Roll No _____ (To be filled in by the candidate)

(Academic Sessions 2015 – 2017 & 2016 – 2018)

STATISTICS   218-(INTER PART – II)   Time Allowed : 20 Minutes

Q. PAPER – II (Objective Type)   **PAPER CODE = 8185**   Maximum Marks : 17

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	In simple linear regression the number of unknowns are :
	(A) One (B) Two (C) Three (D) Four
2	The standard deviation of sampling distribution is :
	(A) Dispersion (B) Difference (C) Average (D) Standard error
3	A qualitative characteristic is :
	(A) Constant (B) Quantitative variable (C) Attribute (D) None
4	In normal distribution the value of constant π is :
	(A) $\dfrac{23}{6}$ (B) $\dfrac{22}{7}$ (C) $\dfrac{30}{9}$ (D) $\dfrac{42}{8}$
5	One byte equals to :
	(A) 8 bits (B) 4 bits (C) 7 bits (D) 13 bits
6	P (type – I error) is equal to :
	(A) α (B) β (C) θ (D) $1 - \beta$
7	The probability distribution of a statistic is :
	(A) Sampling (B) Parameter (C) Data (D) Sampling distribution
8	In normal distribution the value of constant e is :
	(A) 2.7183 (B) 2.8173 (C) 2.1792 (D) 1.2345
9	The value of correlation co-efficient lies between :
	(A) 0 and 1 (B) − 1 and 0 (C) − 1 and + 1 (D) 0 and 2
10	The additive model of time series is :
	(A) $Y = T + C + S + I$ (B) $Y = TCSI$ (C) $T - C - S - I$ (D) $T + C - S - I$
11	The number of degrees of freedom for paired t-test based on n pairs of observation is :
	(A) $2n - 1$ (B) $n - 2$ (C) $2(n - 1)$ (D) $n - 1$
12	The sample is subset of :
	(A) Data (B) Population (C) Parameter (D) Distribution
13	In semi average method if number of values is odd then we drop from initial two halves :
	(A) First value (B) Last value (C) Middle value (D) 2nd value
14	Estimate and estimator are :
	(A) Same (B) Different (C) Both A and B (D) Neither A nor B
15	If X is N (100 , 64) then S.D is :
	(A) 18 (B) 100 (C) 8 (D) 91
16	The signs of regression co-efficients and correlation co-efficient are always :
	(A) Different (B) Same (C) Zero (D) One
17	In converting the score 18, 24, 12, 22, 33 to ranks (assigning rank 1 to highest score) the rank of score 12 is :
	(A) 4 (B) 5 (C) 1 (D) 3

STATISTICS 218-(INTER PART – II) Time Allowed : 2.40 hours

PAPER – II (Essay Type) Maximum Marks : 68

SECTION – I

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2. **Write short answers to any EIGHT (8) questions :** 16

   (i) In a normal distribution $Q_1 = 8$, $Q_3 = 17$. Find the value of mean and mode.

   (ii) Write the probability density function of standard normal distribution.

   (iii) If $Z \sim N (0 , 1)$, then find $P\big[|z| < 1.64\big]$

   (iv) Write four properties of standard normal distribution.

   (v) Find the ordinate of the standard normal curve at $z = - 0.84$

   (vi) Define interval estimation.

   (vii) Differentiate between estimator and estimate.

   (viii) What are the assumptions of student's t-Statistic?

   (ix) Define level of significance.

   (x) Given $\bar{X} = 28$, $\mu_o = 28$. Find the value of z-score.

   (xi) What is computer software?

   (xii) What is a compiler?

3. **Write short answers to any EIGHT (8) questions :** 16

   (i) What is population?

   (ii) What is non-sampling error?

   (iii) What is standard error?

   (iv) Explain the properties of the sampling distribution of a mean.

   (v) Given $N_1 = 3$, $n_1 = 2$ and $N_2 = 4$, $n_2 = 2$. If $\sigma_1^2 = \dfrac{8}{3}$ and $\sigma_2^2 = \dfrac{5}{4}$ find $var (\bar{X}_1 - \bar{X}_2)$ when sampling is done without replacement?

