2016

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

*Answer any **five** questions.*

1. Find the Eigen values and Eigen vectors of the following matrix :

(a) $A = \begin{bmatrix} 1 & -2 \\ 12 & -1 \end{bmatrix}$

(b) $B = \begin{bmatrix} 3 & 1 & 4 \\ 0 & 2 & 6 \\ 0 & 0 & 5 \end{bmatrix}$

2. Find the Inverse of a Matrix $A = \begin{bmatrix} 7 & -1 & 3 \\ 6 & 1 & 4 \\ 2 & 4 & 8 \end{bmatrix}$.

3. Find the maximum and minimum value of the following functions :

(a) $f(x) = 3x^2 + 6x + 8, x \Sigma R$

(b) $f(x) = x^3 - 3x$ in the interval [0, 2]

4. (a) If $u = e^{xyz}$, prove that $\delta^3 u/\delta x\, \delta y \delta z = (1 + 3xyz + x^2y^2z^2).e^{xyz}$.

(b) If $z = \tan^{-1}(2xy/x^2 - y^2)$, prove that $z_{xx} + z_{yy} = 0$.

5. (a) Find the volume of the greatest rectangular parallelopiped that can be inscribed in the ellipsoid $x^2/a^2 + y^2/b^2 + z^2/c^2 = 1$.

(b) Find the value of x for which the function $(x-2)^3 (x-3)^2$ is a maximum or minimum.

6. (a) Integrate : $\int 2x/\left(x^2+1\right)\left(x^2+3\right)\left(x^2+3\right).dx$.

(b) Evaluate : $\int_0^{\pi/2} \sqrt{1+\sin x}.dx$.

7. Prove that $\int_0^{\pi/2} \log \sin x\,dx = \int_0^{\pi/2} \log \cos x\,dx = -\frac{\pi}{2}.\log 2.$

8. State and prove Leibnitz Theorem.

9. Solve the following :

   (a) $d^2y/dx^2 - 4dy/dx + 3y = e^x . \sin 2x$

   (b) $(D^4 + 2D^2 + 1) . y = x^2 . \cos x$

10. Expand by Maclaurin's theorem $\log (1 + e^x)$ as far as the term x^3.

BCA(I)—Comp.
Fund. (BC – 102)

2016

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

*Answer any **five** questions.*

1. What is Memory ? Distinguish between primary and secondary memory.

2. Discuss the History and Generation of computer in details.

3. What is Output Device ? Discuss the list of output device use in digital computer.

4. What is system software ? Explain the types of operating system.

(Turn over)

5. What is Adder Circuits ? Discuss the types of Adder Circuits ? Draw the truth table of Half Adder and four bit Adder ?

6. What is Duality Principle ? Discuss the postulates of switching algebra ?

7. Convert the following :

   (a) $(175)_{10} = (\quad)_2$

   (b) $(10101110.101)_2 = (\quad)_{10}$

   (c) $(135.125)_{10} = (\quad)_2$

   (d) $(4AB)_{16} = (\quad)_{10}$

   (e) $(165)_8 = (\quad)_{10}$

   (f) $111011 + 110101 = (\quad)_2$

   (g) $11001 - 10011 = (\quad)_2$

   (h) $1111 \times 1011 = (\quad)_2$

   (i) $1111\%\ 11 = (\quad)_2$

   (j) $10101 + 11010 + 11110 = (\quad)_2$

8. Define the term software. Discuss the different types of software in details.

9. Define and distinguish between the following :

(a) Machine level language and assembly level language

(b) Application software and system software

10. Write short notes on any **two** of the following :

(a) Compiler

(b) Characteristics of Computer

(c) Function of Operating System

(d) Switching Circuits

BCA(I) — Bus. Comm. & Inf. Sys. (BC – 103)

2016

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

*Answer any **five** questions.*

1. Explain the term Business Communication along with its various types.

2. Write a comprehensive note on filling and indexing system involved in office procedure.

3. Discuss the various characteristics of communication. Also explain the term

"Organisation Barrier" and "Language Barrier".

4. What do you mean by "Credit Letter" ? Also explain the various posts needed to be taken care of while writing any credit letter.

5. Explain the various methods of upward communication. Also, discuss the various methods as well as demerits of upward communication.

6. What do you mean by Information ? Discuss the classification of information.

7. Define decision making concept. Discuss Herbert Simon model of decision-making.

8. What is the concept of Management Information System (MIS) ? Discuss its importance.

9. What is system analysis ? What is the need of system analysis ?

10. Write short notes on any **two** of the following :

(a) Knowledge based system

(b) System analysis and design

(c) Types of information

(d) MIS goals

BCA(I)—Fund. of Mgt. (BC – 104)

2016

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

*Answer any **five** questions.*

1. Explain the steps involved in the process of Management in detail.

2. What is Departmentation ? Explain line and staff organisation structure.

3. Discuss the nature and purpose of controlling. What are the stepe involved in controlling process ?

4. What do you mean by Human Resource Planning ? Explain the different sources of recruitment.

5. How performance appraisal is a tool for motivating employees ? Enumerate different techniques of performance appraisal.

6. What is Organising ? What are the steps involved in the process of organising ?

7. "A manager must possess the quality of a good leader." Explain it.

8. What is Personality ? What are those factors which determine the personality ?

9. "Communication plays a vital role in the field of Management." Explain it with elaborating on the benefits of Interpersonal Communication.

10. Write short notes on any **two** of the following :

    (a) Management : Art Vs. Science

    (b) Perception

    (c) Recruitment and Selection

    (d) Formal and Informal Group