

**BACHELOR OF COMPUTER
APPLICATIONS
(BCA)
(Revised Syllabus)**

BCA(Revised Syllabus)/ASSIGN/SEMESTER-I

ASSIGNMENTS

(July - 2020 & January - 2021)

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/2020-2021**
Maximum Marks : **100**
Weightage : **25%**
Last Dates for Submission : **31st October, 2020 (For July, 2020 Session)**
15th April, 2021 (For January, 2021 Session)

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

Course Code : **ECO-01**
Course Title : **Business Organization**
Assignment Number : **BCA(1)/01/Assignment/2020-21**
Maximum Marks : **100**
Weightage : **25%**
Last Dates for Submission : **31st October, 2020 (For July, 2020 Session)**
15th April, 2021 (For January, 2021 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 (R1)-011/Assignment/2020-21
Maximum Marks	:	100
Last Date of Submission	:	31st October, 2020 (For July, 2020 Session) 15th April, 2021 (For January, 2021 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 marks each=28 Marks)

- a) What are the various components of a computer system? Explain the function of each of these components. How is von Neumann Architecture related to the computer operations? Explain with the help of an example. Differentiate between analog and digital computers. Also define the term integrated circuit.
- b) Explain the term binary code in the context of a digital computer. Differentiate between the ASCII and UNICODE with a help of examples. What is an instruction in the context of a computer? Explain with help of an example. How is an instruction executed by a computer? Explain
- c) Convert the following numbers as directed
 - (i) Decimal 125.0625 into binary and hexadecimal
 - (ii) Decimal 567898765 into binary and hexadecimal
 - (iii) String "Check the code of BCS-011 in @online" to ASCII and Unicode strings
 - (iv) Hexadecimal FEDCBA98 to decimal and binary
- d) What is the need of different types of memories in a computer? Explain. Explain the role of RAM, ROM and cache memory in a computer? Differentiate between PROM and EPROM.
- e) Compare the sequential access with direct access. Explain the storage organisation and capacity computation for a hard disk drive with the help of a diagram. Compare the features of CD, Magnetic tapes and Pen drives.
- f) Compare and contrast the following technologies
 - (i) Parallel port and USB
 - (ii) Graphics Tablet and Mouse
 - (iii) Scanner and Optical mark reader
 - (iv) LCD and LED monitors
- g) Explain the characteristics/functions of the following in the context of a computer system:
 - (i) Tablet and Laptop computers
 - (ii) Motherboard in the context of a computer
 - (iii) CHKDSK utility
 - (iv) Recycle Bin and taskbar

Q2: (Covers Block 2)**(7×4=28 Marks)**

- a) What is a Cloud computing Architecture? Explain the features of cloud computing. Compare the features of cloud computing with client-server architecture and file-sharing architectures.
- b) Compare and contrast the features of Procedural languages and Object oriented programming languages. Which of the two type of languages are better for creating system software? Justify your answer.
- c) Define the basic functions of the following software:
 - (i) Interpreter
 - (ii) Graphics Software
 - (iii) Diagnostic Tools (any four)
 - (iv) Anti-malware software
- d) List the functions of the following in the context of Operating System
 - (i) Graphical User interface and its components
 - (ii) Memory management
 - (iii) Process Control Management
 - (iv) Multi-programming
 - (v) Features of Unix operating system
 - (vi) Serial Processing
- e) Draw a flow chart and write an algorithm for a program that multiplies all the three digit odd numbers. (Hint: These numbers are 101, 103, ...999. You must use looping to multiply them one by one).
- f) Explain the meaning and output of each line of the following in the context of programming:
 - (i) `int i;`
`int x, y, z=31;`
 - (ii) `x = y / 2;`
 - (iii) `z=x*2;`
 - (iv) `if (z==y)`
 - (v) `printf("y contains an EVEN number");`
 - (vi) `else printf("y contains an ODD number");`
- g) List which of the software or type of 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, if applicable.
 - (i) A company maintains the timesheet and activities of its employees on different projects. The status of project with related PERT charts is also recorded. Identify a suitable software for the company
 - (ii) You are applying for admission to various Universities by writing letters to the Registrar of admission. You need to send similar letter to about 10 different Universities, whose contact addresses are saved by you as data. Identify what feature of a software will be used by you.
 - (iii) The financial transactions of a company are to be recorded. These transactions are kept online for last five year transactions. The summary reports can be produced from these records. Identify the software suitable for the company.
 - (iv) You want to set up a new office for the computer skilled manpower that you have hired. But your budgets are a bit low. What kind of software will you use for such company for office work.

Q3: (Covers Block 3)

(6×4=24 Marks)

- (a) Why do you need computer Networks? Explain the following terms in the context of computer networks:
- i) Packet switching
 - ii) Simplex transmission
 - iii) Unguided Media/Channels
 - iv) Optical Fiber .
- (b) Explain the characteristics of Local Area Networks (LAN)? Explain an application for which you need to create a LAN. Also explain the components of LAN. How is LAN different to Wide Area Network(WAN)? Discuss the star topology of LAN with the help of an example.
- (c) Explain the characteristics of the following networking devices:
- i) Modem
 - ii) Network Interface card
 - iii) Bridge
 - iv) Repeater
- (d) Explain the purpose of TCP and IP protocols. What is a web address? What is DNS?. How does DNS is used? Explain with the help of an example. Also, explain the role of subnet mask with the help of an example
- (e) How does a search engine locates information desired by a user? Also explain how you can search for all the Universities which does not offer Engineering courses. What are the uses of an email software? Explain various functions that you can perform using an email software.
- (f) Explain the following in the context of Internet and its applications:
- (i) Software for Collaborations
 - (ii) Software for e-Learning

Course Code	:	BCS-012
Course Title	:	Basic Mathematics
Assignment Number	:	BCA(I)-012/Assignment/2020-21
Maximum Marks	:	100
Weightage	:	25%
Last Dates for Submission	:	31st October, 2020 (For July,2020 Session) 15th April, 2021 (For January,2021 Session)

Note: This assignment has 16 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.