   (vi) Distinguish between finite and infinite population.

   (vii) Sketch scatter diagram indicating negative correlation.

   (viii) Explain the term regression coefficient.

   (ix) Given $x = 2, 4, 6$ and $y = 4, 4, 4$, find simple correlation coefficient.

   (x) Write the relationship between regression coefficient and correlation coefficient.

   (xi) What is curve fitting?

   (xii) If $\Sigma(X - \bar{X})(Y - \bar{Y}) = 8400$ and $\Sigma(X - \bar{X})^2 = 2800$,find $b_{yx} = ?$

4. **Write short answers to any SIX (6) questions :** 12

   (i) Define the term Dichotomy for attributes.

   (ii) What is positive and negative association?

   (iii) What is contrary classes?

   (iv) Define independence of attributes.

   (v) What is contingency table?

   (vi) If $\hat{y} = 10 + 3x$, find the trend values for $x = 1, 2, 3, 4$?

   (vii) Define principle of least square.

   (viii) Write down two properties of least square line.

   (ix) Enlist the different methods of measuring secular trend.

SECTION – II

Note : **Attempt any THREE questions.**

5. (a) In a normal distribution $\mu = 47.6$ and $\sigma = 16.2$, find :
      (i) P_{90} (ii) Two points such that any value has 95% probability of falling between them.   4

   (b) If $X \sim N (60 , 100)$, where X indicate marks obtained by student, find probability that a student selected at random obtains marks : (i) less than 56 (ii) more than 50   4

6. (a) Draw all possible samples of size 2 with replacement from a population 2, 4, 6 make sampling distribution of sample mean. Also find (i) $\mu_{\bar{x}}$ (ii) $\sigma_{\bar{x}}$ 4

   (b) If $n_1 = 10$, $n_2 = 15$
   $$\mu_1 = 30 , \mu_2 = 10$$
   $$\sigma_1^2 = 5 , \sigma_2^2 = 6$$
   find (i) $\mu_{\bar{x}_1 - \bar{x}_2}$ (ii) $\sigma_{\bar{x}_1 - \bar{x}_2}$
   if sampling is done with replacement   4

7. (a) Given the following summary statistics :   4

$n_1 = 40$	$\bar{x}_1 = 90$	$\sigma_1 = 15$
$n_2 = 50$	$\bar{x}_2 = 100$	$\sigma_2 = 20$

   Construct 95% confidence interval for $\mu_2 - \mu_1$

   (b) Test the null hypothesis $H_0 : \mu_1 = \mu_2$ against alternative hypothesis $H_1 : \mu_1 \neq \mu_2$ at $\alpha = 0.05$ using the data given in part (a).   4

8. (a) Fit the regression line of Y on X to given data and show that $\Sigma (Y - \hat{Y}) = 0$ 4

X	1	2	3	4	5
Y	1	1	2	2	4

   (b) Compute and interpret the co-efficient of correlation between the values of X and Y from the data given below :   4

X	5	10	15	20	25
Y	12	14	20	18	16

9. (a) Find co-efficient of association from the following data :   4

Height of son	Height of father	
	Tall	Short
Tall	500	100
Short	100	400

   (b) Compute the trend values by method of semi-average for the following data :   4

Year	1921	1922	1923	1924	1925
Values	15	18	17	42	38

Roll No _____ (To be filled in by the candidate)

(Academic Sessions 2015 – 2017 and 2016-2018)

