

Vidya Vikas Mandal's
Shree Damodar College of Commerce & Economics, Margao Goa
F.Y.B.C.A, Semester I, Supplementary Examination, May/June 2019
BASIC MATHEMATICS

Duration: 2 Hours

Total Marks: 50

Instructions:

- 1) Figures to the right indicate maximum marks
- 2) Start each answer on a fresh page.
- 3) Non scientific, non programmable calculator allowed.

1. Attempt the following.

A. Answer the following questions:

[1x5=5 Marks]

- i. Find the cofactor matrix of $A = \begin{bmatrix} 1 & 2 \\ 3 & -4 \end{bmatrix}$
- ii. Find the equation of circle with centre (4,1) and radius 3.
- iii. If $a=3$ and $d=-5$. Find T_9
- iv. Find $\text{gcd}(37,249)$
- v. Find the lcm of 340 and 225.

B. Match the following:

[1x5=5 Marks]

- | | |
|---------------------------------|-----------------------------|
| i. Volume of a cylinder | a. $\pi r l$ |
| ii. Curved surface area of cone | b. $\frac{\sqrt{3}}{2} a^2$ |
| iii. Area of regular hexagon | c. $\frac{\sqrt{3}}{4} a^2$ |
| iv. Volume of sphere | d. $\pi r^2 h$ |
| v. Area of equilateral triangle | e. $\frac{4}{3} \pi r^3$ |

2. Answer any two of the following questions:

[2x5=10 Marks]

A. Find A^{-1} if $A = \begin{bmatrix} 5 & 3 & 1 \\ 2 & 1 & 3 \\ 1 & 2 & 4 \end{bmatrix}$

B. Find the sum $5+55+555+\dots$ upto n terms

C. Prove that :

i. $\sin^2 \phi + \cos^2 \phi = 1$

ii. $1 + \tan^2 \phi = \sec^2 \phi$

3. Answer any two of the following questions:

[2x5=10 Marks]

A. Write down the equation of the line

- i. Passing through (2,8) and (1,3)
- ii. Having slope 5 and y-intercept 3

B. Evaluate the following limits:

- i. $\lim_{x \rightarrow 0} \frac{5^x - 2^x}{x}$
- ii. $\lim_{x \rightarrow 5} \frac{x^3 - 125}{x - 5}$

C. Solve the following system of linear equations using Cramer's Rule

$$x + 2y - z = 3, \quad 3x - y + 2z = 1, \quad 2x - 2y + 3z = 2$$

4. Answer any two of the following questions:

[2x5=10 Marks]

A. Find the derivative of the following

- i. $Y = X^4 + 3X^2 - 8X + 5\log x + e^x - 2$
- ii. $y = \frac{5x-2}{2x+3}$

B. Discuss the continuity of the following function at $x=3$.

$$f(x) = \begin{cases} x^2 - 2x + 5 & 0 \leq x < 3 \\ 8 & x = 3 \\ 3x + 2 & 3 < x \leq 6 \end{cases}$$

C. If $\vec{a} = 2\hat{i} + 3\hat{j} - 5\hat{k}$ and $\vec{b} = -3\hat{i} + \hat{j} + 2\hat{k}$ find $\vec{a} \times \vec{b}$ and $\vec{a} \cdot \vec{b}$

5. Answer any two of the following questions

[2x5=10 Marks]

A. Integrate the following

- i. $\int (4x^3 + 5e^x - \frac{1}{x} + 7) dx$
- ii. $\int_1^2 \left(\frac{2x^2 + 4x + 5}{x} \right) dx$

B. Simplify the following

- i. $\log_3 243 - \log_2 64 + \log_3 81$
- ii. $\frac{(256)^{\frac{1}{4}}(64)^{\frac{1}{2}}(27)^{\frac{1}{3}}}{(81)^{\frac{1}{5}}(16)^{\frac{1}{2}}}$

C. Solve the following quadratic equation

$$\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$$

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F.Y. B.C.A, Semester I, Supplementary Examination, May/June 2019
Business Accounting (BCA 103)

Duration: 2 hrs

Max Marks: 50

- Instructions:** 1) All questions are compulsory
2) Start each new question on a fresh page
3) Figures to the right indicate maximum marks

Q1. Write short notes on :- (Any 5)

(10 Mks)

- a) Going Concern Concept
- b) Preference Shareholders
- c) Real Account
- d) Revenue Receipts
- e) Accounting Period Concept
- f) Convention of Conservatism
- g) Ledger

Q2. Journalise the following transactions in the books of Balaji Traders.

