Business Mathematics 1
7020

SOUTH WEST REGIONAL MOCK EXAMINATION
TECHNICAL AND VOCATIONAL EDUCATION

The Teachers' Resource Unit (TRU) in collaboration with the Subject Teachers' Association (STA)	Subject Code 7020	Paper Number 1
CANDIDATE NAME	Specialty: ACC/MKT/TIMS	
CANDIDATE NUMBER	Subject title	
CENTRE NUMBER	BUSINESS MATHEMATICS	
Advanced /ATVE	DATE Tuesday, 25/03/2025	

Time Allowed: 1 HOUR 30 MINUTES

INSTRUCTIONS TO CANDIDATES:

1. USE A SOFT HB PENCIL THROUGHOUT THIS EXAMINATION.
2. DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

Before the Examination begins:

3. Check that this question booklet is headed "Business Mathematics and code 7020 Paper 1".
4. Insert the information required in the spaces provided above.
5. Without opening the booklet, pull out the answer sheet carefully from inside the front cover of this booklet. Take care that you do not crease or fold the answer sheet or make any marks on it other than those asked for in these instructions.
6. Insert the information required in the spaces provided on the answer sheet using your HB pencil: **Candidate Name, Centre Number, Candidate Number, Subject Code Number and Paper Number**

How to answer questions in this examination:

7. Answer ALL the 50 questions in this examination. All questions carry equal marks.
8. Calculators are allowed.
9. For each question there are four suggested answers, A, B, C, and D. Decide which answer is correct. Find the number of the question on the Answer sheet and draw a horizontal line across the letter to join the square brackets for the answer you have chosen. For example, if C is your correct answer, mark C as shown below:

   [A] [B] [C] [D]

10. Mark only one answer for each question. If you mark more than one answer, you will score zero for that question. If you change your mind about an answer, erase the first mark carefully, and then mark your new answer.
11. Avoid spending much time on any question. If you find a question difficult, move to the next question. You can come back to this question later.
12. Do all rough work in this booklet using, where necessary, the blank spaces in the question booklet.
13. Mobile phones are **NOT ALLOWED** in the examination room.
14. **You must not take this booklet and answer sheet out of the examination room. All question booklets and answer sheets will be collected at the end of the examination.**

1. In how many years will it take for an asset to depreciate to $1/8^{th}$ of its original value, if its depreciation rate is 15%.
   A 4years
   B 12.8 years
   C 13 years
   D 10.4 years

2. Below is the list of answers given by students as their favorite pet. Which is the frequency of dog?.
Dog, Cat, Fish, Turtle, Cat, Rabbit, Turtle, Dog, Cat, Dog, Cat, Dog, Dog, Turtle, Dog, Cat, Cow, Fish, Rabbit, Dog, Cat, Dog, Cat, Cat, Dog, Turtle, Rabbit, Cat, Fish, Dog, Turtle
   A 5
   B 7
   C 8
   D 10

3. When is the moving average method used for measurement of a trend
   A Trend is linear
   B Trend is non linear
   C Trend is curvilinear
   D Trend is irregular

4. Which of the following methods is used to calculate the Consumer Price Index?
   A Laspeyres's formula
   B Fisher's formula
   C Palgrave's formula
   D Paache's formula

5. Which is the meaning of the statement "price index of the base year concerning 125"?
   A 25% of the price has increased in the current year in comparison to the base year
   B 125% of the price has increased in the current year in comparison to the base year
   C 100% of the price has increased in the current year in comparison to the base year
   D 25 of the price has increased in the current year in comparison to the base year

A sum grows from X to 3X in N years. Given that the rate of interest is 7% per annum. The value of N to the nearest whole number is?
   A 18 years
   B 17 years
   C 12 years
   D 8.5 years

7. The standard deviation of the distances (in km) traveled by a group of 30 cars is 8.6km. Which is the variance of their distances?
   A $33.65km^2$
   B $77.88km^2$
   C $43.98km^2$
   D $73.96km^2$

8) When a die is thrown, the probability of getting a number greater than 5? is?
   A 1/8
   B 1/3
   C 1/6
   D 3/2

