

# **BACHELOR OF COMPUTER APPLICATIONS (BCA)**

## **(Revised Syllabus)**

BCA(Revised Syllabus)/ASSIGN/SEMESTER-I

### **ASSIGNMENTS**

**(July - 2016 & January - 2017)**

**BCS-011**

**BCS-012**

**BCSL-013**



**SCHOOL OF COMPUTER AND INFORMATION SCIENCES  
INDIRA GANDHI NATIONAL OPEN UNIVERSITY  
MAIDAN GARHI, NEW DELHI – 110 068**

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<b>BCS-012</b>	<b>BCA(1)-012/Assignment/16-17</b>	<b>15<sup>th</sup> October, 2016</b>	<b>15<sup>th</sup> April, 2017</b>	<b>6</b>
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### Important Notes

1. Submit your assignments to the Coordinator of your Study Centre on or before the due date.
2. Assignment submission before due dates is compulsory to become eligible for appearing in corresponding Term End Examinations. For further details, please refer to BCA Programme Guide.
3. To become eligible for appearing the Term End Practical Examination for the lab courses, it is essential to fulfill the minimum attendance requirements as well as submission of assignments (on or before the due date). For further details, please refer to the BCA Programme Guide.

<b>Course Code</b>	:	<b>BCS-011</b>
<b>Course Title</b>	:	<b>Computer Basics and PC Software</b>
<b>Assignment Number</b>	:	<b>BCA (1)-011/Assignment/16-17</b>
<b>Maximum Marks</b>	:	<b>100</b>
<b>Weightage</b>	:	<b>25%</b>
<b>Last Dates for Submission</b>	:	<b>15<sup>th</sup> October, 2016 (For July 2016 Session)</b> <b>15<sup>th</sup> April, 2017 (For January 2017 Session)</b>

**This assignment has three questions of 80 marks. Answer all the questions. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation. Please give precise answers. The word limit for each part is 200 words.**

**Question 1: (Covers Block 1) (7×4=28 Marks)**

- (a) A person has written a program for analysis of data. The program and data are available in written form with the person. List steps of activities that the person will have to follow to run the program on the data using a Computer. Also, explain the function of each component of a computer. (4 Marks)
- (b) What is RAM in the context of computer? Why is it needed? What is SRAM and its role in a computer? A computer has primary memory still it requires hard disk, why? Explain the storage organization of a Hard disk and access time for it. (4 Marks)
- (c) Convert the following numbers as directed (4 Marks)
- (i) Decimal 325.6125 into binary and hexadecimal
  - (ii) Decimal 32768 into hexadecimal and binary
  - (iii) Character **s** and **T** to ASCII and Unicode
  - (iv) Hexadecimal AAA1 to decimal and binary
- (d) A 2 inch disk has 8 recording surfaces (4 plates), this disk has 512 tracks with each track having 512 sectors of 512 bytes each. Calculate the capacity and recording density for the disk. This disk rotates at a speed of 6000 rpm and has an average seek time of 10ms; what will be the average access time of the disk? (4 Marks)
- (e) Compare and contrast the following printing technologies (4 Marks)
- (i) Impact versus non-impact printer
  - (ii) Inkjet versus Laser printer
  - (iii) Character versus dot matrix printers
  - (iv) Line printers versus page printer

- (f) Explain the characteristics/functions of any four input devices. (4 Marks)
- (g) Explain the uses of following Software: (4 Marks)
- (i) Disk backup
  - (ii) Disk management
  - (iii) Disk Checker
  - (iv) System restore

**Question 2: (Covers Block 2)**

**(7×4=28 Marks)**

- (a) What is cloud Computing? Explain with the help of an example. What are the features, advantages and disadvantages of cloud computing? Differentiate between cloud computing and Internet based architecture. (4 Marks)
- (b) Explain the features and uses of the following computer software: (4 Marks)
- (i) Anti-virus programs
  - (ii) Debuggers
  - (iii) Device drivers
  - (iv) Multimedia Authoring applications
- (c) What is the need of Operating system for a Computer System? Explain the file management, I/O Management and memory management in the context of Operating system with the help of an example. (4 Marks)
- (d) Differentiate between the following (4 Marks)
- (i) Process and Thread
  - (ii) Serial Processing and Simple Batch processing
  - (iii) Timesharing and Multiprogramming operating systems
  - (iv) Unix and Windows
- (e) Draw a flow chart and write an algorithm for a program that adds 10 even numbers starting from 2. (You must use looping). (4 Marks)
- (f) Define the following terms in the context of programming with the help of an example: (4 Marks)
- (i) Data Types
  - (ii) Arrays
  - (iii) Subroutines and functions
  - (iv) Logical and relational operators

