AGA KHAN UNIVERSITY EXAMINATION BOARD

HIGHER SECONDARY SCHOOL CERTIFICATE

CLASS XI

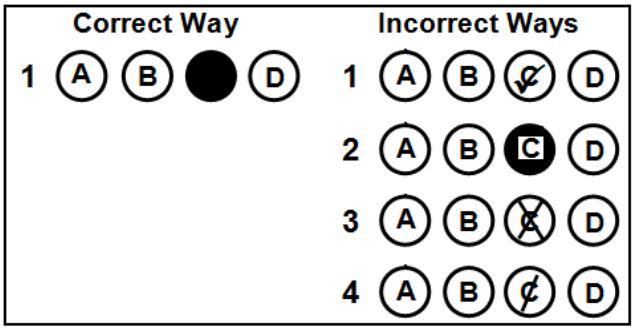
Statistics Paper I

Time: 45 minutes Marks: 30

Note: The MCQs in this model paper can also be used as examples and for practice for Annual and Re-sit Examinations 2022.

INSTRUCTIONS

1. Read each question carefully.
2. The MCQs in this model paper can be used as examples and for practice for Annual and Re-sit examinations 2022.
3. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
4. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 30 only.
5. In each question there are four choices A, B, C, D. Choose ONE. On the answer grid black out the circle for your choice with a pencil as shown below.



Candidate's Signature

6. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
7. DO NOT write anything in the answer grid. The computer only records what is in the circles.
8. You may use a scientific calculator if you wish.

Note: The MCQs in this model paper can be used as examples and for practice for Annual and Re-sit examinations 2022.

1. Which of the following is a discrete variable?

   A. Shoe size
   B. Air pressure
   C. Speed of car
   D. Temperature

2. Which of the following statistical scale measures temperature?

   A. Ratio scale
   B. Ordinal scale
   C. Interval scale
   D. Nominal scale

Use the given table to answer Q.3 and Q.4.

The given table shows the heights of 25 students of a class.

Height (cm)	Number of Students
156 – 160	7
161 – 165	5
166 – 170	9
171 – 175	2
176 – 180	2

3. The relative frequency of the class interval 176 – 180 is

   A. 0.08
   B. 0.10
   C. 0.15
   D. 0.92

4. The number of students who have height less than or equal to 170 cm is

   A. 21
   B. 13
   C. 12
   D. 9

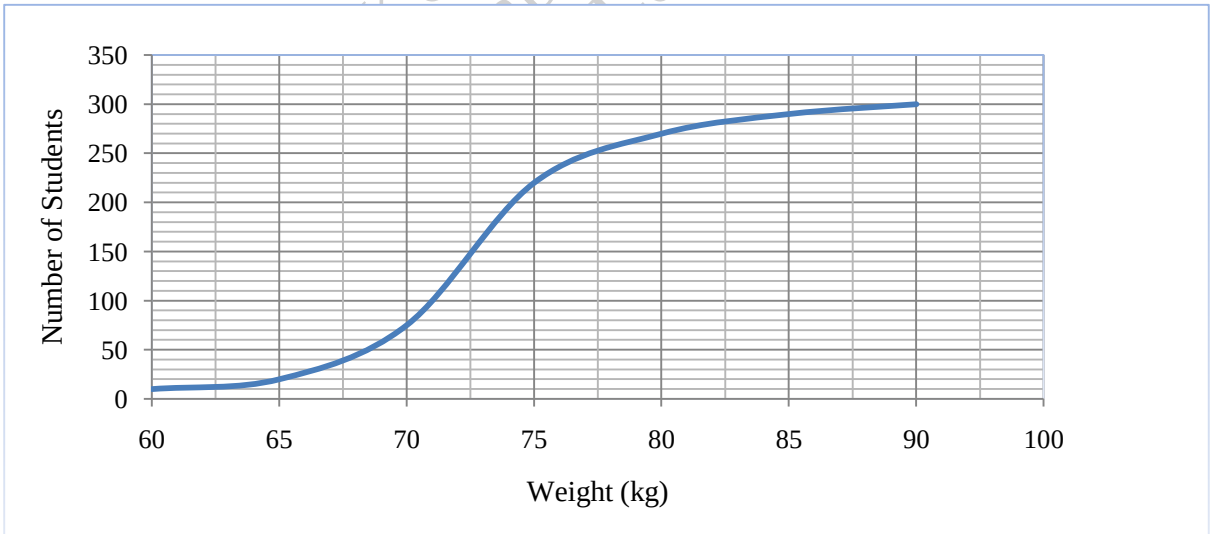
5. The given stem and leaf diagram represents the scores of students in a mathematics' quiz.

