S – 2649

Total No. of Pages : 12

Seat No.	

S.E. (Computer Science & Engineering) (Semester - IV) Examination, December - 2015

APPLIED MATHEMATICS (Online)

Sub. Code : 63524

Day and Date : Monday, 07 - 12 - 2015 **Total Marks : 50**

Time : 12.30 p.m. to 01.30 p.m.

Instructions : **1) Attempt any 50 questions from Q1 to Q60.**
2) All questions carry 1 Mark.

1) The range of the correlation coefficient is?

a) (–1, 1) b) (0,1)

c) [–1,+1] d) None of these

2) For estimating value of variable X

a) Regression equation of Y on X is used

b) Regression equation of X on Y is used

c) Both Regression equations of Y on X and X on Y are used

d) None of these

3) Which of the following can not be the possible value of a correlation coefficient?

a) r = 1.99 b) r = 0

c) r = – 0.73 d) r = –1.0

4) Which of the following indicates a strong negative correlation?

a) r = –0.846 b) r = –0.793

c) r = 0.913 d) r = 0.45

P.T.O.

5) Which of the following indicates negative correlation of lower degree?

a) – 0.23 b) – 0.58

c) – 0.99 d) – 0.09

6) With the help of correlation coefficient one can study

a) Relation ship between any two attributes

b) Relation Ship between any two Variables

c) Relation ship of more than two variables

d) None of these

7) If equation of the line of regression of y on x is with positive slope

a) Correlation coefficient is positive

b) Correlation coefficient is negative

c) No correlation

d) None of these

8) If equation of the line of regression of y on x is with negative slope

a) Correlation coefficient is positive

b) Correlation coefficient is negative

c) No correlation

d) None of these

9) If the regression coefficient of X on Y and Y on X are –0.5 and –0.5 respectively then the

a) 1 b) 0.5

c) –0.5 d) –0.25

10) The principal of least squares state that

a) The sum of square of all points from curve is minimum

b) The sum of square of all points from curve is maximum

c) The sum of square root of all points from curve is minimum

d) The sum of square root of all points from curve is maximum

11) To fit the straight line y = mx + c to n observations, the normal equations are

a) $\sum y = n\sum x + \sum cm$, $\sum xy = c\sum x^2 + c\sum x$

b) $\sum y = c\sum x + m\sum n$, $\sum xy = c\sum x^2 + m\sum x$

c) $\sum y = m\sum x + nc$, $\sum xy = c\sum x^2 + c\sum x$

d) None of these

12) To fit $y = ab^x$ by least squares method, normal equations are :

a) $\sum y = nA + B\sum x; \sum xy = A\sum x + B\sum x^2$ where y = logy, A = loga & B = logb

b) $\sum y = nB + A\sum x; \sum xy = B\sum x + A\sum x^2$ where y = logy, A = loga & B = logb

c) $\sum y = nA + B\sum x^2; \sum xy = A\sum x + B\sum x^2$ where y = logy, A = loga & B = logb

d) None of these

13) Given $\begin{matrix} x & 0 & 1 & 2 \\ y & 0 & 1.1 & 2.1 \end{matrix}$, then the straight line of best fit y = a+bx then a = ... & b = ...

a) a = 1.0167, b = 0.05

b) a = 0.0167, b = 1.05

c) a = 0.0167, b = 0.05

d) a = 1.0167, b = 1.05

14) In $y = a + bx, \sum x = 50, \sum y = 80, \sum xy = 1030, \sum x^2 = 750$ and n = 10, then a = ...& b = ...

a) a = 0.7, b = 1.26
b) a = 1.7, b = 2.23
c) a = 0.78, b = 0.26
d) a = 1.7, b = 1.26

15) The equations of regression lines are y = 0.5 x + a and x = 0.4y + b then the correlation coefficient is

a) $\sqrt{0.2}$
b) 0.45
c) $-\sqrt{0.2}$
d) 0.63

16) If the correlation coefficient is zero, the two regression lines are

a) Parallel
b) Perpendicular
c) coincident
d) inclined at 45°

17) To fit a normal distribution, the parameters required are

a) Mean & S.D.
b) Mean & Variance
c) Mean
d) S.D. & Variance

18) F(x) = kx in $0<x<1$ is valid PDF if k =

a) 1
b) 2
c) 3
d) 4

19) For standard normal variate z, $P(-0.72<z<0)$ is

a) 0.264
b) 0.235
c) 0.356
d) 0.025

20) If the PDF of x is $f(x) = kx(1-x)$, $0<x<1$ then k is

a) 2/9 b) 3/5

c) 1/9 d) 5/7

21) If a coin is tossed 6 times in succession, the probability of getting at least one head is

a) 1/64 b) 3/32

c) 63/64 d) 1/2

22) If a random variable x follows Poisson distribution s.t. $P(x=1)=P(x=2)$, then mean of the distribution is

a) 2 b) 3

c) 4 d) 1

23) A coin is tossed until a tail appears or at the most five times. Given that the tail does not appear on the first two tosses, the probability that the coin will be tossed 5 times is

a) 1/2 b) 3/5

c) 1/3 d) 1/4

24) In a certain manufacturing process it is known that on an average, 1 in every 100 items is defective. What is the probability that 5 items are inspected before a defective item is found?

a) 0.0096 b) 0.96

c) 0.096 d) None of these

25) The probability of having at least one tail in 4 throws with a coin is

a) 3/8 b) 1/2

c) 1 d) None of these

26) 8 coins are tossed simultaneously. The probability of getting at least 6 heads is

a) 57/64 b) 229/256

c) 7/64 d) 37/256

27) In rolling two fair dice, the probability of getting equal number or number with an even product is

a) 6/36 b) 30/36

c) 27/36 d) 3/36

28) The inequality between mean and variance of Binomial distribution which is true is

a) Mean < Variance b) Mean =Variance

c) Mean > Variance d) Mean *Variance = 1

29) Throw two dice over and over until you roll a double six; X = the number of throws.

