SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

Q. 1 a) Define analog signal.
    b) Define radix of any number system.
    c) Define odd parity.
    d) Define commutative law of boolean algebra.
    e) Prove \( A + B = \overline{A} \cdot \overline{B} \)
    f) Find 2's complement of \((1000)_2\).
    g) Define parallel binary adder.
    h) When all inputs of AND gate is high, its output is __________.
    i) Define X-NOR gate.

SECTION-B

Note: Short answer type questions. Attempt any ten parts

Q. 2 i) Differentiate between analog & digital signal.
    ii) Do the following conversions:
        (a) \((101.10)_{10} = (?)_2\)
        (b) \((10101)_2 = (?)_{\text{Gray}}\)
iii) Explain how NOR gate can be used as OR gate.

iv) Simplify \( \overline{AB} (\overline{A} + B)(\overline{B} + B) \)

v) Explain 4:1 multiplexer.

vi) Perform subtraction
   a) \((16)_{10} - (5)_{10}\) [using 1's complement]
   b) \((10)_{10} - (14)_{10}\) [using 2's complement]

vii) Convert \(Y = (A+B) (\overline{B} + C)\) into standard POS form.

viii) Explain 2-bit magnitude comparator.

ix) Construct 7-bit even parity Hamming code for message data \((1010)_2\).

x) Explain J-K flip flop.

xi) Explain 3-bit asynchronous counter.

xii) Differentiate between latch and flip-flop.

xiii) Explain decade counter.

xiv) Explain 3-bit ring counter in detail.

xv) Explain PIPO shift register.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.3 What is race around condition? How it is overcome?

Q.4 Simplify the expression using K-map realize using NOR gate only.

\[ Y = \overline{pM (0,1,3,5,8,10,11)} \cdot d(2,13) \]

Q.5 Draw the circuit of 4-bit synchronous counter and explain its working.

Q.6 Explain PISO shift register in detail.

Q.7 Explain the following:-
   a) NAND & NOR gate as universal.
   b) Half adder and full adder.
Q.1 a) The radix of the octal system is _______.
   b) _______ is a universal gate.
   c) Define digital Signal.
   d) Define even parity.
   e) Give one example of non-weighted code.
   f) State Demorgan's theorem.
   g) How many variables are eliminated with QUADS in K-maps?
   h) Define standard POS form?
   i) Draw truth table for full adder.

Q.2 i) Give advantages of Digital Signal over analog signal.
   ii) Convert \((52.73)_{10}\) into Octal number system.
iii) With the help of truth table explain NAND and NOR gates.

iv) Covert gray code to binary code for
   a) 110101    b) 0001101

v) Prove that \((A + B)(A + C) = A + BC\).

vi) Draw truth table for the function \(Y = \bigoplus M \{0, 2, 6, 7\}\).

vii) Explain 2-bit magnitude comparator.

viii) Explain 1:8 DEMUX.

ix) Perform BCD Addition \(- (728)_{10} + (199)_{10}\).

x) Convert \(Y = [AB + BC + A]\) to standard SOP form.

xi) Explain BCD to decimal decoder.

xii) Explain race around condition.

xiii) Explain MOD-5 counter.

xiv) Explain 4-bit ring counter.

xv) Differentiate between combination and sequential circuit.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10 = 30

Q.3 Simplify the expression using K-map and realize using NAND gate.
\[ Y = \bar{a}m \{0, 1, 3, 5, 8, 10, 11\} + d \{2, 13\} \]

Q.4 Explain 8:1 MUX with truth table and diagram.

Q.5 Explain master-slave Jk flip-flop with truth table and waveforms.

Q.6 Explain BCD to 7 segment decoder.

Q.7 Explain 3-bit UP/DOWN counter.
SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

Q.1  a) What is byte.
    b) What is Latency.
    c) What is band width.
    d) What is Noise.
    e) Write advantage of Data communication.
    f) Mention various components of data communication.
    g) What is multiplexing. What are its types.
    h) What is TDM.

i) Define ASIC, PSIC
j) Define AM, PM.
k) Define LAN, MAN, WAN.
l) Define Topology.
m) Explain star and Ring topology.
n) Write properties of coaxial cable
o) Write characteristics of microwave.
p) Define PCM, DM.
q) Mention transmission modes.
r) What is throughput.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

