

PG CBCS
M.Sc. Semester-IV Examination, 2022
DEPARTMENT OF ZOOLOGY
PAPER: ZOO 401

Full Marks: 40

Time: 2 Hours

Write the answer for each unit in separate sheet

The figures in the right-hand margin indicate full marks.
 Candidates are required to give their answers in their own words as far as practicable.

ZOO 401.1: Environmental pollution and Management

Mark: 20

GROUP-A**1. Answer any two questions:**

- a) Differentiate ecodegradation from pollution?
- b) Explain SPM and RSPM.
- c) What is the significance of Red Data Book?
- d) What is SLOSS?

2×2=4

GROUP-B**2. Answer any two questions:**

- a) Explain briefly multidimensional harmful impacts of chemical fertilizer.
- b) What are the environmental consequences of thermal pollution?
- c) Mention the sources of different soil pollutants leading to deterioration of soil quality.
- d) What do you mean by bioinvasion? Write a short note on Chipko Movement. 2+2

2×4=8

GROUP-C**3. Answer any one question:**

- a) Explain the role of physiochemical parameters in the formation of Acid Rain. Define eutrophication. Highlight the adverse consequences of eutrophication. 3+2+3
- b) Mention the health hazards in humans due to noise pollution. What is photochemical smog? What do you mean by wildlife corridor? 4+2+2

1×8=8

ZOO 401.2: Biostatistics

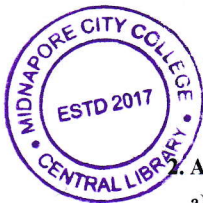
Mark: 20

GROUP-A**1. Answer any two questions:**

- a) The mean and median for a given set of observations are 26 and 28 respectively. Find the value of the mode.
- b) What is the basic difference between student's t-test and paired t-test?
- c) Cite a situation when the study of correlation between 2 variables has no practical significance.
- d) State multiplication theorem of probability with an example.

2×2=4

(P.T.O.)



(2)

GROUP-BAnswer any **two** questions:**2×4=8**

- a) Calculate correlation coefficient between 'x' and 'y' from the following data and state whether the data indicate that 'x' and 'y' are independent of each other.

X_i	-3	-2	-1	1	2	3
y_i	9	4	1	1	4	9

- b) Earthworms were collected from 10 different, small plots of uniform size of grassland. The numbers of earthworms obtained from those 10 plots are shown in the table below. Examine the distribution pattern of earthworms. [Given that $\chi^2_{(0.05)}(9) = 16.92$].

Plot No	1	2	3	4	5	6	7	8	9	10
Earthworms	25	32	17	23	15	34	27	19	22	26

- c) The arithmetic mean for the following frequency distribution is 67.45. Find the value of the missing frequency.

Height (inches)	60-62	63-65	66-68	69-71	72-74
Frequency (f _i)	15	54	f ₃	81	24

- d) The mean score of 16 boys in an aptitude test is found to be 40.3 (s.d. = 8.15) while the mean score of an equal number of girls in the same test is 37.5 (s.d. = 6.35). Judge by a suitable statistical test if there exist any significant difference between the mean scores of the boys and the girls.

GROUP-C3. Answer any **one** question:**1×8=8**

- a) (i) State the salient properties of normal distribution. Draw a normal distribution curve and indicate how much areas of the curve are occupied by mean $\pm\sigma$ and mean $\pm 2\sigma$ of the values, respectively. 3+2+3 2+2

- (ii) A small town has 10,000 men whose mean height is 64.5" (s.d. = 4.5"). The height of a man is known to show a normal distribution pattern. Find out the number of men whose height is (a) less than 55.5", and (b) greater than 73.5". 2+2

- b) (i) The following data shows the yields of wheat (in quintal/bigha) in 12 fields belonging to 3 villages, after using 3 different varieties of fertilizers (a, b and c) in the 3 villages. Is there any significant difference in the average yields of wheat in the 3 villages after using three different varieties of fertilizers? [Given that F at $df(2, 9)$ at 5% level of significance = 4.26].

Fertilizer a	Fertilizer b	Fertilizer c
25	20	24
22	17	26
24	16	30
21	19	20

- (ii) A box contains 3 red and 7 white balls. You are allowed to draw two balls one after another from the box, without any replacement. What will be the probability of getting a white ball first and then a red ball in the two consecutive draws? 3