a) Finite b) Discrete Infinite

c) Continuous d) None of these

30) Take a true-false test with 100 questions; X = the number of questions you answered correctly.

a) Finite b) Discrete Infinite

c) Continuous d) None of these

31) Select a group of 50 people at random; X = the exact average height (in m) of the group.

a) Finite b) Discrete Infinite

c) Continuous d) None of these

32) The probability that a certain machine will produce a defective item is 1/4. If a random sample of 6 items is taken from the output of this machine, what is the probability that there will be 5 or more defectives in the sample?

a) 19/4096 b) 1/4096

c) 4/4096 d) 18/4096

33) The mean of Binomial distribution with n observations and probability of success p, is

a) pq b) np

c) √np d) √pq

34) Fuzzy set was first developed in the year:

a) 1964 b) 1965

c) 1967 d) 1970

35) Characteristic function maps element of X to the element of the set

a) [0,1] b) (0,1)

c) {0,1} d) none of these

36) When x is declared to be a member of A then $\chi_A(x)$ equals

a) 1 b) 0

c) [0,1] d) {0,1}

37) The support of fuzzy set A for which $\alpha = 0$ is exactly same as

a) strong α-cut b) support of A

c) height of A d) α-cut

38) If $A = \frac{0.4}{v} + \frac{0.2}{w} + \frac{0.6}{x} + \frac{0.81}{y} + \frac{0.98}{z}$. Then $|A|$ equals to

a) 2.90 b) 2.99

c) 3.00 d) 2.98

39) The range of S (A,B) is

a) $0 < S(A,B) < 1$ b) $0 < S(A,B) \leq 1$

c) $0 \leq S(A,B) \leq 1$ d) $0 \leq S(A,B) < 1$

40) If A is a Fuzzy set given by $A(x) = \frac{x}{x+2}$, then $\bar{A}$ equals to

a) $-\frac{x}{x+2}$ b) $\frac{x}{x+2}$

c) $\frac{2}{x+2}$ d) $-\frac{2}{x+2}$

41) Concept of ..... & ..... acts as a bridge by which fuzzy sets and crisp sets are connected

a) Height & support b) Normal & Subnormal

c) α Cuts and strong α cuts d) None of these

42) If $A(x) = 2^x; x \in \{0,1,2\}$ then A (x) is

a) Continuous fuzzy set b) Discrete fuzzy set

c) Discontinuous fuzzy set d) None of these

43) If $\mu(x)$ is a membership grade function in a fuzzy set A then members will be

a) Having $\mu(x) \leq 0.5$ b) Having $\mu(x) = 0.5$

c) Having $\mu(x) \leq 0.5$ d) None of these

44) Consider the statements

I) The support of fuzzy set is a crisp set

II) $\propto$ –cut of fuzzy set is fuzzy set

a) Both I) & II) are true

b) I) is true & II) is false

c) Both I) & II) are true

d) I) is false II) is true

45) Which of the following is a major problem with fuzzy logic.

a) It is discrete

b) It has low respectability

c) It has too many widespread use

d) None of these

46) The concept of fuzzy logic was first introduced by

a) Dennis Ritchie

b) Stuart Hirshfieid

c) Rich Decher

d) Lofti Zadeh

47) The intersection of two fuzzy sets is calculated by taking the _____ of corresponding membership values.

a) Minimum

b) Maximum

c) Average

d) Difference

48) The union of two fuzzy sets is calculated by taking the _____ of corresponding membership values

a) Minimum

b) Maximum

c) Average

d) Difference

49) A fuzzy set A: X→E([0,1]) where E([0,1]) is the family of all closed intervals is called

a) Level 2 fuzzy set

b) Level 2 type 2 fuzzy set

c) Type 2 fuzzy set

d) Interval valued fuzzy set

50) Let $A(x)=\frac{x}{x+2}$ be a fuzzy set defined on X= {0,1,2,3,4} then level set of A is

a) {0,1,2,3,4}

b) {0.333,0.5,0.6,0.667}

c) {0,0.333,0.5,0.667}

d) {0,0.333,0.5,0.6,0.667}

51) The support of a fuzzy set $A(x)=\frac{x}{x+2}$ where X= {0,1,2,3,4} is

a) {0,2,3,4}

b) {2,3,4,5}

c) {1,2,3,4}

d) {0,0.33,0.5,0.6,0.667}

52) If $A(x)=\frac{x}{x+2}$; where x∈ {0,1,2,3,4}. Then |A| is

a) 2.1

b) 0

c) 4.5

d) None of these

53) For fuzzy set A & B, we have $A \subseteq B$ then

a) B(x) = 1

b) $A(x) \leq B(x)$

c) $A(x) \geq B(x)$

d) A(x) = 1

54) Let $A(x)=\frac{x}{x+5}$ for then level set of A is X={0,1,2,3,4}

a) {1,2,3,4}
b) {0.167,0.286,0.375,0.444}
c) {0.167,0.286,0.275,0.444}
d) {0,1,2,3,4}