Q.2  i) Explain distributed processing.
    ii) Draw block diagram of delta modulation.
iii) Explain data transmission modes.
iv) Explain Network category.
v) Explain Noise and attenuation.
vi) Explain various components of data communication.
vii) Explain various transmission modes.
viii) Explain FDM and WDM.
ix) Write short note on AM and FM.
x) Write short note on ASIC & FSIC.
xi) Write properties of UTP cable.
xii) Difference between analog and digital signal.
xiii) Explain various transmission impairments.
xiv) Explain Analog to Analog Transmission.
xv) Explain performance of data transmission.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.3 Explain delta modulation with its components.
Q.4 Explain forward error correction versus retransmission.
Q.5 Explain unguided media with their characteristics.
Q.6 Explain various topology of network.
Q.7 Explain digital to digital conversion with coding and schemes.

or

Explain transmission media in detail.
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3rd Sem. / Comp IT
Subject : Data Communication

Time : 3 Hrs.       M.M. : 100

SECTION-A
Note: Very Short Answer type questions. Attempt any 15 parts.   (15x2=30)

Q.1   a) What are the possible analog to analog modulation techniques.
     b) Between AM and FM, which one gives better noise immunity.
     c) What are the possible digital to analog modulation techniques.
     d) What do you mean by Data communication.
     e) List the various guided media used for transmission.
     f) What is analog data.
     g) Define serial Transmission.
     h) Define signals.
     i) Define Bandwidth.
     j) What are the causes of impairment.
     k) What is throughput.
     l) Define latency.
     m) Define Jitter.
     n) What are analog signal.
     o) Define MAN.
     p) Define Redundancy.
     q) Differentiate between error detection and error correction.
     r) Write down any two error correction methods.

SECTION-B
Note: Short answer type questions. Attempt any ten parts     10x4=40

Q.2   i) Explain five components of a data communication system.
     ii) What are the advantages and disadvantages of optical fiber.
     iii) Discuss in short twisted pair cable.
     iv) Briefly discuss the time division multiplexing.
     v) 
     vi) 
     vii) 
     viii) 
     ix) 
     x) 
     xi) 
     xii) 
     xiii) 
     xiv) 
     xv) 
     xvi) 
     xvii) 
     xviii) 
     xix) 
     xx)
v) What do you mean by PCM. Explain in brief.
vi) Explain digital to digital conversion coding & schemes?
vii) Explain various topologies.
viii) Give the general principles of error detection and correction using cyclic redundancy check.
ix) Differentiate between LAN and WAN.
x) What do you understand by ASK. Explain in brief.
xi) What are the different factors used for performance measure of data transmission.
xii) Compare serial and parallel data transmissions in term of speed of data transfer.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30
Q.3 Explain FSK and PSK with the help of neat and clean diagram.
Q.4 How amplitude modulation is different from frequency modulation.
Q.5 Explain following modes of transmission in detail :
   a) Simplex mode
   b) Half duplex mode
   c) Full duplex mode
Q.6 Discuss error detection through parity bit. Also discuss how block parity is used to detect double errors and correct single errors.
Q.7 What is unguided media? What are the different types of unguided media? Explain them in detail.
(1) Define Identifier.
(2) Discuss 'C' Keywords.
(3) Language is developed by
(4) Where we use goto statement?
(5) What are global variables?
(6) Define Recursion.
(7) Define Array.
(8) What is call by value.
(9) What are relational operators used in 'C'.
(10) Define Algorithm.

Note: Very short answer type questions. Attempt any 15 parts.

SECTION-A

Time: 3 Hrs.
M.W. : 100

Subject: Programming in C

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SECTION-C

(4) 120825

(4) Opening and closing a file.
(5) Program to find the factorial of a number.
(6) Enumerated data type.
(7) Write short note on: (any two)
  a) Structure
  b) What is structure? How data is entered into
  c) What do you mean by function? State its
  d) Explain the difference between structure and
  e) Program.

Note: Long answer type questions. Attempt any three

3x10=30
Discuss the history of C language.

4. Explain various types of operators used in development of program.

Q.2 Discuss various steps involved in parts of program.

Note: Short answer type questions. Attempt any ten.

SECTION B

Define function

(i) double variable.
(ii) What is the difference between float and
(iii) Define subscript.
(iv) What are conditional statements?
(v) Define file.
(vi) Define Pointer.
(vii) What are rules of naming variables in C?
(viii) What are basic data types in C?
SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

Q.1  
   a) Define algorithm?
   b) What is program compilation.
   c) Define program debugging.
   d) Define syntax error.
   e) Name the functions used for file input in “C”.
   f) Define Data Type?
   g) What is the purpose of do-while loop.
   h) What is go to statement.
   i) How structure is declared.
   j) Write two differences between structure and array.
   k) Define pointer to pointer.
   l) What is the difference between & and * operator.
   m) What is array initialization.
   n) Define function prototype?
   o) What is the use of return statement?
   p) Can there be a function without main()?
   q) What is the purpose of if else statement.
   r) Write the use of header files?

