

F.Y.B.Sc. (I.T.) (Sem-I)

Professional Communication
Con. 228-16. skills

May
2016
UA-4150

Time: 03 hours

Total marks: 100

- N. B. : 1. All questions are compulsory.
2. Figures to the right indicate full marks.

Q. 1. A) Say whether the following statements are true or false: (05)

- i. Silence is not an absence of speech but a positive suspension of speech.
- ii. To be concise means to use as many words for saying the same thing.
- iii. One method to overcome listening barrier is to give full attention to the speaker.
- iv. Complimentary close – in a letter – includes phrases like Respected Sir, Dear Sir/Madam.
- v. Two optional parts of a letter are – date and signature.

Q. 1 B) Fill in the blanks : (05)

- i. The plural of 'knife' is
- ii. One physical barrier to communication is
- iii.communication uses language as a medium.
- iv. The full form of abbreviation: PTO is
- v. A letter sent to the management when one wishes to leave the job is called aletter.

Q. 2 a) Compare oral and written communication. (15)

OR

Q. 2 b) Write notes on any three of the following:

- i. Completeness in Communication
- ii. Correctness in Communication
- iii. Clarity in Communication.
- iv. Signs and symbols as methods of non verbal communication
- v. Importance of dress and appearance in communication.

[TURN OVER

Q. 3 A) Explain the term 'Kinesics' and write a note on the four major (15) types of body language.

OR

Q. 3 B) Write notes on any three of the following –

- a) Gender barriers
- b) Effect of emotions on communication
- c) Causes of Inattention
- d) Poor hearing and Poor presentation as barriers to communication
- e) Status symbol as a barrier.

Q. 4 A) What is the importance of a 'Meeting' in a business organisation. (15)
Discuss the role of a Chairman in the smooth conduct of a meeting.

OR

Q. 4 B) "Wanted an Assistant Manager for Surya Software Ltd., Mulund, Mumbai. Candidate should be first class graduate in Science with computer programming as a Major subject. Preference will be given if a candidate has 1-2 years of experience. Apply with bio-data to The HR Manager."

Q. 5 A) Your office caught fire a week before and this fire has badly damaged your office. You are the Manager – draft a report to be sent to the Board of Directors – Informing them about this accident and giving them details about your preliminary findings. (15)

OR

Q. 5 B) Write notes on any three of the following –

- a) Uses of a dictionary
- b) Guidelines for writing instructions
- c) Importance of an abstract in a report
- d) How to write a summary
- e) List out the common elements found in a report.

Q. 6 A) What are the different forms of presentation? State their general features. (15)

OR

Q. 6 B) Write notes on any three of the following –

- a) Communication with visitors.
- b) Techniques for effective listening
- c) Difference between a face-to-face conversation and a telephone conversation
- d) Importance of listening
- e) Types of reading

Q. 7 A) Write notes on any three of the following - (15)

- a) Transition words
- b) Rules of hyphenation
- c) Importance of spelling-rules in language
- d) Abbreviations
- e) Importance of proof reading

OR

Q. 7 B i) Proof read the following paragraph: (08)

Piracy is the unauthorised duplication of an original recording for commercial gain without the consent of the rightful owner. The packaging of the pirated copies is different from original. The problem of piracy has arisen with rapid advance of technology. New techniques of printing, recording and fixation of broadcast or recorded programmes have emerged making it easy for the pirates to carry on their illegal activities. Piracy is an illegal and criminal activity. "Internet Privacy is one of the key issues that has emerged since the evolution of World Wide Web. Millions of INTERNET users often expose personal information on the internet in order to sign up or register for thousands of different possible things. One prime example is the use of Google Street View and its evolution of online photography mapping of urban areas including residences

[TURN OVER

Con. 228-UA-4150-16

4

AND

Q. 7 B ii) Do as directed -

(07)

1. Give singular forms of : (02 marks)

Boxes; lives

2. Give plural forms of : (02 marks)

Apple; story

3. Give the full form of : (03 marks)

Dr.; R&D; km.

F.Y.B.Sc.(I.T.) (Sem. I)

Con. 229-16. Applied Mathematics - I

UA-4525

May
2016

(3 Hours)

[Total Marks : 100

All Questions are Compulsory.

Figure to the Right indicate marks.