9) If the probability that an object dropped from a certain height will strike the ground is 80 percent and if 12 objects are dropped from the same place, which is the mean and variance.
   A 9.6; 1.92
   B 8.6; 1.92
   C 9.6; 1.82
   D 8.6 1.82

10. Which distribution is used for $E(X) = \lambda$?
   A Binomial distribution
   B Poisson's distribution
   C Bernoulli's distribution
   D Laplace distribution

11. If $P(x) = 0.8$ and $x = 3$, the value of $E(x)$ is?
   A 2.6
   B 2.8
   C 2.2
   D 2.4

12. Which is the value of λ in Poisson's distribution if the probability of getting a tail in a biased coin toss is ¼ when 8 coins are tossed.
   A 2
   B 3
   C 1
   D 4

13) The random variables of A and B have variances 0.4 and 0.6, respectively, and K = 4A - 2B. The value of K is?
   A 2.2
   B 4.4
   C 6.6
   D 8.8

14. If the difference between C.I. and S.I. is 1,440 when the rate of interest is 12% per annum for a period of 2 years, the amount of investment is ?
   A 150,000frs
   B 100,000 frs
   C 250,000 frs
   D 120,000 frs

15. Which of the following best describes an annuity due?
   A Payments are made quarterly
   B Payments are made annually
   C Payments are made at the end of each period
   D Payments are made at the beginning of each period

16. When Var (x) = 2.25, Var (y) = 1 and Cov (x, y) = 0.9, then correlation coefficient is
   A 0.45
   B 0.8
   C 0.6
   D 0.75

17. The coefficient of skewness of a distribution is 0.4. Its standard deviation and mean are respectively 8 and 30. The mode of the distribution is
   A 26
   B 26.2
   C 26.4
   D 28.9

18. Selection of a football team for CAN 2026 is ?
   A random sampling
   B systematic sampling
   C purposive sampling
   D cluster sampling

19. The mean deviation about median of 28, 7, 16, 14, 24, 15, 34, 30 is
   A 8
   B 6
   C 10.5
   D 12

20. Which is the future value (amount) of an annuity of 1000 payable for 20 year at the rate of 8% p.a. compound interest?
   A 36,868
   B 40,996
   C 45,700
   D 51,160

21. For two mutually exclusive events A and B if P(A) = 3/4 and P(B) = 1/6, then P(A or B) is
   A 11/12
   B 5/12
   C 7/8
   D 1/8

22. Consider the following data

Marks in Maths	0-9	10-19	20-29	30-39	40-49	Total
No. of students (f)	10	8	12	15	5	50

Frequency density of the second class is
   A 0.89
   B 8
   C 1.7
   D 1

23. The necessary diagram to compare among the various components or between a part and the whole is:
   A Bar diagram
   B Step diagram
   C Pie diagram
   D Histogram

24. In Linear Programming, which is the definition of a feasible region
   A The set of all points that satisfy the constraints and maximize the objective function.
   B The set of all possible solutions without considering constraints
   C The set of points where at least one constraint is violated.
   D The set of all points that satisfy all constraints

25. For the LP problem maximize z = 2x + 3y The coordinates of the corner points of the bounded feasible region are A(3, 3), B(20,3), C(20, 10), D(18, 12) and E(12, 12). The minimum value of z is
   A 70
   B 72
   C 15
   D 20

26. If The banker's discount due for 4 months at 15% = 420. Then The true discount is:
   A 460
   B 400
   C 380
   D 360

27. The present value of an annuity of 1,000frs for 11 years to begin with the maturity of a life insurance policy at the end of 4 years reckoning interest at 5% p.a. compound is:
   A 7,178
   B 6,821.64
   C 7,700
   D 7,634.23

28. A machine is worth 10 % less at the end of the year than at the beginning of the year. Which is the value of the machine after 5 years of use, if the machine was bought for 4,000,000fcfa

A 2,361, 960fcfa
B 2,761,960fcfa
C 3,861960fcfa
D 2,000,000fcfa

29. Poisson distribution is applied for which variable

A Continuous Random Variable
B Discrete Random Variable
C Irregular Random Variable
D Uncertain Random Variable

30. An engine -saw costing 1,000,000fcfa is expected to have a residual value of 250,000fcfa after 5yers.The depreciation rate on the diminishing balance method is?

