BACHELOR OF COMPUTER APPLICATIONS (BCA)

(Revised Syllabus)

BCA(Revised Syllabus)/ASSIGN/SEMESTER-I

ASSIGNMENTS

(July - 2019 & January - 2020)

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	:	**FEG-02**
Course Title	:	**English**
Assignment Number	:	**BCA (1)/02/Assignment/2019-20**
Maximum Marks	:	**100**
Weightage	:	**25%**
Last Dates for Submission	:	**15th October, 2019 (For July 2019 Session)**
	:	**15th April, 2020 (For January 2020 Session)**

Here is the web-link of assignment: https://webservices.ignou.ac.in/assignments/soh/Feg.htm

Course Code	**:**	**ECO-01**
Course Title	**:**	**Business Organization**
Assignment Number	**:**	**BCA (1)/01/Assignment/2019-20**
Maximum Marks	**:**	**100**
Weightage	**:**	**25%**
Last Dates for Submission	**:**	**15th October, 2019 (For July 2019 Session)**
	:	**15th April, 2020 (For January 2020 Session)**

Here is the web-link of assignment https://webservices.ignou.ac.in/assignments/bcom.htm

Course Code	:	BCS-011
Course Title	:	Computer Basics and PC Software
Assignment Number	:	BCA (1)/011/Assignment/2019-20
Maximum Marks	:	100
Last Date of Submission	:	15th October, 2019 (For July, 2019 Session)
		15th April, 2020 (For January, 2020 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.

Q1. (Covers Block 1) (7×4=28)

a) Explain the von Neumann Architecture with the help of a diagram. Is this architecture used in the current personal computers? Justify your answer. Explain the role of integrated circuits in design of computers. Also, explain the classification of computer on the basis of technology.

b) Explain the term binary digit. How binary number system is different from decimal number system? How do you represent a computer instruction in binary? Explain with the help of an example. List and explain the role of various components of a computer instruction. What is the role of bus and registers in instruction execution?

c) Convert the following numbers as directed
   (i) Decimal 257.125 into binary and hexadecimal
   (ii) Decimal 999876789 into binary and hexadecimal
   (iii) String "Test for number 45, @check" to ASCII and Unicode strings
   (iv) Hexadecimal 4F9A8C7D to decimal and binary

d) What is the role of memory in a computer system? Why are primary and secondary memory needed in a computer system? What is RAM? How is it different to ROM? Which of the two, RAM or ROM is volatile?

e) Define the term access time for a hard disk. Explain with the help of an example, how access time and storage capacity for magnetic disks are calculated. How is the storage capacity for a magnetic tape calculated? What are the differences in access mechanism for magnetic tapes and magnetic disks?

f) Compare and contrast the following technologies
   (i) Light Pen and Touch screen
   (ii) Scanner and Optical Mark Reader
   (iii) LCD monitor and LED display
   (iv) Printers and Plotters

g) Explain the characteristics/functions of the following in the context of a computer system:
    (i) Disk Defragmenter
    (ii) Motherboard of a computer
    (iii) Disk Checkers
    (iv) Uses of "My Computer" and "My Documents" on a Windows Desktop

Q2. (Covers Block 2)   **(7×4=28)**

a) Explain the Client/Server architecture with the help of a diagram. Explain how this architecture is similar to/ different from cloud computing.

b) Explain the differences between structured programming and non-structured programming with the help of example code. List and define the three important concepts of Object oriented programming.

c) Define the basic functions of the following software:
    (i) Compiler
    (ii) Device Driver
    (iii) Diagnostic Program
    (iv) Anti-virus software

d) List the functions of the following in the context of Operating System
    (i) Graphical User interface and its advantages
    (ii) File management
    (iii) Process
    (iv) Batch Processing
    (v) Time sharing
    (vi) Input/ Output Services

e) Draw a flow chart and write an algorithm for a program that adds all two digit numbers divisible by 3. (Hint: These numbers are 12, 15 till 99. You must use looping).

f) Explain the meaning of each of the following lines in the context of programming:
    (i) int i;
        int remain, evenodd=31;
    (ii) remain = evenodd % 2;
    (iii) if (remain == 0)
    (iv) printf("The Number is an EVEN number");
    (v) else printf("The Number is an ODD number");

g) List which software or type of software will be required for the following situations. Give reasons in support of your answer.

