

BACHELOR OF COMPUTER APPLICATION (BCA)

(Revised Syllabus)

BCA(Revised Syllabus)/ASSIGN/SEMESTER-I

ASSIGNMENTS

(July - 2018 & January - 2019)

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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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.

| | | |
|--------------------------------|---|---|
| Course Code | : | BCS-011 |
| Course Title | : | Computer Basics and PC Software |
| Assignment Number | : | BCA (R1)-011/Assignment/2018-19 |
| Maximum Marks | : | 100 |
| Last Date of Submission | : | 15th October, 2018 (For July, 2018 Session) 15st April, 2019 (For January, 2019 Session) |

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 Marks each=28 Marks)

- a) What is the role of following components of a Computer System:
- (i) Control Unit
 - (ii) Arithmetic Logic Unit
 - (iii) Ports and Connectors
 - (iv) Motherboard
- b) What is an instruction in the context of a Microprocessor? How does a microprocessor instruction specify data and operations? Explain with the help of an example.
- c) A computer system was designed to have a good latest processor and I/O devices, however the designer of the computer did not put any RAM in it. The computer does have a hard disk of 1 tera-byte. Will this computer be able to execute programs? Explain giving justification in support of your answer.
- d) Convert the following numbers as directed
- (i) Decimal 198.25 into binary and hexadecimal
 - (ii) Decimal 444566 into binary and hexadecimal
 - (iii) String "Maximum Limit 500%" to ASCII and Unicode string
 - (iv) Hexadecimal ABCDEF to decimal and binary
- e) How are the tracks on magnetic disk different than that of Optical disks? Consider one optical and one magnetic disks have identical number of tracks and equal size sectors, will these two disks have same size? Justify your answer.
- f) Compare and contrast the following technologies
- (i) SRAM and DRAM
 - (ii) USB and Serial Port
 - (iii) Joystick and Mouse
 - (iv) Projection displays and LED display

- g) Explain the characteristics/functions of the following I/O devices:
- (i) Inkjet printer
 - (ii) Power Connector
 - (iii) Video Card
 - (iv) Magnetic Stripe Reader

Question 2: (Covers Block 2)

(7×4=28 Marks)

- a) Explain the Internet Based Software Architecture with the help of a block diagram. How is this architecture different than that of 3-tier client server architecture? Explain.
- b) What is a file and directory in the context of a computer? What are the activities involved in the file management? Explain how file management is different than the Memory Management.
- c) Explain the features and uses of the following in the context of computer software and programming:
- (i) Assembler
 - (ii) Interpreter
 - (iii) Subroutine
 - (iv) Function
- d) Differentiate between the following:
- (i) Kernel of an Operating system and Non-resident portion of Operating system
 - (ii) Command line interface and Graphical user interface of Operating system
 - (iii) Multiprogramming and Multitasking
 - (iv) Computer Virus and Computer Worms
- e) Draw a flow chart and write an algorithm for a program that multiplies all two digit odd numbers. (You must use looping).
- f) Explain the purpose of each segment marked (i) to (vi) of the following program. What this program will do?
- (i) `int i;`
 - `int marks[20];`
 - (ii) `for (i=0; i<20; i++) {`
 - (iii) `printf ("Enter the number");`
 - `scanf ("%d", &marks [i];`
 - (iv) `if (marks[i] < 40) printf("Not Successful");`
 - (v) `if (marks[i] >= 40) && (marks[i] < 60)) printf("Passed in Second Division);`
 - (vi) `if (marks[i] >= 60) printf("Passed in First Division);`
 - `}`

g) List which of the software will be required for the following situation. Explain the steps that are needed to be performed in order to solve the situation in question.

- (i) You need to send invitation to about 200 students for a workshop.
- (ii) A software project has to be managed such that there is no delay.
- (iii) Student data and their marks are to be stored such that any query may be made on the data easily.
- (iv) You need to show the visual form of data about the progress of an organisation.

Question 3: (Covers Block 3)

(6×4=24 Marks)

(a) Explain the following terms in the context of computer networks:

- i) Message switching
- ii) Simplex transmission
- iii) Optical Fiber
- iv) Radio wave transmission.

(b) A new company which supplies food packets in a locality has to set up a network in its sales office employing 10 parallel ordering stations. It has a large number of person who supplies the food packet at the destination (maximum distance 2 kms from the office). What kind of network the company should make for its sales office? Justify your answer.

(c) List all the activities that you as well as various servers will perform when you check your result from IGNOU website. Explain the role of TCP/IP in this process.

(d) Why is a networking software has layers? List and define the role of each layer of ISO-OSI model.

(e) You want to find about the Universities that offer Programmes in **Computer Science** and **Information Technology** but does not offer programmes in **Medical Science**. Make efficient query or queries that will show the desired result as above. Also explain the activities performed by a search engine.