55) If $A(x)=\frac{x}{x+2}$; where $x \in \{0,1,2,3,4\}$, then ${}^{0.5}A$

a) {0,1,2} b) {2,3,4}
c) {0,1,2,3,4} d) {2}

56) If $A(x) = 2^x$ for X=[0,10] then ${}_{\alpha}A$ is

a) $\left[0,\frac{\log\alpha}{\log 2}\right]$

b) $\left[\frac{\log\alpha}{\log 2},10\right]$

c) $\left[0,\frac{\log 1/\alpha}{\log 2}\right]$

d) $\left[\frac{\log 1/\alpha}{\log 2},10\right]$

57) If $A(x)=\frac{x}{2x+1}, B(x)=\frac{x}{x+2}\ x \in (0,1,2,3)$ then $|A \cap B|$ is

a) 3.4 b) 1.1616
c) 0.82 d) 1

58) If $A(x) = 2^x$ & $B(x) = \frac{x}{x+2}$ for $x \in \{0,1,2,3\}$ then S(A,B) is

a) 1.62 b) 1.433

c) 1.2 d) 0.09553

59) After adding all the membership grades of the discrete fuzzy set A, we get

a) Scalar Cardinality b) Fuzzy Cardinality

c) Level set of A d) Special fuzzy set

60) If A(x)≤B(x) for all x belongs to A and B then the degree of subsethood S(A,B) is

a) 1 b) 0.5

c) 0 d) none of these

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Total No. of Pages : 12

Seat No.	

S. E. (Computer Science & Engg.) (Semester - III) Examination, December - 2015

DISCRETE MATHEMATICAL STRUCTURES (New) (Online)

Sub. Code : 63525

Day and Date : Wednesday, 09 - 12 - 2015 **Total Marks : 50**

Time : 12.30 p.m. to 01.30 p.m.

Instructions : 1) Attempt any 50 questions from Q.1 to Q.60

2) All questions carry 1 mark each.

1) $(\neg P \rightarrow Q) \rightarrow (Q \rightarrow P)$ is

a) FTTT b) TTTT

c) TTFT d) TFTF

2) If Conjunction is False then set of formulas H1, H2,..., Hm is said to be_____.

a) Consistent b) Inconsistent

c) Valid d) Invalid

3) A K-map structure is an area which is subdivided into___cells for a Boolean Function of n variables.

a) n b) 2^n

c) 2^(2^n) d) 2^(n+1)

4) A ___ is an ordered set which consists of a fixed number of objects.

a) Vector b) Batch

c) Plex d) None of these

P.T.O.

5) Set inclusion is _____.
   a) Reflexive & Symmetric
   b) Symmetric & Transitive
   c) Reflexive & Transitive
   d) Reflexive, Symmetric & Transitive

6) Relation R is defined on N-set of natural numbers (including 0) by R = {<a,b>|a,b are both odd} is _____.
   a) Reflexive
   b) Symmetric
   c) Transitive
   d) Antisymmetric

7) Every chain is a _____ lattice.
   a) Complemented
   b) Complete
   c) Bounded
   d) Distributive

8) If homomorphism g:X→Y is one to one onto then g is called _____.
   a) Epimorphism
   b) Monomorphism
   c) Isomorphism
   d) Endomorphism

9) If in a monoid <M,*,e> every element is invertible then the monoid is called a _____.
   a) Inverse
   b) Group
   c) Submonoid
   d) Semigroup

10) The relationship between TE & TL of sink node in PERT graph is _____.

a) TE=TL
b) TE>=TL
c) TE<=TL
d) None of these

11) What is the probability of getting sum less than 9 when two dice was rolled?

a) 21/36
b) 13/18
c) 1/2
d) 5/12

12) Any graph which contain some parallel edges is called _____.

a) Directed Graph
b) Multigraph
c) Isomorphic Graph
d) Simple Graph

13) A path in a digraph in which the edges are all distinct is called _____.

a) Edge Simple
b) Node Simple
c) Cyclic Path
d) None of these

14) A group <G,*> in which operation * is commutative is called _____.

a) Group
b) Subalgebra of G
c) Abelian Group
d) All

15) What is the probability of getting even number or 1 as event, when dice is rolled.

a) 2/3

b) 3/6

c) 1

d) None of these

16) If node has degree 2 then node has_____.

a) 1 subtree

b) 2 subtrees

c) 2 trees

d) 2 leaf nodes

17) If A={1,2,3,4} B={1,4,5}, then A+B is _____.

a) {1,2,3,4,5}

b) {1,3,5}

c) {1,4,5}

d) {2,3,5}

18) Following conlusion is valid

a) H1:P→Q, H2:P, C:Q

b) H1:P→Q, H2:¬P, C:Q

c) H1:P→Q, H2:Q, C:P

d) H1:¬P,H2:PvQ, C:P

19) Given Boolean algebra <L,*,+,',0,1>

i) Set L contains only 2 elements

ii) Operation * & + are distributive over each other.

Which is true

a) i) b) ii)

c) Both d) Neither i) or ii)

20) If <G,*> is a group then which of the following is false

a) a*b=a*c ⇒ b=c

b) a*c=b*c ⇒ a=b

c) a*b=b*a

d) (a*b)^-1=b^-1*a^-1

21) Relation R defined on N-set of natural numbers (including 0) by R = {<a,b>|(a-b) is divisible by 5} is _____.

a) Reflexive

b) Symmetric

c) Transitive

d) All

22) The notation containing operand in between operator is called as ____notation.

a) Suffix

b) Infix

c) Prefix

d) None of these

23) A lattice is called ____if each of it's non-empty subsets has a LUB & GLB.

a) Complemented

b) Complete

c) Distributive

d) All

24) Total degree of isolated node is _____.

a) 1

b) 0

c) Indegree of node

d) Outdegree of node

25) (X1*X2) + (X'2*X'3) + (X1*X3) this expression symmetric in _____.
   a) X2,X3 and X1,X3
   b) X1,X2 and X2,X3
   c) X1,X2 and X1,X3
   d) None of these