(i) You have joined a new company which maintains your daily activity logs and time devoted by you on different projects which company is doing. The company maintains these records for all the employees & projects.

(ii) You need to send your resume along with an application to 20 different companies; you have name and address of HRD manager of all these companies stored in file.

(iii) You need to record the transactions of a multinational company; the transaction may include purchases, sales and financial transactions.

(iv) You have a very low budget for buying application software, though you have manpower with good computer skills what kind of software will you use for the company and why?

Q3. (Covers Block 3) (6×4=24)

(a) What are the advantages of using Computer Networks? Explain the following terms in the context of computer networks:

(i) Circuit switching

(ii) Half Duplex transmission

(iii)Guided Channels

(iv)Infrared transmission.

(b) Explain the differences between the following, giving one application of each:

(i) Ring Topology, Bus topology and star topology

(ii) LAN, MAN and WAN

(c) Explain the characteristics of the following networking devices:

(i) Routers

(ii) Modem

(iii)Gateways

(iv)Switches

(d) Explain the layers of TCP/IP Model. What is an IP address? Explain the role of subnet mask with the help of an example. How does DNS translate a web address? Explain with the help of an example.

(e) Explain the functions of browser and search engine in the context of Internet. You want to find commercial banks which offer **house loans** and **debit cards** but do not provide **online services**; make efficient query or queries that will show the desired result as above.

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

(i) E-learning and Moodle

(ii) Electronic Educational Resources

Course Code : BCS-012
Course Title : Basic Mathematics
Assignment Number : BCA(1)012/Assignment/2019-20
Maximum Marks : 100
Weightage : 25%
Last Date of Submission : 15ᵗʰ October, 2019 (For July, 2019 Session)
15ᵗʰ April, 2020 (For January,2020 Session)

Answer all the questions in the assignment which carry 80 marks in total. All the questions are of equal marks. 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

Q1. Show that

$$\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & 0 \end{vmatrix} = 0$$

Where ω is a complex cube root of unity.

Q2. If $A = \begin{pmatrix} 3 & -1 \\ 2 & 1 \end{pmatrix}$, Show that $A^2 - 4A + 5 I_2 = 0$. Also, find A^4.

Q3. Show that 133 divides $11^{n+2} + 12^{2n+1}$ for every natural number n.

Q4. If p^{th} term of an A.P is q and q^{th} term of the A.P. is p, find its rth term.

Q5. If 1, ω, ω^2 are cube roots of unity, show that
$(2 - \omega)(2 - \omega^2)(2 - \omega^{19})(2 - \omega^{23}) = 49$.

Q6. If α, β are roots of $x^2 - 3ax + a^2 = 0$, find the value(s) of a if $\alpha^2 + \beta^2 = \frac{7}{4}$.

Q7. If $y = In\left(\frac{\sqrt{1+X} - \sqrt{1-X}}{\sqrt{1+X} + \sqrt{1-X}}\right)$, find $\frac{dy}{dX}$.

Q8.
If $A = \begin{bmatrix} 2 & -1 & 0 \\ 1 & 0 & 3 \\ 3 & 0 & -1 \end{bmatrix}$, show that $A\,(adj.A) = |A|\,I_3$.

Q9. Find the sum of all the integers between 100 and 1000 that are divisible by 9

Q10. Write De Moivre's theorem and use it to find $(\sqrt{3} + i)^3$.

Q11. Solve the equation $x^3 - 13x^2 + 15x + 189 = 0$, Given that one of the roots exceeds the other by 2.

Q12. Solve the inequality $\left|\frac{2}{x-1}\right| > 5$ and graph its solution.

Q13. Determine the values of x for which $f(x) = x^4 - 8x^3 + 22x^2 - 24x + 21$ is increasing and for which it is decreasing.

Q14. Find the points of local maxima and local minima of
$f(x) = x^3 - 6x^2 + 9x + 2014$, $x \; \varepsilon \; \mathbf{R}$.