(10 Mks)

Year 2017

- 1st July Commenced business with cash Rs. 5,00,000.
4th July Purchased goods on credit from Sagar Rs. 85,000.
5th July Purchased Furniture for cash worth Rs. 70,000.
12th July Goods sold on credit to Usha Stores Rs. 20,000.
17th July Opened a bank a/c with SBI by depositing cash Rs 5,000.
20th July Paid insurance premium by cheque Rs 2,500.
24th July Cash received from Usha Stores in full settlement.
29th July Cash sales Rs. 95,000.
30th July Paid office rent Rs. 5,000.
31st July Withdrawn cash for personal use Rs.15,000.

Q3. On 1st April 2010, a firm purchased machinery worth Rs. 40,000. On 1st October 2012 it purchased additional machinery worth Rs.9000 and spent Rs.1000 on installation. The firm closes yearly account on 31st March. The firm decided to charge depreciation @10% according to Fixed Installment method. Prepare Machinery Account for 5 years.

(10 Mks)

Q4. Kamat Ltd invited applications for 10,000 shares of Rs. 10 each. The amount payable on shares are as follows:

- Rs. 2 per share on application
- Rs. 3 per share on allotment
- Rs. 3 per share on first call &
- Rs. 2 per share on final call

Applications were received for 13,000 shares. Excess application money was refunded to applicants. All money due were received except the final call on 1000 shares. Pass necessary journal entries.

(10 Mks)

Q5. From the information given below prepare Profit & Loss A/c of Infotech Ltd. for the year ending 31st March 2017 as per Schedule III of the Companies Act 2013. (10 Mks)

Particulars	Amount	Particulars	Amount
Depreciation on premises	8,000	Insurance	16,200
Materials Consumed	8,00,000	Machinery	6,00,000
Opening Stock	40,000	Wages	86,000
Salaries	1,14,000	Building	1,60,000
Bad debts	3,800	Computer	40,000
Bonus to employees	20,000	Sales	12,00,000
Interest on Bank Loan	16,000	Equity share capital	8,00,000
Depreciation on machinery	18,000		
Transport Charges	4,000		
Factory expenses	20,000		
Provision for Tax	60,000		

Additional Information:

- 1) Closing stock was valued at Rs. 1,20,000.

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COMPUTER ORGANIZATION AND ARCHITECTURE - (BCA-102)

Duration: 2 Hours

Total Marks: 50

Instructions: 1) All Questions are Compulsory.
2) Figures to the right indicate Full Marks.
3) Start each new question on a fresh page

Q.1 Answer the following

Marks (10)

A) Define the following:

(5)

- i) Register addressing mode ii) Program counter register iii) Trap Interrupt
iv) Seek time v) MQ register

B) State True or False and justify your answers:

(5)

- 1) Interrupt caused by devices slows down the performance of system.
- 2) Instructions are stored in MBR prior to its execution.
- 3) Every instruction has a micro-program stored in the control memory.
- 4) Instruction 'RCL BX, 02' with BX—ABCDh and CF--1, on execution sets the CF to 1.
- 5) XCHG AX, BX does the swapping operation.

Q.2 Answer the following

Marks (10)

- a) Give four points of differences between third and fourth generation computers (2)
- b) Draw a neat diagram of Von Neuman architecture and explain its working (3)
- c) Solve the following: (5)
 - i) $(7052)_8$ to $(??)_2$ ii) $(408)_{10}$ to $(?)_2$ iii) $(ABCD)_{16}$ to $(??)_8$
 - iv) $(1010111110)_2$ to $(?)_8$
- v) Subtract decimal number 48 from 86. Use Binary 2's complement for subtraction.