26) Which of the following is a partition of set S={1,2,3,4,5,6}.
   a) {{1,3,5},{2,4},{3,6}}
   b) {{1,5},{2},{3,6}}
   c) {{1,5},{2},{4},{3,6}}
   d) {{1,2,3},{2,4,5},{6}}

27) For group <G,*> select proper option from the following
   i) <{},*> is a subgroup
   ii) Has unique identity element
   a) Both true
   b) Both false
   c) i-T & ii-F
   d) i-F & ii-T

28) The connective NOR is not _____.
   a) Commutative
   b) Associative
   c) Both
   d) None of these

29) For any statement formula P→Q the statement formula ____is called its inverse.
   a) Q→P
   b) ¬P→¬Q
   c) ¬Q→¬P
   d) ¬P→Q

30) A partially ordered set is called _____if every non empty subset of it has a least member.

a) Well ordered

b) Well formed formula

c) Both

d) None of these

31) The Adjacency matrix is _____.

a) Boolean matrix

b) Path Matrix

c) Both Boolean & path matrix

d) None of these

32) An ordered pair whose first member is itself an ordered pair is called as ____.

a) Ordered Pair

b) Ordered Triple

c) Ordered Quadruple

d) Ordered n-tuple

33) The conjunction operation with data structure is one which changes data in the structures. This operation is called_____.

a) Updating

b) Intersection

c) Union

d) None of these

34) If one experiment has m possible outcomes and another experiment has n possible outcomes then there are _____possible outcomes when both of these experiments take place.

a) m+n

b) m*n

c) m–n

d) None of these

35) The bound of Lattice are denoted by _____.

a) 11 & 01

b) 0 & 1

c) * & +

d) None of these

36) An event that contains one sample is referred as _____.

a) Sample Space

b) Simple Event

c) Compound Event

d) None of these

37) For Probability select the correct option from the following

i) The Probability of each sample is less than or equal to 1

ii) The sum of probabilities of all the samples in sample space is not equal to1.

a) Both True

b) Both False

c) i-T & ii-F

d) i-F & ii-T

38) If we reserve the direction of edges in graph G=<V,E> then it is called____.

a) Converse of G

b) Converse of E

c) Inverse of G

d) Inverse of E

39) Preorder is the sequence of _____.

a) root node → left sub tree → right sub tree

b) left sub tree → root node → right sub tree

c) root node → right sub tree → left sub tree

d) left sub tree → right sub tree → root node

40) A set of disjoint trees is called a _____.

a) Disjoint set

b) Forest

c) Subtrees

d) Both a & b

41) The suffix and prefix of A^Bv¬C

a) AB^v¬C & ^ABC¬v

b) ABCv^¬ & vA^B¬C

c) ABC¬v^ & ^AvB¬C

d) None of this

42) If there are (n+2) variables then for n=(n-2), the possible values of truth table is

a) n^2

b) 2^n

c) (n–2)^2

d) n

43) Which of the following are statements

i) Nagpur is famous for Banana

ii) Open the door.

iii) Today is Wednesday

a) i & ii

b) ii & iii

c) i & iii

d) All of the above

44) Given A={a,b,c} & a Boolean algebra <p(A),∩,∪,',0,1>. The Complement of {a} is

a) {b,c}

b) {b}

c) {c}

d) {b} or {c}

45) Which is not an algebraic system _____.

a) <N,+,->

b) <R,+,×>

c) <I,+×>

d) <I,+>

46) The elements of list are _____.

a) Atoms
b) Lists
c) Either atom or list
d) Both atom & list

47) Which of the following statement is contradiction

a) $(P \wedge Q) \rightarrow P$
b) $(P \rightarrow \neg P) \rightarrow \neg P$
c) $P \rightarrow (P \vee Q)$
d) $(\neg P \wedge P) \wedge Q$

48) $(P \uparrow Q) \Leftrightarrow$

a) $\neg P \wedge \neg Q$
b) $\neg(P \wedge Q)$
c) $\neg P \wedge Q$
d) None of these

49) A proper inclusion is not _____.

a) Reflexive
b) Symmetric
c) Transitive
d) Asymmetric

50) A formula which consist of product of elementary sums is called _____.

a) Minterm
b) Maxterm
c) DNF
d) CNF

51) The set S_n of all permutations of n elements is a permutation group $<S_n, D>$ is called _____.

a) Symmetric Group
b) Dihedral Group
c) Semigroup
d) None of these

52) An isomorphism of $<G, *>$ to $<G, *>$ is called as _____.

a) Endomorphism
b) Automorphism
c) Epimorphism
d) Monomorphism

53) All POSET are lattices _____.

a) True
b) False
c) Can't say
d) None of these

54) The cubes which are not covered by any other cube is called as _____.
   a) 0 cube
   b) Prime implicant
   c) Minimized cube
   d) Cover

55) The atoms of the Boolean algebra are called as _____.
   a) Maxterms
   b) Minterms
   c) Midterms
   d) Antiterms

56) The sum of probability distribution function is _____.
   a) Greater than 1
   b) Less than 1
   c) Equal to 1
   d) Can't say

57) A Boolean algebra is _____.
   a) Complete & Distributive
   b) Complemented & Distributive
   c) Bounded & Distributive
   d) Complemented & Bounded

58) The direct product of any two distributive lattices is a _____.
   a) Complemented Lattice
   b) Complete Lattice
   c) Distributive Lattice
   d) Bounded Lattice

59) Isomorphic graph is the graph if _____.
   a) There exist one to one correspondence between nodes of the two graphs
   b) There exist one to one onto correspondence
   c) Preserves adjacency of nodes
   d) Both a & c

60) The path of minimum length (u to v) is called geodesic if _____.
   a) v is reachable from u
   b) u is reachable from v
   c) v is not reachable from u
   d) None of these

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Total No. of Pages : 8

Seat No.	