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

Q.2  
   i) Write down features of good algorithm?
   ii) Write down the steps in development of a program.
iii) Discuss the file reading operation in brief.
iv) What is string. How it is similar to arrays?
v) What are the various parts of C program?
vi) Write a short note on call by value with suitable example.
vii) What is pointer. Explain their importance.
viii) Differentiate between switch and break statements.
ix) Write short note on for loop?
x) What is array? What are its benefits?
xi) Write a short note on multi dimensional array.
xii) Write down the differences between variable and constant.
xiii) What are the differences between structure and union.
xiv) What are header files? Explain any two commonly used header files in ‘C’.
xv) What are different types of expressions.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.3 What is flowchart? Draw a flowchart to find average of 10 numbers.
Q.4 Why operator is used. Explain various types of operators with suitable example available is C language.
Q.5 Write a program in C to find biggest of three numbers.
Q.6 Explain various string related functions.
Q.7 Write short note on:
   a) Array of pointers
   b) Array of structures
   c) Unions
SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

Q.1 a) Name any two operating systems.
    b) Define assembler.
    c) Define process
    d) Name any one multi user operating system
    e) What is process control block
    f) Define schedulers
    g) Name any two scheduling algorithms
    h) Define semaphores
    i) What is a loader
    j) What is the command to create a directory in MS-DOS
    k) Name any two input devices
    l) What is swapping
    m) Write short note on internal fragmentation
    n) What do you mean by multi tasking.
    o) Hard-disk is secondary memory. (T/F)
    p) Give name of two external commands of MS-DOS
    q) What are batch files
    r) What is the use of “Copy con” command in MS-DOS.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

Q.2 i) How working of interpreter is different from compilers.
ii) Write about history of MS-DOS.

iii) Write features of windows operating system.

iv) Explain any two external commands of MS-DOS.

v) Explain features of LINUX operating system.

vi) Explain the functions of various types of schedulers.

vii) Explain first come first serve scheduling algorithm.

viii) Write short note on Buffering.

ix) What is the use of paging.

x) Write short note on dedicated devices.

xi) Explain the concept of virtual memory in short.

xii) What are the functions of operating systems.

xiii) List necessary conditions for dead-locks.

xiv) Difference between copy and move command in MS-DOS.

xv) What is a Dead-locks.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.3 Explain various types of output devices.

Q.4 What do you mean by file organization? What are the different types of file organizations.

Q.5 Define process. Explain various process states in detail.

Q.6 Explain the concept of paging in detail.

Q.7 Short notes on
   a) File structure of MS-DOS.
   b) Control panel of windows.
3rd Sem. / Comp, IT, GE  
Subject: Operating System

Time: 3 Hrs.  M.M.: 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2 = 30)

Q.1 a) Define Operating System?
   b) What is turnaround time?
   c) What is compiler?
   d) Write down two functions of a loader.
   e) Write down the difference between single user and multiuser operating system.
   f) What is the difference between process and program.
   g) Define job scheduler.
   h) Define Non-preemptive scheduling.

   i) What is context switching?
   j) Define process.
   k) Define deadlock.
   l) Define DOS?
   m) Define an icon in windows?
   n) What are output devices?
   o) What is meant by field and Record?
   p) Define sequential file access method.
   q) Define Swapping?

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4 = 40

Q.2 i) Define loader? Write down the various types of loaders? Briefly explain any two types of loaders?
ii) Differentiate between compiler and interpreter?
iii) Write short notes on following :-
   (a) Network operating system.
   (b) Distributed operating system.
iv) What are the various performance criteria used by schedulers?
v) Write short notes on :-
   (a) Shortest job first scheduling algorithm.
   (b) Round Robin Scheduling algorithm.
vi) Write short note on DOS internal commands and external commands?
vii) Write down the various I/O Management functions.
viii) Differentiate between Buffering and spooling.
ix) Write short notes on following :-
   (a) Dedicated Devices.
   (b) Shared Devices.
x) Why do we need storage devices.

xi) Discuss hierarchal file structure.

xii) What are various file management functions.

xiii) Write short note on segmentation.

xiv) Discuss in brief virtual memory managements.

xv) What are the various memory management functions?

SECTION-C

Note: Long answer type questions. Attempt any three questions.

Q.3 Explain in detail the various functions of operating system?

Q.4 Discuss the methods for handling deadlocks?

Q.5 What are the main features of DOS? Also explain Directory structure of DOS?

Q.6 Discuss the various page replacement policies in detail.

Q.7 Explain any five file operations?