

GENERAL CERTIFICATE OF EDUCATION BOARD
Technical and Vocational Education Examination

JUNE 2022

ADVANCED LEVEL

Specialty Name and Acronym	All Commercial Specialties except HEC
Centre No.	
Centre Name	
Candidate No.	
Candidate Name	

Mobile phones are **NOT** allowed in the examination room

7020 Business Mathematics 1: MULTIPLE CHOICE QUESTION PAPER

One and a half hours

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you start answering the questions in this paper. Make sure you have a soft HB pencil and an eraser for this examination.

- USE A SOFT HB PENCIL THROUGHOUT THE EXAMINATION.
 - DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
- Before the examination begins:*
- Check that this question booklet is headed **Advanced Level – 7020 Business Mathematics 1**
 - Insert the information required in the spaces above.
 - Insert the information required in the spaces provided on the answer sheet using your HB pencil:
Candidate Name, Exam Session, Subject Code, Centre Number and Candidate Number. 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.
 - Answer ALL questions**
 - Each question has FOUR suggested answers: **A, B, C** and **D**. Decide on 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] ☒ [D]
 - Mark only one answer for each question. If you mark more than one answer, you will score a zero for that question. If you change your mind about an answer, erase the first mark carefully, then mark your new answer.
 - Avoid spending too much time on any one question. If you find a question difficult, move on to the next question. You can come back to this question later.
 - Do all rough work in this booklet, using, where necessary, the blank spaces in the question booklet.
 - Texts, notes and pre-prepared materials of any kind are also **NOT** allowed in the examination room.
 - At the end of the examination, the invigilator shall collect the answer sheet first and then the question booklet after. DO NOT ATTEMPT TO LEAVE THE EXAMINATION HALL WITH IT.**

Turn Over

1. A single value used to estimate the population is:

A Interval estimate
B Point estimate
C Confidence estimate
D Degree of freedom estimate

2. A normal distribution requires that:

A Mean = Median = Mode
B Mean < Median < Mode
C Mean > Median > Mode
D Mean \neq Median \neq Mode

3. The number of ways to arrange the word "COOK" is:

A 24
B 4
C 12
D 16

4. A firm has arranged a ten-year lease, at an annual rent of 8,000 FCFA. The First payment has to be paid at the end of year. The present value of the lease at 12% is:

A 42 624 FCFA
B 50 624 FCFA
C 45 200 FCFA
D 53 200 FCFA

5. A bond with face (par) value of 1 000 FCFA is quoted at a deep discount price of 6.5%. The current yield of the 3% bond is?

A 3.5%
B 9.5%
C 19.5%
D 46.2%

6. Supposed X is a binomial variable with parameters $n = 86$, $p = 0.62$. The standard deviation to 4 decimal places is:

A 4.5013
B 7.3021
C 20.2616
D 53.3200

7. Any statement whose validity is tested on the basis of a sample is called:

A Null hypothesis
B Alternative hypothesis
C Statistical hypothesis
D Simple hypothesis

8. A failing student is passed by an examiner, is an example of:

A Type-I error
B Type-II error
C Unbiased decision
D Difficult to tell

9. The probability function of a random variable is defined as:

X	-2	-1	0	1	2
f(x)	2k	K	3k	4k	5k

The value of k is:

A 0

B $\frac{1}{4}$

C $\frac{1}{15}$

D 1

10. The outcome of tossing a coin is:

A Mutually - Exclusive event
B Compound event
C Mutually - inclusive events
D Simple event

11. The random variable X has variance 2. The value of $\text{Var}(2x + 1)$ is:

A 4
B 8
C 9
D 10

12. A fair die is rolled once. Given that the score is an even number. The probability that it is prime number is:

A $\frac{1}{3}$
B $\frac{1}{2}$
C $\frac{2}{3}$
D $\frac{1}{6}$

13. The fourth term of a GP is 36 000 FCFA and the seventh term is 288 000 FCFA. The common ratio of the progression is:

A 3
B 2.83
C 8.32
D 2

14. BELMON Plc. issued a debenture loan with the following characteristics:

- Issue price per debenture: 9 700 FCFA
- Number of debentures: 100 000 debentures
- Nominal value per debenture: 10 000 FCFA