A 8%
B 12%
C 24.2%
D 27.5%

31.Non-negative condition in an Linear Programming model is?

A a positive coefficient of variables in objective function
B a positive coefficient of variables in any constraint
C non-negative value of recourse
D non- positive value of the recourse

31. Market value of 3,000frs stock at 95frs at 6.25% per annum is

A 2,800frs
B 2,850frs
C 2,750frs
D 2,550frs

33. The commission which is payable to the broker for the guaranteed sell of some shares or securities is:

A Dividend
B Underwriting Commission
C Stock
D Brokerage

34. A bag contains 80 chocolates. This bag has 4 different colors of chocolates in it. If all four colors of chocolates were equally likely to be put in the bag, the expected number of chocolates of each color is ?

A 12
B 11
C 20
D 9

35. Suppose a person has 8 red, 5 green, 12 orange, and 15 blue balls. Test the null hypothesis that the colors of the balls occur with equal frequency. The Chi Square value you can get is?

A 5.6
B 5.68
C 5.86
D 5.8

36. A faculty is interested in whether there is a relationship between gender and subject at his college. He tabulated some men and women on campus and asked them if their subject was Mathematics (M), Geography (G), and Science (S). Which is the expected frequency of women in Geography based on this table?

	M	G	S	Total
Women	10	14	10	34
Men	11	22	14	47
Total	21	36	24	81

A 31.12
B 15.11
C 12.13
D 10.07

37. An instrument acknowledging the indebtedness is

A Debenture
B Share
C Stock
D Dividend

38. The rejection probability of Null Hypothesis when it is true is?

A level of Confidence
B Level of Significance
C Level of Margin
D Level of Rejection

39. The level of significance is

A maximum allowable probability of Type II error
B maximum allowable probability of Type I error
C same as the confidence coefficient
D same as the p-value

40. A statistician calculates a 95% confidence interval for μ when σ is known. The confidence interval is 18,000FCFA to 22,000FCFA, the amount of the sample mean is:

A 18,000FCFA
B 20,000FCFA
C 22,000FCFA
D 40,000FCFA

41. If the population proportion is 0.90 and a sample of size 64 is taken, which is the probability that the sample proportion is more than 0.89?

A 0.5019
B 0.6056
C 0.5300
D 0.7019

42. In a box, there are 8 oranges, 7 white, and 6 blue balls. If a ball is picked up randomly, which is the probability that it is neither orange nor blue?

A 1/3
B 1/21
C 2/21
D 5/21

43. A company wants to set up a sinking fund to repay a loan of 10,000,000FCFA in 5 years. If the sinking fund earn an annual interest rate of 6%.The amount the company should deposit into the sinking fund each year is?

A 1,174,000
B 1,560,000
C 1,254,000
D 2,000,000

44. The Effective rate that is equivalent to a nominal rate of 16% compounded semi-annually is

A 15.16
B 16.64
C 18.32
D 20.24

45. Which is the amount that one can get from 800,000fcfa worth of stock sold at 1,100frs each if the brokerage is 2.5%(Nominal Value 1000frs)

A 858,000FCFA
B 866.800FCFA
C 625,000FCFA
D 780,000FCFA

46. The number of ways a 7 letters (U,V,W,X,Y,Z A) be placed in 3 empty places is

A 18 ways
B 210 ways
C 140 ways
D 300 ways

47. The rate per annum when 32,000fcfa yield a compound interest of 5,044fcfa in 9 months' interest being compounded quarterly is?

A 80%
B 20%
C 50%
D 32%

48. A company charges depreciation at the rate of 25%p.a on the reducing balance method on an asset that cost 20,000fcfa.The net book value at he end of the year is?

A 12,500 FCFA
B 5,000FCFA
C 15,000FCFA
D 11,400FCFA

49. REMI lent 5,000frs to KECH for 3 years at the rate of 5% per annum compound interest. Which is the amount that REMI will get after 3 years?

A 5789
B 5788.12
C 5788.13
D 5788

50. If x:y = 3:4, then (7x+3y):(7x-3y) is

A 5:2
B 4:3
C 11:3
D 37:19

END.

GO BACK AND CHECK YOUR WORK.