S.E. CSE (Semester - III) (New) Examination, December - 2015

DATA STRUCTURES (Online)

Sub. Code : 63526

Day and Date : Monday, 14 - 12 - 2015 **Total Marks : 50**

Time : 12.30 p.m. to 01.30 p.m.

Instructions: 1) **All questions are compulsory.**
2) **Each question carry one mark.**

1. Stack is _____.

(a) LIFO structure (b) FIFO structure

(c) Linear data structure (d) Both (a) and (c)

2. Which expression is free from precedence?

(a) Prefix (b) Postfix

(c) Fully parenthesized (d) All of these

3. Degree of a node in a tree is _____

(a) Number of children (b) Number of descendants

(c) Number of siblings (d) All of these

4. Degree of a node in a graph is

(a) number of edges coming to that node

(b) number of edges coming out of that node

(c) number of edges linked to the node

(d) all of these.

5. Which queue in an array can utilize location vacated by deleted elements?

(a) linear queue (b) circular queue

(c) both (a) and (b) (d) none of these

P.T.O.

6. A tree is a _____

(a) hierarchical structure

(b) a graph without a cycle

(c) it is a graph with a unique node known as root

(d) all of these

7. A graph containing ordered pair of vertices is called as _____.

(a) Complete graph (b) Weighted graph

(c) Undirected graph (d) Directed graph

8. A queue can be implemented using _____.

(a) an array (b) a linked list

(c) both (a) and (b) (d) only (a) not (b)

9. All siblings of a node can be found easily using _____

(a) BFS traversal (b) DFS traversal

(c) both (a) and (b) (d) none of these

10. If the variable top points to the top most element in the array then number of elements in the stack is

(a) top (b) top + 1

(c) top – 1 (d) none of these

11. The worst case occur in linear search algorithm when _____.

(a) Item is somewhere in the middle of the array

(b) Item is not in the array at all

(c) Item is the last element in the array

(d) Item is the last element in the array or item is not there at all

12. The searching technique that takes O (1) time to find a data is _____

(a) Linear Search (b) Binary search

(c) Hashing (d) Tree Search

13. Linked list is generally considered as an example of_____ type of memory allocation.

(a) Static (b) Hybrid

(c) Compile Time (d) Dynamic

14. In a binary tree, _____

(a) Each node has maximum of 3 children

(b) Each node has maximum of 2 children

(c) Each node has minimum of 2 children

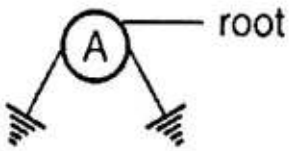
(d) Each node has minimum of 1 child

15. The result of insertion in a full queue will cause _____

(a) underfiow (b) overflow

(c) exception (d) none of these

16. Give the height of the given tree is _____



(a) 0 (b) 1

(c) 2 (d) None of these

17. What will be the postfix expression of following expression?

(A+B)*(C*D-E)*F/G

(a) AB+CD*E–FG/** (b) AB+CDE_*FG/* *

(c) AB+CD*E–*FG/ * (d) None of these

18. A Complete graph with N vertices has _____

(a) N edges (b) N(N-1)/2 edges

(c) No edges (d) None of the above

19. A Weighted graph is defined as _____

(a) Edges are assigned with some value.

(b) Edges are assigned with direction.

(c) Edges don't have direction.

(d) None of the above

20. Stack cannot be used for _____

(a) Recursion implementation

(b) Function call

(c) Resource allocation and scheduling

(d) Parsing

21. In an algorithm, it is frequently required to trace ascendants of a node. Which representation should be used?

(a) array representation (b) linked representation

(c) both (a) and (b) (d) none of these

22. Complexity of linear search algorithm is _____

(a) $O(n^2)$ (b) O(log n)

(c) O(n) (d) O(n log n)

23. A linked list in which the last node of Linked list points to the first node is called a _____

(a) Single linked list (b) Circular linked list

(c) Double linked list (d) None of the above

24. What is right way to Initialize array?

(a) int (6) = { 2,4, 12,5,45,5 }; (b) int n{} = { 2,4, 12,5,45,5 };

(c) int n{6}={2,4, 12}; (d) int num{6]={2,4, 12,5,45,5 };

25. Evaluate following postfix expression 6 5 3 + 9*+

(a) 72 (b) 78

(c) 76 (d) 66

26. A cycle is simple path in which _____

(a) Start and end points are different

(b) Start and end points are same

(c) Have start point but not the end point

(d) None of the above

27. The maximum number of nodes at depth d in a binary tree is _____

(a) $2^d - 1$ (b) 2^{d-1}

(c) 2^{d+1} (d) 2^d

28. State True or False.

i) An undirected graph which contains no cycles is called forest.

ii) A graph is said to be complete if there is an edge between every pair of vertices.