STATISTICS   218-(INTER PART – II)   Time Allowed : 15 Minutes

(COMMERCE GROUP)   GROUP – II   Maximum Marks : 10

Q.PAPER (Objective Type)   **PAPER CODE = 8648**   www.pakcity.org

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	The number of important basis of classification is :
	(A) Two (B) Three (C) Four (D) Five
2	Simple index number involves commodities :
	(A) More than one (B) One (C) Two (D) Three
3	$^np_r = - - -$:
	(A) $\dfrac{n!}{r!}$ (B) $\dfrac{n!}{(n+r)!}$ (C) $\dfrac{n!}{r!(n-r)!}$ (D) $\dfrac{n!}{(n-r)!}$
4	The number of chairs in the college is an example of
	(A) Constant (B) Continuous variable
	(C) Discrete variable (D) Both A and B
5	π is a :
	(A) Constant (B) Variable (C) Statistic (D) Co-efficient
6	The graph of cumulative frequency distribution is called :
	(A) Histogram (B) Ogive (C) Frequency polygon (D) Multiple bar chart
7	If three coins are tossed then the possible outcomes are :
	(A) 3 (B) 9 (C) 4 (D) 8
8	Price relative are equal to :
	(A) $\dfrac{p_n}{p_o} \times 100$ (B) $\dfrac{p_n}{p_{n-1}} \times 100$ (C) $\dfrac{p_o}{p_n} \times 100$ (D) $\dfrac{p_{n-1}}{p_n} \times 100$
9	We must arrange the data before calculating :
	(A) A.M. (B) Median (C) Mode (D) None of these
10	The model letter of the word " STATISTICS " :
	(A) S (B) T (C) I (D) S and T

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Roll No _____ (To be filled in by the candidate)

STATISTICS   **(Academic Sessions 2015 - 2017 and 2016-2018)**
(COMMERCE GROUP)   218-(INTER PART – II)   Time Allowed : 1.45 hours
(Essay Type)   www.pakcity.org   GROUP – II   Maximum Marks : 40

SECTION – I

2. **Write any SIX (6) short answers of the following questions :**   **12**
   (i) What is quantitative variable?   (ii) What is a parameter?
   (iii) What is a population?   (iv) Define the term class-mark.
   (v) Define tabulation.   (vi) Define class-interval.
   (vii) What is an array?   (viii) Give two advantages of graphs.
   (ix) Define multiple bar diagram.

3. **Write any SIX (6) short answers of the following questions :**   **12**
   (i) Write any two reasons of average calculation.   (ii) Define arithmetic mean.
   (iii) Find arithmetic mean when sum of five values is 60.   (iv) Define model class.
   (v) Enlist any two uses of index number.   (vi) What is price index number?
   (vii) Define permutation.   (viii) What is probability?
   (ix) Define subset.

SECTION – II

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Note : Attempt any TWO questions.

4. (a) Make a frequency distribution of the following data taking class size as 1 :   4

3	2	10	9	7	6	8	6	5	7
0	9	4	2	8	5	4	3	10	0
6	10	7	8	5	3	2	9	1	2
4	6	7	1	2	10	0	5	2	8

(Turn Over)

	(C) Discrete variable (D) Both A and B		
5	π is a : (A) Constant (B) Variable (C) Statistic (D) Co-efficient		
6	The graph of cumulative frequency distribution is called : (A) Histogram (B) Ogive (C) Frequency polygon (D) Multiple bar chart		
7	If three coins are tossed then the possible outcomes are : (A) 3 (B) 9 (C) 4 (D) 8		
8	Price relative are equal to : (A) $\frac{p_n}{p_o} \times 100$ (B) $\frac{p_n}{p_{n-1}} \times 100$ (C) $\frac{p_o}{p_n} \times 100$ (D) $\frac{p_{n-1}}{p_n} \times 100$		
9	We must arrange the data before calculating : (A) A.M. (B) Median (C) Mode (D) None of these		
10	The model letter of the word " STATISTICS " : (A) S (B) T (C) I (D) S and T		

4. (b) The height of college students are given below :

Height	57 – 59	60 – 62	63 – 65	66 – 68	69 – 71
No. of Students	8	15	27	18	9

Draw a histogram.

5. (a) For the following frequency distribution compute mode :

Classes	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79
Frequency	15	18	22	10	05

(b) Calculate arithmetic mean :

x	5	10	15	20	25	30	35
f	3	7	10	15	10	3	2

6. (a) The price of wheat (per 40 kg.) is given below. Compute chain indices using 1991 as base year :

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Price	112	124	130	160	160	172	240	240	240	300

(b) If 3 coins are tossed, construct the sample space and find the probability of 3 heads?