

ARUNACHAL PRADESH PUBLIC SERVICE COMMISSION

SUBJECT: - STATISTICS

Time: 3 (Three) hours

Full marks: 100

Q.1. Attempt any ten questions.

10x3 = 30

- a) What is index number?
- b) Write down the classical definition of probability.
- c) State the theorem of total probability of two events.
- d) Explain the term 'least square'.
- e) Define the term 'linear programming'.
- f) What is time reversal test?
- g) What is queueing theory?
- h) What do you mean by life table?
- i) What are the uses of chi-square test?
- j) What do you mean by sample?
- k) Define regression analysis.
- l) List out methods of collection of official statistics.
- m) Explain the term 'percentile score'.
- n) Explain three limitations of NSS.

Q.2. Attempt any five questions.

5x8 = 40

- a) Find out the probability of drawing either a spade or an ace from a pack of 52 cards.
- b) What do mean by the 'sample space'? Explain with an example.
- c) A bag contains 3 green and 8 red balls. If one ball is drawn from it at random, find the chance that ball drawn is green.
- d) Distinguish between fertility rates and reproduction rates.
- e) A coin is tossed 400 times and it turns up heads 216 times. Discuss whether the coin may be unbiased one.
- f) What do mean by 'standard error'? How does it differ from standard deviation?
- g) What are the defects of Indian agricultural statistics?

Q.3. Attempt any two questions.

2x 15 = 30

a) How is the population Census conducted in India? Discuss the salient features of the Indian population census of 2011.

b) The 200 digits are chosen at random from a set of tables. The frequencies of the digits are :

Digits :	0	1	2	3	4	5	6	7	8	9
Frequency:	18	19	23	21	16	25	22	20	21	15

Use χ^2 test to assess the correctness of the hypothesis that the digits are distributed in equal numbers in the tables from which these were chosen. (Value of χ^2 for 9 d.f. at 5% level of significance is 16.919).

c) From the following data of a city calculate - a) Crude birth rate; b) General fertility rate; c) Age specific fertility rate; and d) Total fertility rate :

Age-group	No. of women (000)	No. of live birth
15- 19	17	340
20 - 24	18	1,980
25 - 29	20	2,900
30 - 34	15	1,500
35 - 39	12	840
40 - 44	10	400
45 - 49	8	40

The total population of the city in 2012 was 10, 00,000.

d) How do you define reliability in statistics? What are different methods used to improve the reliability to optimize the result in sampling.

#####