Q15. Evaluate : $\int \frac{dx}{(e^x - 1)^2}$

Q16. Using integration, find length of the curve $y = 3 - x$ from (-1, 4) to (3, 0).

Q17. Find the sum up to n terms of the series $0.4 + 0.44 + 0.444 + \ldots$

Q18. Show that the lines $\frac{x-5}{4} = \frac{y-7}{-4} = \frac{z-3}{-5}$ and $\frac{x-8}{4} = \frac{y-4}{-4} = \frac{z-5}{4}$ Intersect.

Q19. A tailor needs at least 40 large buttons and 60 small buttons. In the market, buttons are available in two boxes or cards. A box contains 6 large and 2 small buttons and a card contains 2 large and 4 small buttons. If the cost of a box is $ 3 and cost of a card is $ 2, find how many boxes and cards should be purchased so as to minimize the expenditure.

Q20. A manufacturer makes two types of furniture, chairs and tables. Both the products are processed on three machines A1, A2 and A3. Machine A1 requires 3 hours for a chair and 3 hours for a table, machine A2 requires 5 hours for a chair and 2 hours for a table and machine A3 requires 2 hours for a chair and 6 hours for a table. The maximum time available on machines A1, A2 and A3 is 36 hours, 50 hours and 60 hours respectively. Profits are $ 20 per chair and $ 30 per table. Formulate the above as a linear programming problem to maximize the profit and solve it.

Course Code	:	**BCSL-013**
Course Title	:	**Computer Basics and PC Software**
Assignment Number	:	**BCA(1)/L-013/Assignment/2019-20**
Maximum Marks	:	**100**
Weightage	:	**25%**
Last date of Submission	:	**15ᵗʰ October, 2019(For July 2019 Session)**
	:	**15ᵗʰ April, 2020 (For January 2020 Session)**

Answer all the questions in the assignment which carry 80 marks in total. 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

Section1: Linux operating system

Q1. **(a)** Run the following (Linux commands and write the output) **(10)**

- ls-a
- ls-l
- mkdir
- pwd
- chmod

(b) Perform the following tasks in Linux **(6)**

(i) Display the last 20 lines of a text file (you need to create a text file)
(ii) Display the first 15 lines of any text file
(iii)To count the no of times word IGNOU has occurred in a text file.

Section 2: Power point

Q2. Create a Power Point Presentation on the important features of Windows OS (minimum 10 slides) **(16)**

(i) All slides should follow the common design format
(ii) Add a video to at least one slide which can be run on full screen option
(iii)All the slides should have timer based transition.
(iv)All the slides should have perform heading and slide notes.
(v) Each slide should have one image related to Windows operating system.

Section 3: Word Processing

Q3. **(a)** Create a letter head of your study center where you are enrolled and insert the water mark with that study center name in the letter head. The following guidelines to be followed. **(8)**

- The logo of the company should be placed in the center.
- Name, address – left side should be placed at.
- Email ID, IP address of the study center should be shown at right side.
- Display the ruler bar and the vertical bar to the top of the page.

(b) Design a flyer for admission to the foreign university. It should contain "visit our counselors for admission in the foreign University" Use different font style, age, colors, effects, alignment to create the flyer. **(8)**

Section 4: Worksheet

Q4. Create a work sheet for pricing information of a company which sales computers &peripheral devices. You are required to calculate discount, sales price(MRP-Discount) and profit margin(MRP-sales price) **(16)**

Product	Product code	Manufacturing cost	MRP	Discount (10%)	Sales price	Profit margin
Computer	C-1	25000.00	27000.00	-	-	-
Laser printer	C-2	5000.00	6000.00			
Filing cabinet	C-3	6000.00	7000.00			
27th monitor	C-4	2000.00	3000.00			
Mouse	C-5	400.00	500.00			

Section 5: Browsing and Discussion Forum

Q5. Collaborate online (in a group) on Google docs to create a presentation on 'Smart Phone design'. All the group should work on the presentation simultaneously from their respective machines. Use speaker notes for any online discussion and present a comprehensive report. (The report should comprise the latest trends in the design of smart phones). **(16)**