Q.3 Answer the following

Marks (10)

- a) Give two points of differences between static memory and dynamic memory (2)
- b) What is the usefulness of flag register? Write in brief about any 4 flag registers. (3)
- c) Explain memory hierarchy w.r.t storage and speed. (5)

Q.4 Answer the following

Marks (10)

- a) Give four points of differences between programmed driven I/O and DMA. (2)
- b) What is an addressing mode? Give appropriate examples of register addressing mode and immediate addressing mode. (3)
- c) List five functions performed by device controller . (5)

Q.5 Answer the following

Marks (10)

- a) If BH—49h then on execution of ROL BH ,03 , what will be the content of BH , CF (2)
- b) Write an assembly language programme to find sum of 10 numbers. (3)
- c) With the help of neat diagram explain Micro-programmed control unit (5)

ENVIRONMENTAL STUDIES

Duration: 1 Hour Max.

Max.Marks:25

- Instructions: 1) Figures to the right indicate maximum marks
2) Start each question on a fresh page
3) All questions are compulsory

- Q.I) Answer **Any Five** of the following: (5)
- a) Eco-Mark
 - b) Biomass energy
 - c) Producer
 - d) Food Web
 - e) Species Diversity
 - f) Flood
 - g) Food security
- QII.A) State and explain components of environmental studies. (5)
- OR**
- Q.II .X) Define natural resources? Explain its conservation methods. (5)
- QIII.A) State and explain types of mining and its effects on environment. (5)
- OR**
- Q.IIIX) Write a note on wind energy and its advantages. (5)
- Q.IV.A) State and explain characteristics of forest ecosystem. (4)
- OR**
- Q.IV.X) Define food chain? Explain any one type of food chain. (4)
- QV.A) Write a note on importance of abiotic component of ecosystem. (3)
- OR**
- QV.X) Explain any two values of biodiversity. (3)
- QVI.A) Write a short note on any two measures of In- situ conservation of biodiversity. (3)
- OR**
- QVI.X) Write a short note on Hotspots of biodiversity. (3)

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PROBLEM SOLVING & PROGRAMMING CONCEPTS (BCA-11)

Duration: 2 Hours

Total Marks: 50

- Instructions:** 1) All Questions are Compulsory.
2) Figures to the right indicate Full Marks.
3) Start each new question on a fresh page

Q.1 Answer the following

Marks (10)

A) State true or false and justify your answers. (5)

- i) A character variable can store only character at a time.
- ii) Spaces can be present in a variable name.
- iii) All the things that can be done using a for loop can also be done using a while loop.
- iv) For loop can be used ,if we want statements in a loop to get executed at least once.
- v) Function can contain more than one return statement.

B) Give one term for the following: (5)

- 1) Name given to a memory location, the value stored in which can keep on changing.
- 2) Function calling itself.
- 3) When a number of similar/dissimilar data types need to be grouped together, we use _____.
- 4) Keyword used if you want the variable to persist across function calls.
- 5) A C program is a collection of _____.

Q.2 Answer the following

Marks (10)

a) What do you mean by passing the parameters by reference in a function? (2)

Elaborate using example.

b) What is an Algorithm? Write an algorithm to find the largest of 3 elements entered through a keyboard. (3)

c) ABC bank has the following interest rates depending on the duration of the deposit: (5)

Number of days of Deposit	
<60	4%
60 to 90	4.5%
90 to 180	5.5%
180 to 361	6.5%
>361	7%

Draw a flowchart to assign interest rates according to the above condition .When number of days are entered through the keyboard.

Q.3 Answer the following

Marks (10)

a) What is the output of the following program

(2)

```
#include<stdio.h>
int main()
{
int x=5,y=10;
predict(x,&y);
printf(“%d%d”,x,y);
}
void predict(int a,int *b)
{
a=20;
*b=30;
}
```

b) Explain the working of the switch case syntax.

(3)

c) Write an algorithm to find the factorial of a number entered through the keyboard.

(5)

Q.4 Answer the following

Marks (10)

a) What are functions in C and why is it used?

(2)

b) Write three difference between source code and object code

(3)

c) Write a note on recursion with a suitable example.

(5)

Q.5 Answer the following

Marks (10)

a) Distinguish between local and global variables.

(2)

b) Mention any three storage classes and their significance.

(3)

c) What are arrays? Can you define arrays of any datatype?

(2)

2) Solve the following.

(3)

i) If $a=b>c?b:c$ what will value of 'a' be if

a) $b=8,c=5$ and

b) $b=6,c=16$

ii) Expression $a=3/2+5*4/3$ will be evaluated to _____