Stem	Leaf
3	0 2 4 5 6 8 8
4	2 2 3 3 6 6
5	0 0 2 3 3 3 6 7 8
6	1 1 2 2 4 5 5 6
7	0 0 3 3 3 5

The number of students' score less than 50 marks is

A. 12
B. 13
C. 14
D. 15

6. The given cumulative frequency curve shows the weight of 300 students of a class in a university.



The median weight of this class is

A. 72 kg
B. 72.5 kg
C. 75 kg
D. 75.5 kg

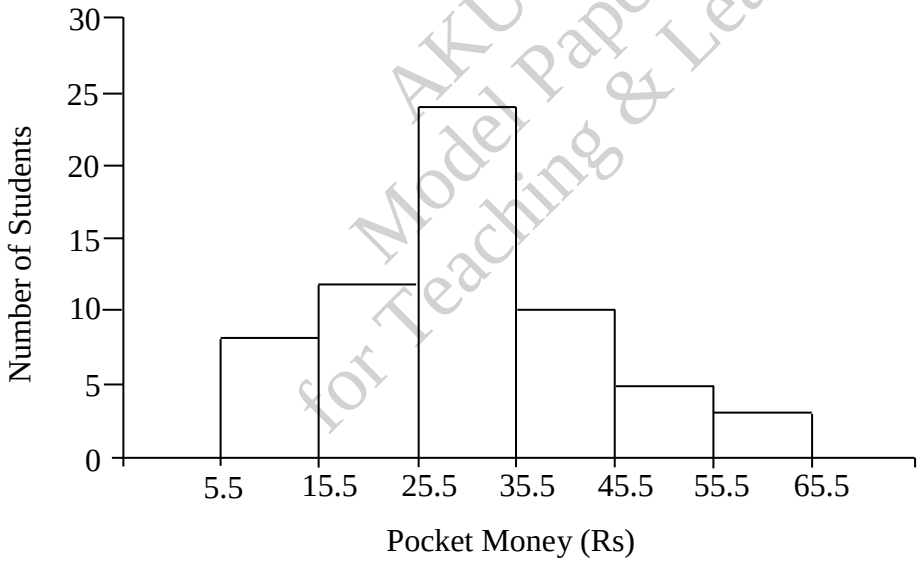
7. For a slightly skewed distribution of data, if the mean is 8 and the median is 12, the mode of the data is

A. 4
B. 12
C. 20
D. 24

8. If $12X = 3Y$, then $\overline{Y}$ is equal to

A. $\frac{1}{4}\overline{X}$
B. $\frac{1}{4}X$
C. $4X$
D. $4\overline{X}$

9. The diagram shows a histogram which represents the daily pocket money (in Rupees) of students in a class. The mode of this data, estimated graphically, is



A. 25
B. 25.5
C. 29.5
D. 35.5

10. If the arithmetic mean of a grouped data is 14 and $\sum fx = 20{,}888$, then $\sum f$ is equal to

A. 1,492
B. 6,702
C. 10,451
D. 292,432

11. The geometric mean of 4, 5, 6 and 10 is

A. 5.5
B. 5.88
C. 6.25
D. 34.64

12. Which of the following is NOT a property of symmetrical distribution?

A. Mean – Mode = 3 (Mean – Median)
B. Third quartile – median = median – first quartile
C. All odd ordered moments about mean vanish
D. First moment ratio is equal to zero