Q.1>Attempt any One:

10

a. Find the Eigen values & Eigen vectors for $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 0 & -3 \\ 3 & -3 & 2 \end{bmatrix}$

b. Derive the formula for n^{th} derivative of $y = \frac{1}{ax+b}$ and hence find n^{th} derivative of

$$y = \frac{1}{(x-1)(x+2)}$$

Q.2>Attempt any Three:

15

a. Find the rank of $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$

b. Show that the matrix $A = \begin{bmatrix} 3i & 2+i \\ -2+i & -i \end{bmatrix}$ is Skew-Hermitian.

c. Find the inverse of $A = \begin{bmatrix} 1 & 2 \\ 2 & 3 \end{bmatrix}$ by using Adjoint method.

d. Solve the following system of equations

$$x + y + z = 7, \quad x + 2y + 3z = 6, \quad x + 3y + 4z = 2$$

[TURN OVER

Q.3>Attempt any Three:

15

a. Verify Cayley Hamilton theorem for $A = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 0 & -1 \\ 3 & 3 & 2 \end{bmatrix}$

b. Show that the Vectors $X_1=(1,1,1)$, $X_2=(1,2,4)$ & $X_3=(2,3,5)$ are linearly dependent.

c. Show that the matrix $A = \begin{bmatrix} 1 & -6 & -4 \\ 0 & 4 & 2 \\ 0 & -6 & -3 \end{bmatrix}$ is derogatory.

d. Is the matrix $A = \begin{bmatrix} 2 & 1 & 3 \\ 1 & 4 & -6 \\ 3 & -6 & -3 \end{bmatrix}$ diagonalizable. Justify.

Q.4>Attempt any Three:

15

a. Find unit normal to the Surface $xy + xyz = 3$ at $(1, 1, 1)$.

b. Find $\text{div}(\text{curl } \vec{F})$ if $\vec{F} = x^2y \mathbf{i} + xy^2 \mathbf{j} + xyz \mathbf{k}$

c. Find $\text{grad}(f)$ at $(1, 2, 0)$ if $f = x^2y + xy^2$

d. Find $\text{div}(\vec{F})$ at $(1,2,3)$ if $\vec{F} = \cos(x)y \mathbf{i} + xy^2 \mathbf{j} + (x+y) \mathbf{k}$

Q.5>Attempt any Three:

15

a. Solve $(x^2+y^2) dx - xy dy = 0$.

b. Solve $\frac{dy}{dx} = \cos(x+y)$.

c. Solve $x^2y dx + xy^2 dy = 0$.

d. Solve $(x+1)\frac{dy}{dx} - y = e^x(x+1)^2$

Q.6>Attempt any Three:

15

a. Solve $(D^2+3D+2)y=e^x$

b. Solve $(D^3+8)y=3$

c. Solve $(D^2+D-2)y=x$

d. Solve $(D^2+D+2)y=\cos 2x$

Q.7>Attempt any Three:

15

a. Verify Lagrange's mean value theorem for $f(x)=2x-x^2$ in $[0,1]$

b. Verify Rolle's theorem for $f(x)=\sin x$ in $[0, \pi]$

c. Find nth derivative of $y=(2x+3)^7$

d. If $u=x^y$ verify $\frac{\partial^2 u}{\partial x \partial y} = \frac{\partial^2 u}{\partial y \partial x}$

————— x x x —————

F.Y.B.Sc. (I.T.) (Sem-I)

May
2016

Fundamental of digital computing.

Con. 230-16.

UA-4591

Total Marks : 100

Duration : 3 Hrs

Note: All Questions are compulsory

- Q. 1
- 1 Write a short note on three basic logic gates 5M
 - 2 Design the logic circuit diagram for half adder 5M
- Q. 2 Attempt any three
- 1 Convert $(10.10)_{10}$ into its equivalent octal and hexadecimal form 5M
 - 2 Add the given binary numbers 11011, 10110 and 00111 5M
 - 3 Subtract the binary number 00101 from the binary number 10000 5M
 - 4 Write a short note on error detecting and correcting codes 5M
- Q. 3 Attempt any three
- 1 Why NAND gate is known as universal gate? 5M
 - 2 Write a short note on XOR gate 5M
 - 3 Write and prove De Morgan's Law for Boolean operations 5M
 - 4 Explain the method of simplifying a Boolean equation with four variables using Karnaugh map. 5M
- Q. 4 Attempt any three
- 1 Design the logic circuit for binary to excess-3 code converter 5M
 - 2 Implement the following function $F(a, b, c, d) = \Sigma (0,1,3,5,7,8,9,10,15)$ using multiplexer 5M
 - 3 What is encoder? Explain the concept of encoder with a logic circuit diagram 5M
 - 4 Describe the concept of demultiplexer with an example 5M
- Q. 5 Attempt any three
- 1 Design the logic circuit of RS Flip-Flop using NAND gate 5M
 - 2 List and explain the different types of shift registers. 5M
 - 3 Explain the concept of synchronous Counter with an example circuit diagram 5M
 - 4 Design the logic circuit of T Flip-Flop. 5M
- Q. 6 Attempt any three
- 1 List and explain the major components of a hard disk. 5M
 - 2 Write a short note on cache memory 5M
 - 3 Draw and explain the basic components of a digital computer system. 5M
 - 4 Explain the working method of Keyboard as an input device 5M
- Q. 7 Attempt any three
- 1 List down the various features of a real time operation system. 5M
 - 2 Explain the concept of multitasking operating system. 5M
 - 3 What are the advantages of using Windows operating system? 5M
 - 4 Describe the history of Linux operating system. 5M

E.Y.B.Sc.(I.T.) (Sem-I)
Electronic & Communication Technology

May
2016

Con. 231-16.