The debentures are issued at:

A Par
B Below par
C Premium
D Above par

15. For a set of ten numbers $\sum x = 290$ and $\sum x^2 = 8469$. The mean of the numbers is:
 A 29
 B 290
 C 846.9
 D 29.20
-
16. A bill of 60 000 FCFA is payable on 01/01/2014 at 12% compounded annually. The value of this bill on the 01/01/2012 is:
 A 47 831.63 FCFA
 B 42 706.81 FCFA
 C 75 264.65 FCFA
 D 84 295.68 FCFA
-
17. The ratio of the third amortization to the first amortization of an ordinary loan is 1.0816. The interest rate of this loan is:
 A 10.4%
 B 1.04%
 C 4%
 D 5%
-
18. The net present value of an investment is equal to zero. This signifies that the project is:
 A At its starting point
 B Profitable
 C Not Profitable
 D At break-even
-
19. In a certain competition, two judges ranked 4 contestants as shown in the table below.
 Judge 1 1 2 3 4
 Judge 2 1 4 3 2
 The spearman's rank correlation coefficient for this data is:
 A -0.29
 B 0.20
 C -0.20
 D 0.25
-
20. The Actual Percentage Rate (APR) of interest of 14% p.a. compounded half yearly is:
 A 14.49%
 B 7%
 C 6.77%
 D 28%
-
21. An arrangement of objects when the order is important is:
 A Sample Point
 B Combination
 C Random Experiment
 D Permutation
-
22. The total depreciation over an asset's useful life is equal to:
 A Cost minus salvage value
 B Cost plus salvage value
 C Book value
 D Salvage value
-
23. Two books are to be selected at random without replacement out of four books. The number of possible selections is:
 A 4
 B 2
 C 6
 D 3
-
24. When a die and a coin are rolled together, all the possible outcomes are:
 A 6
 B 2
 C 36
 D 12
-
25. A random sample of nine durations for the completion of a task was found to be normally distributed with a mean of 20 minutes and a standard deviation of 12 minutes. The 95% confidence interval used to estimate the mean (in minutes) of all the times is :
 A 17.7 to 22.3
 B 16.9 to 23.1
 C 10.8 to 29.2
 D 16.0 to 24.0
-
26. The profits (000 FCFA) of the DCF LTD 2013 to 2016 were :
- | Year | 2013 | 2014 | 2015 | 2016 |
|--------|------|------|------|------|
| Profit | 167 | 145 | 196 | 204 |
| Index | 100 | | | |
- The index value for 2016 is:
 A 37
 B 104
 C 108
 D 122
-
27. Three capitals are in decreasing AP. The 1st which is the biggest is invested at the rate of 5% per annum, during a period of 1 year and yield an interest of 12 500 FCFA. The amount of the 1st capital is:
 A 250,000 FCFA
 B 150,000 FCFA
 C 60,000 FCFA
 D 75,000 FCFA
-