- (g) Explain the following with the help of an example/diagram, if needed: (4 Marks)
- (i) Open Source Software Licensing
  - (ii) Timesheet Management
  - (iii) Use of Primary Key in a table of a database
  - (iv) Use of chart and macros in MS-Excel

**Question 3: (Covers Block 3) (6×4=24 Marks)**

- (a) What are the advantages of using computer Networks? What is a twisted pair cable? What are its characteristics? Compare and contrast the features of twisted pair cable to optical fiber cable in the context of data transmission. (4 Marks)
- (b) A company has one single office building having about 1000 rooms in a city from where it controls all its operations. What kind of network the company should make for its office? The company makes about 100 dealers all over the county; what kind of network company should make to communicate with dealers? Justify your answer. (4 Marks)
- (c) Explain the concept of DNS. Explain the components of an IP address with the help of an example. What is the significance of network mask? Explain with the help of an example. (4 Marks)
- (d) Explain the functioning of a search engine. You want to identify the latest developments in the area of Internet. Make a search phrase which may give you good result. (4 Marks)
- (e) List major security threats while using email, chat and social networking. How can you reduce the risk due to these threats? (4 Marks)
- (f) Explain the following in the context of Internet and its applications, giving their features and uses: (4 Marks)
- (i) E-learning
  - (ii) Social Networking

Course Code	:	BCS-012
Course Title	:	Basic Mathematics
Assignment Number	:	BCA (1)-012/Assignment/ 2015
Maximum Marks	:	100
Weightage	:	25%
Last Dates for Submission	:	15 <sup>th</sup> October, 2016 (For July 2016 Session) 15 <sup>th</sup> April, 2017 (For January 2017 Session)

**NOTE: NOT ATTENDING THE VIVA LEADS TO NON EVALUATION OF ASSIGNMENT**

This assignment has twenty questions in all and carries 80 marks. The rest of the 20 marks are for viva-voce. Answer all the questions. All questions carry equal marks (i.e. 4 marks each). Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

1. Use Cramer's Rule to solve the system of linear equation given below  
 $2x - y + 3z = 0$ ;  $x + 5y - 7z = 0$ ;  $x - 6y + 10z = 0$

2. Find the inverse of  $A = \begin{bmatrix} 1 & 2 & 5 \\ 2 & 3 & 1 \\ -1 & 1 & 1 \end{bmatrix}$  and verify that  $A^{-1}A = I_3$

3. Solve the system of equation using matrix method  
 $2x - y + 3z = 5$ ;  $3x + 2y - z = 7$ ;  $4x + 5y - 5z = 9$

4. Reduce the Matrix to triangular form & hence determine its rank

$$\begin{bmatrix} 2 & 5 & -3 & -4 \\ 4 & 7 & -4 & -3 \\ 6 & 9 & -5 & 2 \\ 0 & -9 & 6 & 5 \end{bmatrix}$$

5. Show that  $x(x + 1)(2x + 1)$  is a multiple of 6 for every natural number  $x$ .
6. Find the sum of the series  $1^2 + 3^2 + 5^2 + \dots + (2n - 1)^2$
7. Prove that  $(2 - w)(2 - w^2)(2 - w^{10})(2 - w^{11}) = 49$  where  $w^2, w, 1$  are cube root of unity.
8. If  $\alpha, \beta, \gamma$  are roots of equation  $x^3 + px + q = 0$ . Then show that  
 $\frac{1}{7}(\alpha^7 + \beta^7 + \gamma^7) = \frac{1}{7}(\alpha^2 + \beta^2 + \gamma^2) \frac{1}{5}(\alpha^5 + \beta^5 + \gamma^5)$
9. Solve the inequality  $\frac{2}{|x-3|} > 5$  and graph its solution.
10. Show that  $f(x) = |x|$  is continuous at  $x = 0$ .
11. Find derivative of the following (i)  $x^2 e^x$  (ii)  $\ln x/x$
12. If  $Y = \ln(x + \sqrt{x^2 + 1})$ , Prove that  $(x^2 + 1) \frac{d^2 y}{dx^2} + x \frac{dy}{dx} = 0$

13. If a camphor ball evaporates at a rate proportional to its surface area  $4\pi r^2$ . Show that its radius decreases at a constant rate.
14. Determine the intervals in which the function  $f(x) = e^{1/x}$ . ( $x \neq 0$ ) is increasing or decreasing.
15. Find local maximum and local minimum values for  $f(x) = x^3 - 6x^2 + 9x + 1$ . ( $x \in \mathbb{R}$ ).
16. Evaluate the integral
- (i)  $I = \int \frac{2e^x + 3e^x}{3e^x + 4e^{-x}} dx$
- (ii)  $I = \int x^3 (\log x)^2 dx$
17. Find the area bounded by curves  $Y = \sqrt{x}$  and  $Y = x$
18. Find the length of the curve  $Y = 2x + 3$
19. Prove that the straight line joining the mid points of two non parallel sides of a trapezium is parallel to the parallel sides and half of their sum.
20. Find maximum values of  $5x + 2y$ , subject to the following constraints.  
 $-2x - 3y \leq -6$  ;  $x - 2y \leq 2$  ;  $6x + 4y \leq 24$  ;  $-3x + 2y \leq 3$  ;  $x \geq 0, y \geq 0$ .

