

Pabna Cadet College  
Fortnightly Examination - 2021  
Second Term Phase One  
Subject: Statistics (Set 02)  
Class: XI

Time: 40 minutes

Full Marks: 20

Answer all the question.

1. Following are the information of some objects of solar system (distances are in astronomical unit-AU).

Name	Perihelion	Aphelion
2020Fy30	35.6	107.7
2020FY31	39.5	102.4
Eris	38.3	97.5
2015TH	28.9	136.4
2014 UZ	38.3	177.0
Gonggong	28.9	101.2
2015FG	38.3	92.1
2014FC	33.7	92.1
2006QH	36.2	104.4
Sedna	40.4	96.7

- a. What is a scatter diagram? 1
- b. Is the correlation coefficient unit-free? Show mathematically. 2
- c. Draw a scatter diagram from the given data and comment on the relationship. 3
- d. Find the influence of aphelion on perihelion and explain. How realistic is the relationship? 4

2. Answer in short.

- a. Write three uses of correlation analysis 2
- b. When do you use rank correlation? 2
- c. Give two sets of examples each with two variables where in one set the variables depend on each other, and in the other one specific variable affects the other. 2

3. Consider the following two models

Model	Fitted Model	$R^2$
$Y = \alpha_1 + \beta_1 X + \epsilon$	$\hat{Y} = 2.4 - 8.2X$	75%
$Y = \alpha_2 + \beta_2 X + \epsilon$	$\hat{Y} = -1.2 + 2.6X$	96%

- a. Which model performed better and why? 2
- b. What do you understand from the values of  $\beta_1$  and  $\beta_2$ ? 2

—Good Luck—