(8 pages) Reg. No. : .....

Code No. : 30893 E **Sub. Code : EMEC 22**

B.A. (CBCS) DEGREE EXAMINATION, APRIL 2024.

Second Semester

Economics — Core

STATISTICS FOR ECONOMICS – II

(For those who joined in July 2023 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The index number for a base year is ————
   (a) given value (b) 25
   (c) 50 (d) 100

2. The best average in the construction of index numbers is ————
   (a) median (b) geometric mean
   (c) arithmetic mean (d) harmonic mean

3. ———— is a series of values of a variable over a period of time arranged chronologically
   (a) Index Number
   (b) Time Series
   (c) Theory of Probability
   (d) Sampling

4. The process of finding functional relationship between the variables x_i, y_i is called ————
   (a) Index Number (b) Curve fitting
   (c) Trend Line (d) Graph

5. The probability of getting one head when we toss two coins simultaneously is ————
   (a) 0 (b) 1/4
   (c) 1/2 (d) 1/8

6. The probability of getting a spade from a pack of cards is ————
   (a) 1/52 (b) 1/13
   (c) 4/13 (d) 1/4

7. Small sample theory is applicable when
   (a) $N \geq 30$ (b) $N \leq 30$
   (c) $N < 30$ (d) $N > 30$

8. For testing $P_1 = P_2$ in a large sample, the proper test is
   (a) t – test (b) Z–test
   (c) F–test (d) chi-square test (χ^2)

9. The number of degrees of freedom in a 3×3 contingency table is ————.
   (a) 8 (b) 4
   (c) 3 (d) 2

10. When a null hypothesis is rejected, it is possible that ———— has been made
    (a) a type II error (b) a wrong decision
    (c) a correct decision (d) none of these

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Construct an index number for 2006 taking 2005 as base using simple aggregative index.

Commodity	Price in 2005	Price in 2006
A	90	95
B	40	60
C	90	110
D	30	35

Or

(b) An enquiry into the budgets of the middle class families in a city in India gave the following information. Calculate the cost of living index.

Item	Price 2012	Price 2013	Weight
Food	1500	1650	35%
Rent	300	325	15%
Clothing	450	500	20%
Fuel	10	90	10%
Misc.	500	550	20%

12. (a) List out the components of time series.

Or

(b) Calculate three yearly moving average for the following data.

Year	1998	1999	2000	2001	2002
Students	332	317	357	392	402
Year	2003	2004	2005	2006	2007
Students	405	410	427	405	438

13. (a) A bag contains 7 red, 12 white and 1 green balls. What is the probability that:

(i) three balls drawn are all white and

(ii) three balls drawn are one of each colour.

Or

(b) Four coins are tossed simultaneously. What is the probability of getting 2 heads and 2 tails?

14. (a) Differentiate between the census method and sampling method.

Or

(b) In 600 throws of a six faced dice, odd points appeared 360 times. Would you say that the dice is fair at 5% level of significance?

15. (a) The following results were obtained from a sample of 10 boxes of biscuits; mean weight is 490 grams and SD is 9 grams. Could the sample come from a population having a mean of 500 grams.

Or

(b) Test the equality of standard deviations for the data given below at 5% level of significance. $n_1 = 10, n_2 = 14, s_1 = 1.5, s_2 = 1.2$.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Calculate Fisher's price index from the following data.

	2002		2003	
Commodity	Price	Expenditure	Price	Expenditure
A	8	80	10	120
B	10	120	12	96
C	5	40	5	50
D	4	56	3	60
E	20	100	25	150

Or

(b) Calculate Laspeyre's and Paasche's price index numbers from the following data.

	Base Year		Current Year	
Commodity	Kilo	Rate (Rs.)	Kilo	Rate (Rs.)
Bread	10	3	8	3.25
Meat	20	15	15	20
Tea	2	25	3	23

17. (a) Calculate the trend values by the method of least squares from the data given below and estimate the sales for the year 2010.

Year	2003	2004	2005	2006	2007
Sales (in lakhs. Rs.)	70	74	80	86	90

Or

(b) Fit a straight line to the following data

Year	2001	2002	2003	2004	2005	2006	2007
Profit (in '000 Rs.)	12	10	14	11	13	15	16

18. (a) Three groups of workers contain 3 men and 1 women, 2 men and 2 women, and 1 man and 3 women respectively, one worker is selected at random from each group. What is the probability that the group selected consists of 1 man and 2 women.

Or

(b) A large number of measurements is normally distributed with the mean of 65.5 inches and SD of 6.2 inches. Find the percentage of measurements that fall between 54.8 inches and 68.8 inches.

19. (a) Explain the types of sampling.

Or

(b) One thousand articles from a factory are examined and found to be 3% defective. thousand five hundred similar articles from a second factory are examined and found to be only 2% defective. Can it reasonably be concluded that the product of the first factory is inferior to second?

20. (a) A group of 10 rats fed on a diet A and another group 8 rats fed on a diet B recorded the following increase in weights in grams.

Diet A	5	6	8	1	12	4	3	9	6	10
Diet B	2	3	6	8	1	10	2	8	–	–

Test whether diet A is superior to diet B using t-test?

Or

(b) In a certain sample of 2000 families, 1400 families are consumers of tea. Out of 1800 North Indian families, 1236 consumes tea. Use chi square test χ^2 and state whether there is any significant difference between consumption of tea among North Indian Families and South Indian Families