(f) Explain the following in the context of Internet and its applications:

- (i) Security threats on Internet
- (ii) E-learning processes

| | | |
|--------------------------------|---|---|
| Course Code | : | BCS-012 |
| Course Title | : | Basic Mathematics |
| Assignment Number | : | BCA(1)-012/Assignment/2018-19 |
| Maximum Marks | : | 100 |
| Weightage | : | 25% |
| Last Date of Submission | : | 15th October, 2018 (For July, 2018 Session) |
| | : | 15th April, 2019 (For January, 2019 Session) |

Note: This assignment has 20 questions of 80 marks (each question carries equal marks). Answer all the questions. Rest 20 marks are for viva voce. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

1. Evaluate the determinant given below, where ω is a cube root of unity. (4 Marks)

$$\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix}$$

2. Using determinant, find the area of the triangle whose vertices are $(-3, 5)$, $(3, -6)$ and $(7, 2)$. (4 Marks)

3. Use the principle of mathematical induction to show that $2 + 2^2 + \dots + 2^n = 2^{n+1} - 2$ for every natural number n . (4 Marks)

4. Find the sum of all integers between 100 and 1000 which are divisible by 9. (4 Marks)

5. Check the continuity of the function $f(x)$ at $x = 0$: (4 Marks)

$$f(x) = \begin{cases} \frac{|x|}{x}, & x \neq 0 \\ 0, & x = 0 \end{cases}$$

6. If $y = \frac{\ln x}{x}$, show that $\frac{d^2y}{dx^2} = \frac{2 \ln x - 3}{x^3}$ (4 Marks)

7. If the mid-points of the consecutive sides of a quadrilateral are joined, then show (by using vectors) that they form a parallelogram. (4 Marks)

8. Find the scalar component of projection of the vector (4 Marks)

$$\vec{a} = \hat{2i} + \hat{3j} + \hat{5k} \text{ on the vector } \vec{b} = \hat{2i} - \hat{2j} - \hat{k}.$$

9. Solve the following system of linear equations using Cramer's rule: (4 Marks)
- $$x + y = 0, \quad y + z = 1, \quad z + x = 3$$

10. If $A = \begin{bmatrix} 1 & -2 \\ 2 & -1 \end{bmatrix}$, $B = \begin{bmatrix} a & 1 \\ b & -1 \end{bmatrix}$ and $(A + B)^2 = A^2 + B^2$, Find a and b . (4 Marks)

11. Reduce the matrix A(given below) to normal form and hence find its rank. (4 Marks)

$$A = \begin{bmatrix} 5 & 3 & 8 \\ 0 & 1 & 1 \\ 1 & -1 & 0 \end{bmatrix}$$

12. Show that $n(n+1)(2n+1)$ is a multiple of 6 for every natural number n . (4 Marks)

13. Find the sum of an infinite G.P. whose first term is 28 and fourth term is $\frac{4}{49}$. (4 Marks)

14. Use De Moivre's theorem to find $(\sqrt{3} + i)^3$. (4 Marks)

15. If $1, \omega, \omega^2$ are cube roots unity, show that $(2-\omega)(2-\omega^2)(2-\omega^{10})(2-\omega^{11}) = 49$. (4 Marks)

16. Solve the equation $2x^3 - 15x^2 + 37x - 30 = 0$, given that the roots of the equation are in A.P. (4 Marks)

17. A young child is flying a kite which is at height of 50 m. The wind is carrying the kite horizontally away from the child at a speed of 6.5 m/s. How fast must the kite string be let out when the string is 130m ? (4 Marks)

18. Using first derivative test, find the local maxima and minima of the function $f(x) = x^3 - 12x$. (4 Marks)

19. Evaluate the integral $I = \int \frac{x^2}{(x+1)^3} dx$ (4 Marks)

20. Find the length of the curve $y = 3 + \frac{x}{2}$ from (0, 3) to (2, 4). (4 Marks)

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|--------------------------------|---|
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| Maximum Marks | : 100 |
| Weightage | : 25% |
| Last date of Submission | : 15th October, 2018 (For July, 2018 Session) |
| | : 15th April, 2019 (For January, 2019 Session) |

Note: Answer all the questions which carry 80 marks. The rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation. Make suitable assumption if necessary

Section 1: Power Point

Question1(a): Make a marketing presentation of any 4G mobile phone with at least 10 slides highlighting technical features of the brand. Use different customized animation effects on pictures and Clip Art on any four of the 10 slides. All slides should have slide notes. Write speaker notes for each slide (15 Marks)

Question 1(b): Create Photo Album in Power Point (5 Marks)

Section 2: Outlook

Question2: (i) Imagine that you want to have an appointment with doctors for a regular check-up in a hospital. You are required to make a schedule, make a contact list of all the doctors, send an e-mail, take an on-line appointments, pay the consultation fees in advance, book a taxi. Write all the options available to fulfill the task in Outlook (6 Marks)

(ii) Create a rule which allows all high priority mails from doctors to an important folder unless subject says 'Unimportant' and then flag these mails for follow-up. (4 Marks)

Section 3: Spreadsheet

Question 3: Perform the following procedures in Excel and complete your worksheet (20 Marks)
Create a worksheet containing monthly expenditure on purchase of household items, rent payment, mobile recharge, electricity and cable TV with proper headings. Make assumptions about expenditures. There is a provision of discount of 15% over the purchase of Rs. 6000 of purchasing. The worksheet should contain monthly income, monthly expenditure listed and summed, total discount, left over amount each month and the amount left over per day (assume 30 days in a month)

Section 4: Word processing

Question4:(a) Use a Mail Merge feature to send a letter to all your friends for inviting them to new-year celebration. (5 Marks)

(b) Design a flyer for exhibition of paintings. Use different font styles, sizes, color effects, to create it. It should contain the text “Painting Exhibition”. (5 Marks)

Section5 : Browsing and Discussion Forum

Question 5: Locate, download and analyze information online on advancement in smart phone technology through advance search option of Google and prepare and submit a 3-4 page report (20 Marks)

You are required to do the following :

- Review at least 10 reviews article
- Search for the keyword “smart phone”
- Review the result of search and consider the similarities and differences between smart phones of different vendors .
- While preparing the report , also capture some screens images of smart phones and include in the report.