

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

BCA(Revised Syllabus)/ASSIGN/SEMESTER-I

ASSIGNMENTS

(July - 2017 & January - 2018)

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 (1)/011/Assignment/17-18
Maximum Marks	:	100
Weightage	:	25%
Last Dates for Submission	:	15th October, 2017 (For July 2017 Session)
	:	15th April, 2018 (For January 2018 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.

1. (Covers Block 1) *(Marks 7X4= 28)*

- a) A computer program consists of instructions and data on which the instruction operates. How are the instructions of a program executed by a computer? Where are the instructions and data stored during execution? What is the role played by Input/output devices?
- b) Computer systems always have small RAM, yet it mostly has a large secondary memory like hard disk? Why? The access time of a hard disk is much larger than RAM, even than RAM is smaller in size than hard disk. Justify.
- c) Convert the following numbers as directed
 - (i) Decimal 119.0625 into binary and hexadecimal
 - (ii) Decimal 25600 into binary and hexadecimal
 - (iii) String "MATHS marks 50" to ASCII and Unicode string
 - (iv) Hexadecimal 9A8C7E to decimal and binary
- d) How can you calculate the capacity of a Winchester disk given its density and speed? A disk has 10 recording surfaces. Each surface has 2000 tracks, each track has 512 sectors and each sector can store 1MB of data. Calculate the capacity of this disk.
- e) Compare and contrast the following technologies
 - (i) Parallel port versus Serial port
 - (ii) Light Pen versus Touch Screen
 - (iii) LED Monitors versus Projection Displays
 - (iv) Laser printers versus Dot matrix printers
- f) Explain the characteristics/functions of the following I/O devices:
 - (i) Microphone

- (ii) Graphics Tablet
- (iii) MICR
- (iv) Bar Code Reader

- g) Explain the uses of following Software:
- (i) Accounting Software
 - (ii) Anti-virus software
 - (iii) Disk Checkers
 - (iv) Spreadsheet software

2. (Covers Block 2)

(Marks 7X4= 28)

- a) What is client/server architecture? What are its advantages and disadvantages? Is cloud computing also a client/server architecture? Justify your answer.
- b) Explain the features and uses of the following computer software:
- (i) Compiler
 - (ii) Linkers
 - (iii) File viewer
 - (iv) Presentation software
- c) What is the kernel of an operating system of a Computer? Explain the terms multiuser, multiprogramming and multitasking in the context of operating system.
- d) Differentiate between the following
- (i) Command line interface versus GUI
 - (ii) File Management system versus Input/Output control system in the context of an Operating system
 - (iii) A process versus a program
 - (iv) Unix versus MS-DOS
- e) Draw a flow chart and write an algorithm for a program that multiplies first n odd numbers starting from 1. The value of n may be given as input to the program. (You must use looping).
- f) Define the following terms in the context of programming with the help of an example:
- (i) Expressions
 - (ii) Two dimensional Arrays
 - (iii) Arithmetic operators
 - (iv) Conditional statement

- g) Explain the following with the help of an example/diagram, if needed:
- (i) Open Source development model
 - (ii) Scheduling in the context of project management software
 - (iii) Mailmerge in MS-Word
 - (iv) Creating tables using a DBMS.

3. (Covers Block 3)

(Marks 6X4=24)

- (a) Explain the following terms in the context of computer networks:
- (i) Packet switching
 - (ii) Half Duplex transmission
 - (iii) Need of computer networks
 - (iv) Channel of data transmission.
- (b) A Multinational company has its sales offices in 100 different countries of the World. It uses a computer network to collect world-wise sale and order data at its head office. What kind of network the company should make for its sales offices and head office? Justify your answer.
- (c) What is TCP/IP? What is an IP address? Explain various components of IP address with the help of an example.
- (d) What is a browser? How does a browser work? How does it communicate with the web server? Explain with the help of an example.
- (e) How can you enhance your search results from Internet? Explain with the help of examples. List four applications of the Internet.
- (f) Explain the following in the context of Internet and its applications, giving their features and uses:
- (i) E-mail
 - (ii) Moodle

Course Code	:	BCS-012
Course Title	:	Basic Mathematics
Assignment Number	:	BCA(1)/012/Assignment/17-18
Maximum Marks	:	100
Weightage	:	25%
Last Date of Submission	:	15th October, 2017 (For July 2017 Session)
	:	15th April, 2018 (For January 2018 Session)

Note: There are 16 questions in the following assignment (each carrying 5 marks), in total carrying 80 marks. Rest 20 marks are for viva-voce. Answer all the questions.