(a) True, True (b) False, True

(c) False, False (d) True, False

29. User want to insert single element on to the stack having already 6 elements and having stack size 6 then stack becomes _____

(a) Underflow (b) Crash

(c) None of these (d) Overflow

30. Maximum number of nodes in a binary tree of height h is _____

(a) 2^h (b) 2^{h+1}

(c) $2^{h+1} - 1$ (d) $2^{h-1} + 1$

31. Very slow way of sorting is _____

(a) Bubble sort (b) Insertion sort

(c) Heap sort (d) Quick sort

32. The situation when in a linked list START=NULL is

(a) Empty (b) Full

(c) Saturated (d) None of these

33. A linear list in which the pointer points only to the successive node is _____

(a) Singly linked list (b) Circular linked list

(c) Doubly linked list (d) None of the above

34. A directed graph is _____ if there is a path from each vertex to every other vertex in the digraph.

(a) Weakly connected (b) Strongly Connected

(c) Tightly Connected (d) Linearly Connected

35. Expression in which the operator is written before the operand is called as

(a) Infix (b) Prefix

(c) Postfix (d) None of these

36. A tree with n nodes have _____ edges

(a) $n + 1$ (b) n

(c) $n - 1$ (d) $n + 2$

37. The total number of comparisons in a bubble sort is _____

(a) $O(n \log n)$ (b) $O(2^n)$

(c) $O(n^2)$ (d) $O(n)$

38. _____ refers to a linear collection of data items.

(a) Edge (b) Linked List

(c) Graph (d) Tree

39. Size of the array need not be specified, when

(a) Initialization is a part of definition

(b) It is a declaration

(c) It is a formal parameter

(d) All of these

40. Traversing a binary tree first left subtree then root and then right subtree is called _____ traversal.

(a) postorder (b) preorder

(c) inorder (d) BFS

41. In the — traversal we process all of a vertex's descendents before we move to an adjacent vertex.

(a) Depth First (b) Breadth First

(c) With First (d) Depth Limited

42. In a graph if e=[u, v], Then u and v are called

(a) endpoints of e (b) adjacent nodes

(c) neighbors (d) all of above

43. _____ is very useful in situation when data have to stored and then retrieved in reverse order.

(a) Stack (b) Queue

(c) List (d) Link list

44. Which traversal technique will locate a node quickly, if it is close to the root node.

(a) postorder (b) preorder

(c) inorder (d) BFS

45. To implement Sparse matrix dynamically, the following ____ data structure is used

(a) Trees (b) Graphs

(c) Priority Queues (d) Linked List

46. A doubly linked list is also called as _____

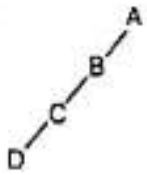
(a) Left list (b) One way list

(c) Two way list (d) Right list

47. The process of finding some other position when hash address is occupied is classified as____

(a) Collision resolution
(b) Address space resolution
(c) Multiple hashing resolution
(d) Chaining resolution

48. Consider the tree given below



Which two traversals will gives the same result?

(a) preorder, inorder
(b) preorder, postorder
(c) inorder, postorder
(d) none of these

49. Graphs are represented using _____

(a) Adjacency tree
(b) Adjacency linked list
(c) Adjacency graph
(d) Adjacency queue

50. Linked list are not suitable data structure of which one of the following problems?

(a) Insertion sort
(b) Binary search
(c) Radix sort
(d) Polynomial manipulation

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Total No. of Pages : 12

Seat No.	

S.E. (C.S.E.) (Semester - III) Examination, December - 2015

DATA COMMUNICATION (Online) (New)

Sub. Code : 63527

Day and Date : Wednesday, 16 - 12 - 2015 **Total Marks : 50**

Time : 12.30 p.m. to 01.30 p.m.

Instructions : 1) Attempt any 50 Questions from Q.1 to Q.60.

2) All questions carry one mark each.

1) _____ is a set of rules that governs the data communications

A) Standard B) Rule

C) Protocol D) None of these

2) A periodic signal completes one cycle in 0.001 s. What is the frequency?

A) 1 Hz B) 100 Hz

C) 1 KHz D) 1 MHz

3) In _____ mode, each station can both transmit and receive, but not at the same time.

A) simplex B) half-duplex

C) full-duplex D) None of these

4) Sine wave can be represented by the parameters _____.

A) Peak amplitude B) Frequency

C) Phase D) All of these

P.T.O.

5) Which of the following is not the category of topology?

A) Mesh
B) Star
C) Bus
D) Circle

6) Relationship between amplitude and frequency can be represented by _____.

A) Time-domain plot
B) Frequency-domain plot
C) Graph
D) None of these

7) Baseband transmission of a digital signal is possible only if we have a _____ channel.

A) Low-pass
B) Bandpass
C) Low rate
D) High rate

8) In _____ connection, more than two specific devices share a single link.

A) Point-to-Point
B) Multipoint
C) Primary
D) None of these

9) _____ is a type of transmission impairment in which the signal loses strength due to the resistance of the transmission medium.

A) Attenuation
B) Distortion
C) Noise
D) Decibel

10) Calculate SNR for noiseless channel?

A) 0 B) ∞

C) 1 D) None of these

11) _____ is a data communication system within a building, plant, or campus, or between nearby buildings.

A) LAN B) WAN

C) MAN D) None of these

12) _____ refers to the structure or format of the data, meaning the order in which they are presented.

A) Semantics B) Syntax

C) Timing D) All of the above

13) _____ describes the position of the waveform relative to time 0.

A) Frequency B) Phase

C) Amplitude D) Voltage

14) In fiber optics, the signal is _____ waves.

A) light B) radio

C) infrared D) very low-frequency

15) The _____ is the number of bits sent in 1s, expressed in bits per second (bps).

A) Bit length B) Bit rate

C) Wavelength D) None of these

16) _____ refers to the variation in the packet arrival time.

A) Delivery
B) Accuracy
C) Gitter
D) Timelines

17) The idea of RZ and idea of NRZ-I are combined into _____ schemes.

A) Manchester
B) Differential Manchester
C) Both A) and B)
D) None of these

18) Radio waves are _____.

A) Omnidirectional
B) Unidirectional
C) Bidirectional
D) None of these

19) _____layer of OSI model is responsible for the process-to-process delivery of a message

A) Physical
B) Data-link
C) Network
D) Transport

20) When a beam of light travels through media of two different densities, if the angle of incidence is greater than the critical angle, _____ occurs.