Q1. If $A = \begin{pmatrix} 3 & -1 \\ 2 & 1 \end{pmatrix}$, **(5 Marks)**

Show that $A^2 - 4A + 5I_2 = 0$. Also, find A^4 .

Q2. Verify that 133 divides $11^{n+2} + 12^{2n+1}$ for every natural number n. **(5 Marks)**

- Q3**
- If p^{th} term of an A.P is q and q^{th} term of the A.P. is p, find its r^{th} term. **(5 Marks)**
 - Find the sum of all the integers between 100 and 1000 that are divisible by 9.

Q4. If $1, \omega, \omega^2$ are cube roots of unity, show that **(5 Marks)**
 $(2 - \omega)(2 - \omega^2)(2 - \omega^{19})(2 - \omega^{23}) = 49$.

Q5. If α, β are roots of $x^2 - 3ax + a^2 = 0$, find the value(s) of a if $\alpha^2 + \beta^2 = \frac{7}{4}$. **(5 Marks)**

Q6. If $y = \ln \frac{\sqrt{1+x} - \sqrt{1-x}}{\sqrt{1+x} + \sqrt{1-x}}$, find $\frac{dy}{dx}$. **(5 Marks)**

Q7. Evaluate : $\int x^2 \sqrt{5x - 3} dx$ **(5 Marks)**

Q8. Use De Moivre's theorem to find $(\sqrt{3} + i)^3$. **(5 Marks)**

Q9. Solve the equation $x^3 - 13x^2 + 15x + 189 = 0$, Given that one of the roots exceeds the other by 2. **(5 Marks)**

Q10. Solve the inequality $\frac{2}{x-1} > 5$ and graph its solution. **(5 Marks)**

Q11. 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. **(5 Marks)**

Q12. Find the points of local maxima and local minima of **(5 Marks)**
 $f(x) = x^3 - 6x^2 + 9x + 2014, x \in \mathbf{R}$.

Q13. Using integration, find length of the curve $y = 3 - x$ from $(-1, 4)$ to $(3, 0)$. **(5 Marks)**

Q14. Show that the lines, given below, Intersect each other. **(5 Marks)**

$$\frac{x-5}{4} = \frac{y-7}{-4} = \frac{z-3}{-5} \text{ and } \frac{x-8}{4} = \frac{y-4}{-4} = \frac{z-5}{4}$$

Q15. 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. **(5 Marks)**

Q16. Find the scalar component of projection of the vector $\vec{a} = 2\mathbf{i} + 3\mathbf{j} + 5\mathbf{k}$ on the vector $\vec{b} = 2\mathbf{i} - 2\mathbf{j} - \mathbf{k}$. **(5 Marks)**

Course Code	:	BCSL-013
Course Title	:	Computer Basics and PC Software
Assignment Number	:	BCA(1)/L-013/Assignment/2020-21
Maximum Marks	:	100
Weightage	:	25%
Last date of Submission:	:	31st October, 2020 (For July,2020 Session) 15th April, 2021 (For January,2021 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 Marks)**
- who am i
 - pwd
 - grep
 - chmod
 - find
- (b)** Perform the following tasks in Linux **(6 Marks)**
- (i) Display the first 15 lines and last 20 lines of a text file (you need to create a text file)
 - (ii) Identify all files in your home directory which a group has written permission on it
 - (iii) What will be the output of the following commands:
 - `ls | head - 5 | tail -1 > myfile`
`cat myfile`
 - `ls -l / etc | tail - n + 2 | sort`

Section 2: Power point

- Q2.** Create a Power Point Presentation on the important features of Linux OS **(16 Marks)** (minimum 10 slides)
- (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 speaker notes.
 - (v) Each slide should have one image related to Linux operating system.

Section 3: Word Processing

- Q3. (a)** Create multilevel month and week wise schedule for performing different academic tasks. Months should be numbered as A1.....to A12. Each month should be further broken into weeks numbered as W1...W4. For each week , academic activities such as attending counseling sessions, watching video lectures, etc., should be in numerical order(1,2,3...)
- (6 Marks)**
- (b)** Design a flyer for wedding function. Use different styles, sizes, fonts, colours and effects. **(10 Marks)**

Section 4: Worksheet

- Q4.** Create a worksheet for yearly income, tax, expenses and saving as given below. Type in labels, year, income, expenses and saving. You are required to calculate tax(20% of the yearly income), expense(30% of the yearly income) , saving(yearly income - (tax + expense)) and next year's income which is 10% more than the previous year. Also calculate total income, total taxes, total expenses and total savings. Yearly Income ,Tax, Expenses and Saving Table Amounts are shown in Rupees

	A	B	C	D	E
1	Year	Income	Tax	Expenses	Saving
2	2014	1,20000.00			
	2015				
	2016				
	2017				
	2018				
	2019				
		Total Income	Total Tax	Total Expense	Total Saving

Section 5: Browsing and Discussion Forum

- Q5.** You are supposed to organize an event like organizing an event. You are required to do the following tasks in Outlook: **(16 Marks)**
- Prepare your month's Calendar which includes all the academic activities plus this event
 - Colour the event day for quick identification
 - Select a time slot on the Calendar to create a meeting request
 - Prepare a list of people to invite for the event
 - Send the meeting request by email
 - Prepare the list of people who have accepted or declined the request
 - Create the Calendar that shows the schedule of a group of people and resources(availability of a room, projector, etc.) working in a study center.