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<b>Maximum Marks</b>	:	<b>100</b>
<b>Weightage</b>	:	<b>25%</b>
<b>Last Dates for Submission</b>	:	<b>15<sup>th</sup> October, 2016 (For July 2016 Session)</b> <b>15<sup>th</sup> April, 2017 (For January 2017 Session)</b>

**Note: This assignment has seven questions of 80 marks. There are five sections in the assignment. Answer all the questions. Rest 20 marks are for viva voce. You may use illustrations and diagrams, printouts of the solutions to enhance explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.**

### **Section-I (Power point)**

1. Make a power point presentation on infrastructure support and activities at your program centre ( minimum 10 slides) which should include the following details: *(15 marks)*

Responsibilities of a program centre

- Location of the program centre (insert a map and a picture of your study centre)
- Library support( Number of books, journals, e-books , borrowing facility)
- Lab facility( internet connectivity, numbers of computers, its configurations, printers)
- Activities at the centre: counseling, practical classes( insert pictures)
- Create animation on the picture of the study centre.
- All the slides should follow the common design : same title style, color background, page numbers
- All slides should have slide notes
- Write speaker notes for each slide

### **Section-II (Outlook)**

2. *(5 marks)*
- Make a contact list of 10 persons. Just enter name and email address.
  - Create a new appointment to your calendar
  - Meeting between 10 AM- 11AM in the conference room of Hotel XYZ
  - Invite the contact from the contact list



### Section-III (Spreadsheet)

3. (a) Sales Analysis (10 marks)

The following is the sales report (in thousand dollar) of different regions in the first quarter and the second quarter

Region	First Quarter	Second Quarter
East	20	30
North East	10	15
South	60	70
North	80	72
South East	40	80

Create a sales chart of the above report.

- (b) Prepare a worksheet for the following problem: (20 marks)

You are looking to buy a car. You are considering two options: to buy a second hand car and keep it for ten years or to buy a new car and keep it for four years. The depreciation per year is simply the difference between the purchase price and the resale price divided by the numbers of years. The total running cost per year is the sum of service/repair cost, the fuel cost per year (miles per year multiplied by fuel cost per mile) , the tax and the insurance. The total cost per year is the sum of the depreciation and the running costs. You are supposed to **calculate average depreciation per year, fuel cost per year, total running cost per year and total cost per year** for both the options. Type in labels: car purchase option, initial cost, resale, years ,average depreciation per year, running cost, services/repairs per year, miles per year, fuel cost per mile, fuel cost per year, tax, insurance, total running cost and total cost per year. Prepare the worksheet having all the details as given below:

	A	B	C
1.	<b>Car Purchase option</b>		
2.		Option 1	Option 2
3.	Initial cost	€ 10,000	€ 17,000
4.	Resale	€ 1,000	€ 12,000
5.	Years	10	4
6.	Average depreciation per year		
7.			
8.	<b>Running cost</b>		
9.	Services / repairs per year	€ 350	€ 250
10.			
11.	Miles per year	5000	5000
12.	Fuel cost per mile	€ 0.20	€ 0.17
13.	Fuel cost per year		
14.	Tax	€ 450	€ 450
15.	Insurance	€ 800	€ 800
16.	Total running cost		
17.	Total cost per year		

#### **Section-IV (Word Processor)**

4. (a) Design a flyer for birthday party using different styles, fonts and effects. (10 marks)
- (b) You have been asked by the management of the company to organize a get-together party for the newly recruited staff in the company. Create a standard cover letter to inform all the new members using mail-merge facility. You need to create a database of all the members whom you wish to inform. Watermark the letter as official. (10 marks)

#### **Section-V (Browsing and Discussion Forum)**

5. Locate, download and analyze information online on advancement in smart phone technology through advance search option of Google and prepare a 3-4 page report for submission. (10 marks)

You are required to do the following in order to prepare the report.

- Review at least 10 articles to find out the advanced features.
- Search for keyword advanced mobile technology in smart phone technology.
- Review the result of search and consider the similarities and differences between different articles.
- While preparing the report, also capture some screens of smart phones and include in the report.