A) Reflection
B) Refraction
C) Incidence
D) Criticism

21) All signal levels are on one side of the time axis in _____ Line coding scheme.

A) Unipolar
B) Bipolar
C) Bipolar
D) All of these

22) ATM layer in the ATM reference model is responsible for _____.

A) Flow control
B) Cell generation/extraction
C) Both A and B
D) None of these

23) Signals with a frequency below 2 MHz use _____ propagation.

A) Ground
B) Sky
C) Line-of-sight
D) None of these

24) _____ error means that 2 or more bits in the data unit have changed from 1 to 0 or from 0 to 1.

A) Single-bit
B) Multi-bit
C) Burst
D) None of these

25) A _____ is a connecting device that operates in the physical and data link layers of the Internet model.

A) Repeater
B) Bridge
C) Router
D) None of these

26) _____ is the number of signal elements sent in a second.

A) Data rate
B) Bit rate
C) Baud rate
D) None of these

27) _____ is a technique in which receiver detects occurrence of an error & asks the sender to resend the message.

A) Forward error detection
B) Retransmission
C) Both A) and B)
D) Neither A) nor B)

28) Bit-oriented protocols is the approach used in _____.

A) Fixed-size framing
B) Variable-size framing
C) Flow control
D) None of these

29) Most common UTP connector is _____.

A) RJ45
B) BNC
C) BNC-T
D) None of these

30) In block coding, message is divided into blocks, each of k bits, called _____.

A) Datawords
B) Codewords
C) Keywords
D) Passwords

31) In _____ propagation, very high-frequency signals are transmitted in straight lines directly from antenna to antenna.

A) Ground
B) Sky
C) Line-of-sight
D) None of these

32) Density of the core remains constant from the center to the edges in _____.

A) Multimode graded-index fiber
B) Multimode step-index fiber
C) Single mode
D) None of these

33) After adding r redundant bits to each block to make the length n = k + r, The resulting n-bit blocks are called _____.

A) Datawords
B) Blockwords
C) Codewords
D) None of these

34) _____ between two words (of same size) is no. of differences between corresponding bits.

A) Bandwidth
B) Length
C) Phase
D) Hamming Distance

35) _____ signals can be used for short-range communication in a closed area using line-of-sight propagation.

A) Radio waves
B) Microwaves
C) Infrared
D) None of these

36) The Hamming distance between 100 and 001 is _____.

A) 2
B) 0
C) 1
D) None of these

37) If a noiseless channel with a bandwidth of 3000 Hz transmitting a signal with two signal levels the maximum Bit rate would be

A) 12000 bps
B) 6000 bps
C) 1800bps
D) zero

38) In cyclic redundancy checking, what is the CRC?

A) The divisor
B) The quotient
C) The dividend
D) The remainder

39) As the data packet moves from the upper to the lower layers, headers are _____.

A) Added
B) Removed
C) Rearranged
D) Modified

40) A _____ receives a signal and, before it becomes too weak or corrupted, regenerates the original bit pattern. It then sends the refreshed signal.

A) passive hub
B) repeater
C) bridge
D) router

41) In modulo-2 arithmetic, we use the _____ operation for both addition and subtraction.

A) XOR
B) OR
C) AND
D) None of these

42) In _____, each station sends a frame whenever it has a frame to send.

A) Pure ALOHA
B) Slotted ALOHA
C) Both (A) and (B)
D) Neither (A) nor (B)

43) HDLC is an acronym for _____.

A) High-duplex line communication
B) High-level data link control
C) Half-duplex digital link combination
D) Host double-level circuit

44) In pure ALOHA, the vulnerable time is _____ the frame transmission time.

A) The same as
B) Two times
C) Three times
D) None of these

45) In the _____ Protocol, the sequence numbers are modulo 2^m.

A) Simplest
B) Stop-and-wait
C) Go-back-N
D) None of these

46) In _____ the time is divided into discrete intervals, each interval correspond to one frame.

A) Pure ALOHA
B) CSMA
C) Slotted ALOHA
D) None of these

47) Checksums use _____ arithmetic.

A) Two's complement arithmetic
B) One's complement arithmetic
C) Either (A) or (B)
D) None of these

48) ARQ stands for _____

A) Automatic repeat quantization
B) Acknowledge repeat
C) Automatic retransmission request
D) Automatic repeat request request

49) _____ is a standard for a 1-persistent CSMA/CD LAN.

A) IEEE 802.3

B) IEEE802.4

C) IEEE 802.5

D) None of these

50) Stop-and-Wait ARQ is a special case of _____ in which the size of the send window is 1.

A) Go-Back-N ARQ

B) Stop-and-wait

C) Simplest

D) None of these

51) In the _____ method, each station has a predecessor and a successor.

A) Reservation

B) Polling

C) Token passing

D) None of these

52) _____ supports segments of up to 500 meters.

A) 10Base5

B) 10Base2

C) 10Base-T

D) None of these

53) The _____ is used to synchronize the receiver's clock.

A) SOF field

B) Preamble field

C) FCS field

D) None of these

54) In the _____ method, after the station finds the line idle, it sends its frame immediately. If the line is not idle, it continuously senses the line until it finds it idle.

A) Nonpersistent
B) 1-persistent
C) p-persistent
D) None of these

55) Token bus was standardized by IEEE standard _____.

A) 802.3
B) 802.6
C) 802.5
D) 802.4

56) DQDB stands for _____.