13. The given data is arranged in the ascending order.

a, 1, 3, 5, 7, 9, 10

The range of the data is

A. $10 - a$
B. $a - 10$
C. $\frac{10 - a}{2}$
D. $\frac{a - 10}{2}$

14. The average of the squared differences from the mean is called

A. variance.
B. mean deviation.
C. standard deviation.
D. coefficient of mean deviation.

15. The standard deviation of the data 25, 25, 25, 25, 25, 25, 25 and 25 is

A. – 5
B. 0
C. 5
D. 25

16. The square root of second moment about mean is also known as

A. variance.
B. mean deviation.
C. standard deviation.
D. coefficient of variation.

17. If Q_1, Q_2 and Q_3 are the first, second and third quartile respectively of a data set, then the formula of coefficient of quartile deviation is

A. $\frac{Q_2 - Q_1}{Q_2 + Q_1}$
B. $\frac{Q_2 + Q_1}{Q_2 - Q_1}$
C. $\frac{Q_3 - Q_1}{Q_3 + Q_1}$
D. $\frac{Q_3 + Q_1}{Q_3 - Q_1}$

Use the given information to answer Q.18 and Q.19.

The price of potato in the first four weeks of January 2019 is given in the following table and the price of Week-1 is considered to be the base price.

Week	Price/ kg (Rs)
1	25
2	30
3	32
4	20

18. The price index of Week-4 indicates that the price in Week-4 as compared to Week-1 is

A. 25% higher.
B. 25% lower.
C. 20% higher.
D. 20% lower.

19. With respect to Week-1, the highest change in the price index is

A. 20%
B. 25%
C. 28%
D. 60%

20. The Fisher's index number can be calculated by using Laspeyeres' and Paasche's indices, and it is the

A. arithmetic mean of the two indices.
B. geometric mean of the two indices.
C. harmonic mean of the two indices.
D. weighted arithmetic mean of two indices.

Use the given information to answer Q.21 and Q.22.

A simple linear regression is expressed through an equation $\hat{Y} = 20 + 2.5X$, where X is the number of hours spent on studying per week and $\hat{Y}$ is the estimated marks obtained in a test.

21. If a student studies 20 hours a week for a test, then his estimated marks in the test will be

A. 40
B. 50
C. 70
D. 80

22. The slope and y-intercept, of the given regression equation, respectively are

A. 20 and 2.5
B. 2.5 and 20
C. – 2.5 and 20
D. 2.5 and -20

23. The coefficient of correlation between two variables X and Y is 0.8. If all the values of X and Y are divided by 2, then the coefficient of correlation will be

A. 0.2
B. 0.4
C. 0.8
D. 1.0

24. The formula of Spearman rank correlation is

A. $R = 1 - \dfrac{6\sum d^2}{n(n^2 - 1)}$

B. $R = 1 - \dfrac{\sum d^2}{n(n^2 - 1)}$

C. $R = 1 - \dfrac{6\sum d^2}{n(n-1)}$

D. $R = 1 - \dfrac{\sum d^2}{n(n-1)}$

25. The year-wise data of a car dealer for 8 years is recorded in the following table.

Year	Number of Cars Sold
2009	30
2010	36
2011	39
2012	45
2013	66
2014	59
2015	50
2016	56

For the given data, the first 3 years moving average will be

A. 35
B. 36
C. 40
D. 79

26. Which of the following options is NOT a factor of time series?

A. Cyclic variation
B. Random variation
C. Seasonal variation
D. Coefficient of variation

27. Which of the following options is NOT a vital event?

A. Birth
B. Divorce
C. Sickness
D. Earthquake

28. If in the year 2015, the crude death rate for a certain city is 12.7 per thousand persons and the number of deaths is 1850, then in year 2015 the total population will be

A. 145,600
B. 235,000
C. 145,669
D. 235,999

29. If the forward difference operator is defined as $\Delta y_n = y_{n+1} - y_n$, then $\Delta^2 y_n$ is equal to

A. $y_{n+2} - y_{n+1} + y_n$
B. $y_{n+2} - y_{n+1} - y_n$
C. $y_{n+2} - 2y_{n+1} + y_n$
D. $y_{n+2} - 2y_{n+1} - y_n$

30. In the given forward difference table, the value of *a* will be

x	$y = f(x)$	Δy_n	$\Delta^2 y_n$	$\Delta^3 y_n$
5	3			
		3		
6	6		-2	
		2		a
7	8		1	
		3		
8	11			

A. -2
B. -1
C. 0
D. 2

END OF PAPER

Please use this page for rough work

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