, then find the probability that

   i.   both cards have letter M written on it.                                    (2 Marks)

_____

_____

_____

_____

   ii   the first card has letter M or second card has letter T written on it.      (2 Marks)

_____

_____

_____

_____

   iii.  both cards have letter E written on it.                                   (1 Mark)

_____

_____

Q.7. (Total 4 Marks)

Complete the given table to find Pearson's coefficient of correlation using the following formula.

$$r = \frac{n \sum XY - \left(\sum X\right)\left(\sum Y\right)}{\sqrt{\left[n \sum X^2 - \left(\sum X\right)^2\right]\left[n \sum Y^2 - \left(\sum Y\right)^2\right]}}.$$

| S. No. | Height($X$) (cm) | Weight($Y$) (kg) | $XY$ | $X^2$ | $Y^2$ |
|--------|------------------|------------------|------|-------|-------|
| 1 | 45 | 2.3 | | | |
| 2 | 47 | 2.8 | | | |
| 3 | 48 | 2.5 | | | |
| 4 | 52 | 3 | | | |
| 5 | 49 | 2.8 | | | |
| 6 | 50 | 3 | | | |
| 7 | 51 | 3.2 | | | |
| 8 | 53 | 3.1 | | | |
| 9 | 55 | 3.5 | | | |
| 10 | 46 | 2.5 | | | |
| **Total** | **496** | **28.7** | | | |

_____

_____

_____

_____

_____

_____

_____

_____

_____

END OF PAPER

Please use this page for rough work

# Please use this page for rough work

# Please use this page for rough work