

SHIVAJI COLLEGE, UNIVERSITY OF DELHI

DEPARTMENT OF MATHEMATICS

INTERNAL TEST (Academic Year 2023-24)

Name of the Course: B. SC.(Honours)

Semester: VI

Name of the Paper: FM

Faculty Name: Dr. R. Agrawal

Duration: 45 Mins

Maximum Marks: 15 Marks

Date: 06/03/2024

INSTRUCTION: Attempt all the questions. Marks are indicated in the right hand margin.

1. An investor receives \$1000 in one year in returns for an investment of \$1000 now. Calculate the percentage return per annum with (a) annual compounding, (b) semi-annual compounding, (c) monthly compounding and (d) continuous compounding. (4)
2. A five year bond with a yield of 11% (continuously compounded) pays an 8% coupon at the end of each year. Find out the bond's price and bonds's duration. (3)
3. A US company expects to have to pay 1 million Canadian dollars in six months. Explain how the exchange rate risk can be hedged using (a) a forward contract, (b) an option. (4)
4. Explain why a futures contract can be used for either speculation or hedging. (4)

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SHIVAJI COLLEGE, UNIVERSITY OF DELHI
DEPARTMENT OF MATHEMATICS
INTERNAL TEST II (2023-24)

Name of the Course: B. SC.(Honours)
Name of the Paper: FM
Duration: 45 Mins
Date: 03/05/2024

Semester: VI
Faculty Name: Dr. R. Agrawal
Maximum Marks: 15 Marks

INSTRUCTION: Attempt all the questions. Marks are indicated in the right hand margin.

1. List all the factors affecting stock option prices. (2)
2. The risk-free rate of interest is 7% per annum, with continuously compounding, and the dividend yield on a stock index is 3.2% per annum. The current value of the index is 150. What is the six-month futures price? (2)
3. The price of a non-dividend paying stock is \$19 and the price of a three-month European call option on the stock with a strike price of \$20 is \$1. The risk-free rate is 4% per annum. What is the price of a three-month European put option with a strike price of \$20? (3)
4. An investor believes that there will be a big jump in a stock price, but is uncertain as to the direction. Identify four different strategies the investor can follow and explain the differences among them. (4)
5. Call options on a stock are available with strike prices of \$15, \$17.5 and \$20, and expiration dates in 3 months. Their prices are \$4, \$2 and \$0.5 respectively. Explain how the options can be used to create a butterfly spread. Construct a table showing how profit varies with stock price for the butterfly spread. (4)

SHIVAJI COLLEGE, UNIVERSITY OF DELHI
DEPARTMENT OF MATHEMATICS
INTERNAL TEST (Academic Year 2023-24)

Name of the Course: VAC - II

Semester: II

Name of the Paper: Vedic Mathematics - I

Faculty Name: Dr. R. Agrawal

Duration: 20 Mins.

Maximum Marks: 12

Date of Test: 15/04/2024

Marks Obtained:

Name:

Roll No.:

Sign.:

Instructions: i) Write your Name, Roll No and sign immediately on receipt of the question paper.
ii) All the questions are compulsory and carry equal marks.

Q.1 Choose the correct complement of 869:

- a) 130 b) 133 c) 113 d) 131

Q.2 Choose the correct complement of 5647:

- a) 4333 b) 4352 c) 4350 d) 4334

Q.3 Choose the correct answer of $76543 - 29987$:

- a) 46556 b) 46555 c) 46718 d) 46464

Q.4 Choose the correct answer of $100000 - 7211$:

- a) 99280 b) 9999 c) 99211 d) 91898

Q.5 Choose the correct answer of $24543 + 67188 + 92644 + 34567 =$

- a) 218912 b) 218922 c) 218932 d) 318912

Q.6 Choose the correct answer of $73542 + 81987 + 33345 + 81041 =$

- a) 269915 b) 289914 c) 296015 d) 298392

Q.7 Choose the correct answer of $34542 + 67803 + 21453 + 77624 =$

- a) 201412 b) 201512 c) 201113 d) 20422

Q.8 Choose the correct answer of $9213 + 3644 + 7254 + 8193 =$

- a) 28304 b) 28904 c) 28904 d) 23894

Q.9 Choose the correct answer of $87652 - 40209$:

- a) 47373 b) 47383 c) 47312 d) 47372

Q.10 Choose the correct answer of $854 - 486$:

a) 378 b) 377 c) 357 d) 368

Q.11 Choose the correct option 1532×11 :

a) 16842 b) 16723 c) 15851 d) 16852

Q.12 Choose the correct option 52571×11 :

a) 578281 b) 578271 c) 578222 d) 573781

Q.13 Choose the correct option 3744×111 :

a) 15684 b) 415590 c) 415584 d) 415544

Q.14 Choose the correct option 324×999 :

a) 323666 b) 323466 c) 323676 d) 323789

Q.15 Choose the correct option 7058×999 :

a) 7050942 b) 7050342 c) 820342 d) 7055842

Q.16 Choose the correct option 324×9999 :

a) 3249675 b) 3239675 c) 3249676 d) 3239676

Q.17 Choose the correct option 989×995 :

a) 98455 b) 984055 c) 98416 d) 984016

Q.18 Choose the correct option 98×122 :

a) 11956 b) 12056 c) 12044 d) 11944

Q.19 Choose the correct option 107×1008 :

a) 108756 b) 107856 c) 18756 d) 12556

Q.20 Choose the correct option 2134×3261 :

a) 6958974 b) 6958874 c) 6758874 d) 6956974

Q.21 Choose the correct remainder, $60712 \div 537$:

a) 212 b) 181 c) 31 d) 113

Q.22 Choose the correct remainder, $7238761 \div 524$:

a) 136 b) 361 c) 225 d) 224

Q.23 Choose the correct quotient $46028 \div 84$:

a) 558 b) 547 c) 557 d) 548

Q.24 Choose the correct quotient $38982 \div 73$:

a) 524 b) 535 c) 525 d) 534

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DEPARTMENT OF MATHEMATICS
INTERNAL TEST (Academic Year 2023-24)

Name of the Course: VAC - II

Semester: II

Name of the Paper: Vedic Mathematics - I

Faculty Name: Dr. R. Agrawal

Duration: 15 Mins.

Maximum Marks: 816

Date of Test: 29/04/2024

Marks Obtained:

Name:

Roll No.:

Sign.:

Instructions: i) *Write your Name, Roll No and sign immediately on receipt of the question paper.*

ii) *All the questions are compulsory.*

iii) *Q. 1 to Q. 10 carry 1 marks each and Q. 11 carries 6 marks.*

Q.1 Find the square of 113:

a) 12726

b) 126169

c) 12769

d) 12669

Q.2 Find the square of 994:

a) 98836

b) 988036

c) 100036

d) 998012

Q.3 Find the square of 89:

a) 7921

b) 79121

c) 100121

d) 10121

Q.4 Find the cube of 96:

a) 884736

b) 884764

c) 884836

d) 884864

Q.5 Find the square root of 20736:

a) 156

b) 146

c) 144

d) 154

Q.6 Find the square root of 20828:

a) 145

b) 144

c) 154

d) 155

Q.7 Find the square root of 4782969:

a) 2178

b) 2188

c) 2287

d) 2187

Q.8 Find the cube of 105:

a) 1157525

b) 11575125

c) 1157625

d) 9575125

Q.9 Find the square of 205:

a) 41025

b) 40025

c) 38025

d) 42025

Q.10 Find the square of 195:

a) 38025

b) 38125

c) 34225

d) 34025

Q.11 Complete the following table with the Baudhayana numbers of the respective Angles:

Angle	Base	Perpendicular	Hypotenuse
A	1	1	$\sqrt{2}$
B	1	$\sqrt{3}$	2
B/2			
2A			
B – A			

Rough Work

SHIVAJI COLLEGE, UNIVERSITY OF DELHI
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INTERNAL TEST (Academic Year 2023-24)

Name of the Course: SEC - IV

Semester: IV

Name of the Paper: IT Skills and DA - II

Date of Test: 20/04/2024

Duration: 60 Mins.

Maximum Marks: 20

Faculty Name: Dr. R. Agrawal and Dr. S. D. Ram

Instructions: *All the questions are compulsory and marks are indicated in the right-hand margin.*

Q.1 Define Function. 2 M

Q.2 What is Vertical Line Test. 2 M

Q.3 Plot the following functions to check whether the functions are linear or not:

i) $y = x/2 + 2$ 3 M

ii) $y = (x/2 + 2)^2$ 3 M

Q.4 Draw the graph of the function $y = x^3$. Find the slope at $x = 2$ and -2 . Also define all the ranges of x where the function is increasing or decreasing. 5 M

Q.5 Sketch the curve $y = x^2 - x - 2$. Find the values of x for which the slope is positive and also for negative. 5 M