- Q1. For what value of 'k' the points (-k + 1, 2k), (k, 2 - 2k) and (- 4 - k, 6 - 2k) are collinear.
- Q2. Solve the following system of equations by using Matrix Inverse Method.

$$\begin{aligned} 3x + 4y + 7z &= 14 \\ 2x - y + 3z &= 4 \\ 2x + 2y - 3z &= 0 \end{aligned}$$
- Q3. Use principle of Mathematical Induction to prove that:

$$\frac{1}{1 * 2} + \frac{1}{2 * 3} + \dots + \frac{1}{n(n+1)} = \frac{n}{n+1}$$
- Q4. How many terms of G.P $\sqrt{3}, 3, 3\sqrt{3}, \dots$ Add upto 39
- Q5. If $y = ae^{mx} + be^{-mx}$, Prove that $d^2y/dx^2 = m^2y$.
- Q6. Integrate $f(x) = \frac{x}{(x+1)(2x-1)}$ w.r.t x
- Q7. If 1, w, w² are Cube Roots of unity show that $(1+w)^2 - (1+w)^3 + w^2 = 0$.
- Q8. If α, β are roots of equation $2x^2 - 3x - 5 = 0$ form a Quadratic equation whose roots are α^2, β^2
- Q9. Solve the inequality $\frac{3}{5}(x-2) \leq \frac{5}{3}(2-x)$ and graph the solution set.
- Q10. A spherical ballon is being Inflated at the rate of 900 cm³/sec. How fast is the Radius of the ballon Increasing when the Radius is 15 cm.

Q11. Find the area bounded by the curves $x^2 = y$ and $y=x$.

Q12. Investor wants to Invest at most 12000 in saving certificates and National Saving Bonds. She has to Invest at least 2000 in Saving certificates and at least 4000 in National Saving Bonds. If Rate of Interest on Saving certificates is 8% per annum and rate of interest on national saving bond is 10% per annum. How much money should the investor, invest to earn maximum yearly income? Find also the maximum yearly income.

Q13. Reduce the matrix A to triangular form and hence determine its rank.

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

Q14. Find the inverse of $A = \begin{pmatrix} 1 & 6 & 4 \\ 2 & 4 & -1 \\ -1 & 2 & 5 \end{pmatrix}$, if it exists, for the matrix A

Q15. If m times the m^{th} term of an A.P. is n times its n^{th} term, show that $(m + n)^{\text{th}}$ term of the A.P. is zero.

Q16. Verify the following:

i) $\lim_{n \rightarrow 0} \frac{|x|}{x}$ does not exist

ii) $f(x) = |x|$ is continuous at $x = 0$.

Course Code	:	BCSL-013
Course Title	:	Computer Basics and PC Software Lab
Assignment Number	:	BCA(1)/L-013/Assignment/17-18
Maximum Marks	:	100
Weightage	:	25%
Last date of Submission	:	15th October, 2017 (For July 2017 Session)
	:	15th April, 2018 (For January 2018 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

1. Make a power point presentation on Internet which should include topics: *(20 Marks)*
 What is Internet, Impact of Internet on our lives and a brief history of Internet.
 There should be a minimum of 10 slides
 - Insert the relevant picture of Internet on every slide
 - 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 2: Outlook

2. i) Imagine that you are an event manager and want to organize a promotional event (for any product development company. You are required to book a hall in a hotel and other resources for conducting the event, make a contact list, send an email with an attachment (invitation letter) to all invitees from the contact list. Write all the options available to fulfill the task for the event *(6 Marks)*
- ii) What options are available in the Outlook to reschedule the event on some other date due to non availability of the hall *(4 Marks)*

Section 3: Spreadsheet

3. Perform the following procedures in Excel and complete your worksheet *(20 Marks)*
 - i) Calculate the total number of pedestrian killed that occurred during weekdays.
 - ii) Calculate the percent of all weekday pedestrians killed that occurred during each of the given times of day.

- iii) Calculate the total number of pedestrians killed that occurred during weekends.
 - iv) Calculate the percent of all weekday pedestrians killed that occurred during each of the given time of day.
 - v) Calculate the total number of pedestrian killed that occurred during each time of day (i.e., add weekday and weekend pedestrian killed for each time of day).
- Create a bar graph for the percent of all pedestrian killed by the time of day

Pedestrians Killed by Time of Day and Day of Week

Time of Day	Day of Week				Total	
	Weekday		Weekend		Number	Percent
	Number	Percent	Number	Percent	Number	Percent
12:00-2:59 a.m.	188		450			
3:00-5:59 a.m.	142		211			
6:00-8:59 a.m.	346		63			
9:00-11:59 a.m.	281		96			
12:00-2:59 p.m.	382		98			
3:00-5:59 p.m.	601		159			
6:00-8:59 p.m.	694		665			
9:00-11:59 p.m.	470		592			
Total						

Section 4: Word processing

- 4. (a) Create a 3-page document in 3-column format. In the first page you insert an image and write text around the image and in the remaining pages you insert tables. *(6 Marks)*
- (b) Create a table of contents and footnotes for the above document *(4 Marks)*

Section 5: Browsing and Discussion Forum

- 5. Locate, download and analyze information online on advancement in microprocessor technology through advance search option of Google and prepare a 4 pages report and submit *(20 Marks)*

You are required to do the following:

- Review at least 10 articles (write ups)
- Search for the keyword “microprocessor”
- Review the result of search and consider the similarities and differences between different microprocessors.
- While preparing the report, also capture some screens images of microprocessors and include in the report.