THE NEW APPROACH TO MCQs IN *ENSET* BAMBILI

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N.B.M (B.Sc., *DIPET II* IN ECONOMICS)

PART A: PAST QUESTIONS

STATISTICS ENSET 2014 SECOND CYCLE

THE UNIVERSITY OF BAMENDA
HIGHER TECHNICAL TEACHER'S TRAINING COLLEGE
ENTRANCE EXAMINATION: ACADEMIC YEAR 2014. Time Allowed: 3hrs
DEPARTMENT OF ECONOMICS: Second cycle Minor: STATISTICS

1 .A sample of size 36 is drawn from a population of size 1000 with standard deviation of 9. The standard error δ_x is A) 1.5 B) 1.473 C) 2.1717 D) 2.25

2. Urn A contains 4 red and 3 black balls and urn B contains 2 red and 2 black balls. A ball is drawn from urn A and its color is noted then put in urn B and then a ball is then drawn from urn B. The probability of drawing two balls of the same color is: A) 0.6 B) 0.886 C) 0.75 D) 0.3428

3. The probability that a hunter will hit his target is $\frac{1}{20}$. The probability that out of 30 shots he will hit his target at most twice is: A) 0.2146 B) 0.238 C) 0.0113 D) 0.019

4. The regression line of y on x is given by $y = 0.6x+10$ and that of x on y is given by $x = 1.4y+5$. The value of the correlation coefficient is: A) 0.69 B) 1.4 C) 0.9828 D) 0.966

5. Based on question 4, the value of the coefficient of determination is: A) 0.9828 B) 0.14 C) 0.966 D) 0.9

6. Balls are removed from a bag containing 5 balls numbered from 1 to 5 without replacement. If X is the random variable "the sum of two balls". The sample space will be: A) 25 B) 5 C) 4 D) 10

7. The mathematical expectation of rolling a fair die twice is: A) $\frac{1}{6}$ B) 2 C) 0.2777 D) $\frac{1}{3}$

8. A sample of size 36 has a mean of 50 and a standard deviation of 10. The 95% confidence interval of the population mean from which it is drawn is: A) [46.73; 53.27] B) [46; 53] C) [46.08; 53.92] D) [46; 54]

9. Given the following distribution: -1, 0, 2, 2, 1, 3 and 5. It range is: A) 5 B) 6 C) 7 D) 2

10. In ANOVA table of a multiple regression with three independent variables and nine observations, the total variation in the dependent variable is 2867 and the explained variation is 2067.The mean squares of error is: A) 1.387 B) 160 B) 0.721 D) 133.33

11. The probability density function of a continuous variable is given by $f(x) = \begin{cases} x^2 - 4x, 0 \le x \le 4 \\ 0, elsewhere \end{cases}$, the mode of this random variable is: A) 2 B) 2 and -2 C) 0 D) 4

12. Given the following statistics: $n_1 = 5$, $\overline{x_1}$ =9.7, S^2_1 =4.415; n_2 =4, $\overline{x_2}$ =8.53, S^2_1=2.61. The value of $\hat{\delta}$ ($\overline{x_1} - \overline{x_2}$) is: A) 3.641 B) 1.908 C) 1.5355 D) 1.239

13. A continuous random variable has probability density function f given by $f(x) = \begin{cases} cx^2(1-x), 0 \le x \le 1 \\ 0, \quad otherwise \end{cases}$. If m is the median of X, then A) $6m^4 + 8m^3 - 1 = 0$ B) $6m^4 - 8m^3 + 1 = 0$ C) $\frac{2cm^3}{3} - \frac{2cm^4}{4} + 1 = 0$ D) $6m^4 - 8m^3 + 1$

Question 14 through 19 deals with a director of personnel who is trying to determine a predicting equation for longevity in this institution. He used SAS to regress months employed for several employees on education level, age when hired, score on the institution's psychological maturity test and number of dependents. His results are summarized as follows:

Dep. Variable: longevity length of employment (months)

Analysis of Variance

Source	Sum of squares	degrees of freedom	mean squares	F value	Prob>F
Regression	7325.325	4	1831.331	10.194	0.0127
Error	898.275	5	179.655		
Total	8223.6	9			
Root MSE	13.4035		R-Square	0.8908	

Variables	parameters Estimates	standard error	t-values	Prob>|t|
Intercept	82.24	81.74	1.006	0.3605
School	-1.553	4.362	-0.356	0.737
Age	-1.685	1.253	-1.346	0.236
Scores	0.1102	0.291	0.379	0.7203
Dependents	6.876	7.659	0.898	0.4104

14. The regression equation for these data is:

A) $\hat{y}$ =82.24 - 1.55x_1-1.69x_2+0.11x_3+6.88x_4 B) $\hat{y}$ =82.24+1.55x_1+1.69x_2+0.11x_3+6.88x_4

C) $\hat{y}$ =13.403 – 1.55x_1 – 1.69x_2+0.11x_3+6.88x_4 D) $\hat{y}$ =82.24 – 0.365x_1 – 1.346x_2 +0.379x_3 +0.898x_4

15. How much of the variation in length of employment is explained by the regression?

A) 94% B) 82% C) 89% D) 13%

16. Suppose you wish to test whether years of school are significant explanatory variables for longevity. The degree of freedom you will use would be: A) 4 B) 9 C) 6 D) 5

17. What is the value of S_{β_3} A) 13.4 B) 0.291 C) 7.65 D) 1.25

18. How many denominator degree of freedom would there be for an F test? A) 5 B) 4 C) 9 D) 10

19. The number of data points entered by the director is: A) 9 B) 10 C) 18 D) 19

20. If p=0.4 for a particular Bernoulli process, the calculation $\frac{7!}{3!4!}(0.4)^3(0.6)^4$ gives the probability of getting A) Exactly three successes in 7 trials B) Exactly four successes in 7 trials C) 3 or more successes in 7 trials D) 4 or more successes in 7 trials

21.In which of the following cases will the Poisson distribution be a good approximation of the binomial A) n=300, p=0.01 B) n=300, p=0.02 C) n=300, p=0.03 D) n=30, p=0.2

22. From a population of 125 items with a mean of 105 and a standard deviation of 17, 64 items were chosen. The prob (107.5 <$\bar{x}$<109) is A) 0.549 B) 0.0549 C) 0.889 D) 0.0889

23. P(An $\bar{B}$) is the same as: A) P(A) – P(B) B) P(A) – P(AnB) C) P(B) – P(AnB) D) none of the above

24. For an infinite population, the standard error ($\delta_{\bar{x}}$) is given by: A) $\frac{\delta^2}{\sqrt{n}}$ B) $\frac{\delta}{\sqrt{n}}$ C) $\frac{\delta}{\sqrt{n}}\sqrt{\frac{N-n}{N-1}}$ D) $\frac{\delta}{\sqrt{n-1}}$

25. The director of H.T.T.T.C has 8 friends. The number of ways he can invite 4 of them to dinner if two of them are not in speaking terms and will not attend together is: A) 35 B) 70 C) 55 D) 80