UA-4653

(3 Hours)

[Total Marks : 100

- | | | |
|------|---|---|
| Q.1 | a) Derive the equation for total power used in transmitting amplitude modulated wave. | 5 |
| | b) Discuss the operation of a semiconductor diode in reverse bias. | 5 |
| Q.2 | Attempt any three question from the following. | |
| | a) With the help of neat circuit diagram and proper input output waveforms, explain the working of full wave rectifier using pn junction diode. | 5 |
| | b) What is an extrinsic semiconductor? Explain p-type semiconductors. | 5 |
| | c) Draw the input characteristics of a transistor connected in CE configuration and explain the various regions of operation. | 5 |
| | d) Explain how can a transistor be used as a switch. | 5 |
| Q.3 | Attempt any three question from the following. | |
| | a) What do you mean by Darlington pair? | 5 |
| | b) Write a short note on DC amplifiers. | 5 |
| | c) Explain the following terms : i) Voltage gain ii) Current amplification factor | 5 |
| | d) With the help circuit diagram explain single stage RC coupled amplifier. | 5 |
| Q.4 | Attempt any three question from the following. | |
| | a) Explain Barkhausen criteria for oscillators. | 5 |
| | b) With the help of circuit diagram explain monostable multivibrator using 555 timer. | 5 |
| | c) With the help of circuit diagram explain RC phase shift oscillator. | 5 |
| | d) Calculate the time period of astable multivibrator, if $R_A=33\text{ K}\Omega$, $R_B=4.7\text{ K}\Omega$ and $C=0.22\text{ }\mu\text{F}$. | 5 |
| Q.5 | Attempt any three question from the following. | |
| | a) Explain a typical radio transmitter system using block diagram. | 5 |
| | b) Explain generation of SSB using filter method. | 5 |
| | c) What is the need for modulation in communication system? | 5 |
| | d) Explain the following terms: i) Balanced modulator ii) Modulation index | 5 |
| Q.6 | Attempt any three question from the following. | |
| | a) Differentiate between AM and FM systems. | 5 |
| | b) What do you mean by sampling? State and explain sampling theorem. | 5 |
| | c) Write a note on pulse width modulation (PWM). | 5 |
| | d) Explain Frequency Division Multiplexing in detail. | 5 |
| Q.7. | Attempt any three question from the following. | |
| | a) What is digital communication? Explain FSK in detail. | 5 |
| | b) With the help of a suitable diagram, explain the propagation of light in optical fibres. | 5 |
| | c) Write a short note on LASER. | 5 |
| | d) Explain the following terms: i) critical angle ii) optical detectors | 5 |

F.Y.B.Sc.(I.T.) (Sem-I)

Introduction to C++ programming.

Con. 232-16.

UA-4030

May
2016

- Q.1) (A) Answer the following (10)**
- (1) Define Algorithm . What are the characteristics of algorithm ?
 - (2) Explain and draw different symbols of flowchart. Write advantages and disadvantages of flowchart
- Q.2) (A) Answer the following (any 3) (15)**
- (1) How to declare variable ? Write down rules to name the variable , Explain with example.
 - (2) Write note on Program Design Process
 - (3) Draw flowchart to check number is positive or negative .
 - (4) Write algorithm to display reverse of the number.
- Q.3) (A) Answer the following (any 3) (15)**
- (1) Write a note on insertion and extraction operator with example .
 - (2) What are data types in c++ ?
 - (3) State following statements are valid or not
1) B*10 2) Emp name 3) Stud_no2 4) P.F.Number 5) marks
 - (4) What do you mean by reference variable ? Explain with example.
- Q.4) (A) Answer the following (any 3) (15)**
- (1) Explain simple 'if' statement , 'if...else' statement , and 'nested if' statement with syntax and example
 - (2) Explain 'while' loop with syntax and example .
 - (3) Write a program in c++ to display series of odd numbers from 1 to 100 .
 - (4) Explain 'break' and 'continue' statement with example.
- Q.5) (A) Answer the following (any 3) (15)**
- (1) Write a note on function recursion.
 - (2) Explain getchar() , puts() , getch() , gets() , putchar() functions.
 - (3) explain with example , the difference between call by value and call by reference for function calls
 - (4) Write a program in c++ to check number is prime or not using function .
- Q.6) (A) Answer the following (any 3) (15)**
- (1) Write a note on pointers
 - (2) What is an array ? How do you initialize and access elements in an array ?
 - (3) How to pass array elements to a function ?
 - (4) Write a program in c++ to input 20 elements in array , find out sum and average of element
- Q.7) (A) Answer the following (any 3) (15)**
- (1) Explain any two string handling functions with the help of examples .
 - (2) Write a note on structures . Explain with example .
 - (3) what is a vector ? How do you access elements in vectors ?
 - (4) Write a program in c++ to search given character in the given string