28. At the end of one year, the compounded amount of 10,000 FCFA at 4% compounded quarterly is:
- A 10 307 FCFA
 - B 10 504 FCFA
 - C 10 406 FCFA
 - D 10 605 FCFA
-
29. Which is the future value of 12 annuities of 7 000 FCFA each invested at the end of each period at a compound interest rate of 5.5%
- A 13,308.4 FCFA
 - B 114,699.13 FCFA
 - C 60,329.6 FCFA
 - D 151,895.8 FCFA
-
30. Company A has lent a given sum to company B. Company B has to reimburse through a series of five constant annuities of 80,000 FCFA at the end of each year. Compound interest rate is 10%. The Present value of the sum is:
- A 45,906.9 FCFA
 - B 48,840.8 FCFA
 - C 191,468.18 FCFA
 - D 303,262.94 FCFA
-
31. The investment alternative which would provide the greatest ending wealth for your investment is:
- A 12 % compounded monthly
 - B 12.5% compounded annually
 - C 12.25% compounded quarterly
 - D 12.5% compounded semi-annually
-
32. The proper term for the value found by subtracting accumulated depreciation from the asset's original cost is:
- A Accumulated Value
 - B Market Value
 - C Book value
 - D Salvage Value
-
33. If an investment of 1 236 FCFA grew to 1 386 FCFA in 3 years, what is the annually compounded rate of interest?
- A 3.89%
 - B 3.82%
 - C 3%
 - D 2.8%
-
34. The sample size is:
- A Larger than the population size
 - B Smaller than the population size
 - C Larger or smaller than the population size
 - D Equal to the size of the population
-
35. A debenture loan has the following characteristics:
- Nominal value per debenture: 10 000 FCFA
 - Nominal rate: 7.5%
 - Real rate: 6.25%
- The redemption price per debenture is:
- A 1 200 FCFA
 - B 12 000 FCFA
 - C 11 000 FCFA
 - D 10 750 FCFA
-
36. The minimum time required for an activity to be completed without altering the overall project time is:
- A Latest finished time
 - B Latest start time
 - C Earliest start time
 - D Earliest Finish time
-
37. The mean of n numbers is 13. When 27 is added to the n numbers, the mean of the $n + 1$ numbers is 15. The value of n is:
- A 10
 - B 12
 - C 6
 - D 9
-
38. A discrete random variable follows a Binomial distribution. X follows a Bin ($6, p$). If $E(X) = 18/7$, then the value of p is:
- A $2/7$
 - B $4/7$
 - C $3/7$
 - D $1/7$
-
39. An unsecured creditor received the sum of 80,000 FCFA. If the dividend was 125 FCFA per 1,000 FCFA, the amount that was owed to her is:
- A 640 000 FCFA
 - B 10 000 FCFA
 - C 80 000 FCFA
 - D 8 000 FCFA
-
40. The difference between the simple interest and compound interest for 10 000 FCFA invested at 5% p.a. for 2 years is:
- A 10 025 FCFA
 - B 25 FCFA
 - C 10 250 FCFA
 - D 250 FCFA

41. If the annuities of an ordinary loan are constant, the amortization will be:

A In increasing A.P. with a common ratio $(1+i)$
 B In decreasing A.P. with a common ratio $(1+i)$
 C In decreasing G.P. with a common ratio $(1+i)$
 D In increasing G.P. with a common ratio $(1+i)$

42. The equivalent monthly rate to an annual rate of 12% is:

A 0.9%
 B 0.95%
 C 1%
 D 1.01%

43. The value of the third quartile of 43, 75, 48, 51, 51, 47, and 50 is:

A 47
 B 75
 C 48
 D 51

44. A distribution is said to be positively skewed if:

A $Q_3 - Q_2 = Q_2 - Q_1$
 B $Q_3 - Q_2 > Q_2 - Q_1$
 C $Q_3 - Q_2 < Q_2 - Q_1$
 D $Q_1 + Q_2 + Q_3 = 0$

45. The standard deviation of the following set of data 20, 40, 70 and 120 is:

A 35.55
 B 37.67
 C 43.53
 D 36.54

46. For a given set of data, the regression line y on x is $1.3x + 0.4$ and x on y is $0.7y - 0.1$.

The unexplained variation is

A 0.95
 B 0.19
 C 0.09
 D 0.91

47. The rate at which the net present value of an investment is equal to zero is:

A The Accounting Rate of Return
 B The Internal Rate of Return
 C The External Rate of Return
 D The Economic Rate of Return

48. A statistical measure which is based entirely on the extreme values of the distribution is:

A The quartile deviation
 B The mean deviation
 C The standard deviation
 D The Range

49. When testing hypothesis about a population mean, the two tailed test results for the alternative hypothesis is:

A $H_1: \mu_1 > \mu_0$
 B $H_1: \mu_1 \neq \mu_0$
 C $H_1: \mu_1 \leq \mu_0$
 D $H_1: \mu_1 \geq \mu_0$

50. A project has an average profit of 5 000 000 FCFA and an initial cost of capital of 40 000 000 FCFA. The Accounting rate of return based on average capital invested is:

A 25%
 B 12.5%
 C 20%
 D 50%

STOP

NOW GO BACK AND CHECK YOUR WORK