A) Double Quality Double Bus
B) Dual Quality Dual Bus
C) Distributed Queue Dual Bus
D) Distributed Queue Double Bus

57) In the _____ method, all data exchanges must be made through the primary device even when the ultimate destination is a secondary device.

A) Reservation
B) Polling
C) Token passing
D) None of these

58) Which is the part of Data Link Layer?

A) LLC
B) MAC
C) Both A) and B)
D) None of these

59) IEEE 802.6 standard is used for _____.

A) LANs

B) MANs

C) WANs

D) None of these

60) OSI stands for _____.

A) Open System Interface

B) Out System Interface

C) Open System Interconnection

D) Out System Interconnection.

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Total No. of Pages : 8

Seat No.	

S.E. (Computer Sci. and Engg.) (Part - I) (Semester - III)
(Online) Examination, December - 2015
MICROPROCESSORS (New)
Sub. Code : 63528

Day and Date : Friday, 11 - 12 - 2015 **Total Marks : 50**

Time : 12.30 p.m. to 01.30 p.m.

Instructions: 1) **Attempt any 50 questions from Q 1 to Q 60.**
2) **All questions carry 1 mark each.**

1. _____ is 8 bit register that usually temporarily stores the instructions drawn from memory locations, before their actual execution.

   a) Accumulator b) Flag register

   c) Temp register d) Instruction register

2. The maximum number of memory locations that can be addressed by the 8085 processor is _____.

   a) 8KB b) 1MB

   c) 32KB d) 64KB

3. XRA A is _____ byte instruction.

   a) 1 b) 2

   c) 3 d) 4

4. MOV A, M is an example of _____ addressing mode.

   a) Register b) Direct

   c) Indirect d) Implied

5. The contents of register (B) and Accumulator (A) of 8085 microprocessor are 49H and 3AH respectively. The contents of A and the status of carry flag (CY) and sign flag (S) after executing SUB B instruction are

   a) A=F1,CY=1,S=1 b) A=0F, CY=1, S=1

   c) A=F0, CY=0, S=0 d) A=1F, CY=1, S=1

P.T.O.

6. In an 8085 microprocessor, the instruction CMP B has been executed while the content of the accumulator is less than that of register B. As a result,
   a) Carry flag will be set but Zero flag will be reset
   b) Carry flag will be reset but Zero flag will be set
   c) Both Carry flag and Zero flag will be reset
   d) Both Carry flag and Zero flag will be set

7. For the 8085 assembly language program given below, the content of the accumulator after the execution of the program is

```
MVI A, 45H
MOV B, A
STC
CMC
RAR
XRA B
```

   a) 00H b) 45H
   c) 67H d) E6H

8. DAD H instruction adds the content of HL pair and _____.
   a) BC b) DE
   c) HL d) AF

9. XCHG instruction exchange the content of the HL and _____ register pairs.
   a) BC b) DE
   c) HL d) AF

10. The content of the accumulator after the execution of XRA A
   a) 00H b) FFH
   c) 0FH d) F0H

11. The 80286 and 80386SX address _____ bytes of memory using a 24-bit address that selects locations 000000H-FFFFFFH.
   a) 1MB b) 8MB
   c) 16MB d) 32MB

12. An example instruction that copies the _____ bits from R8 to R11 is MOV R11D, R8D.

a) 8 b) 16

c) 32 d) 64

13. _____ is a general-purpose register that holds a part of the result from a multiplication.

a) RAX b) RBX

c) RCX d) RDX

14. The _____ flag is set with the STD and cleared with the CLD instructions.

a) O b) I

c) D d) A

15. The _____ is an additional data segment that is used by some of the string instructions to hold destination data.

a) CS b) DS

c) ES d) SS

16. A real mode segment of memory is 64K in length, once the beginning address is known, the ending address is found by adding _____ H.

a) 1FFF b) 00FF

c) 6400 d) FFFF

17. The _____ describes the memory segment's location, length, and access rights.

a) Selector b) Descriptor

c) Offset d) Base

18. In 80386, Granularity bit. If ,G=0 the limit specifies a segment limit of _____

a) 00000 to FFFFFH b) 000000 to FFFFFFH

c) 00000000 to FFFFFFFFH d) 0000-to FFFFH

19. The Linear address is the actual memory location accessed by a program.

a) True b) False

20. _____ contains the page directory base or root address.

a) CR0 b) CR1

c) CR2 d) CR3

21. In Memory paging, page directory contains 1024 directory entries of _____ byte each.
    a) 1 b) 2
    c) 3 d) 4
22. MOV CL,[BX+4] is an example of _____ addressing mode.
    a) Register b) Register relative
    c) Direct d) Indirect
23. The direct addressing mode 8086 instruction is MOV [1234H], AX. Find the destination memory address where AX content are copied. Data segment register DS=1000H. (2M)
    a) 12340H b) 11234H
    c) 11111H d) l0000H
24. An intra segment jump is a jump to any memory location within the entire memory system.
    a) True b) False
25. An inter segment jump is a jump anywhere within the current code segment.
    a) True b) False
26. For the 16 bit instruction mode, if MOD=11 it select
    a) No displacement
    b) 8-bit sign-extended displacement
    c) R/M is a register
    d) 16-bit signed displacement
27. The PUSH instruction removes data from the stack and places it into the target 16-bit register, segment register, or a 16- bit memory location.
    a) True b) False
28. The DI offset address accesses data in the extra segment for all string instructions that use it.
    a) True b) False
29. The _____ instruction transfers a byte, word, or double word of data from an I/O device into the extra segment memory location addressed by the DI register.
    a) OUTS b) INS
    c) STOS d) MOVS

30. The _____ Instruction converts the contents of the AL register into a number stored in a memory table.

a) OUTS b) INS

c) XCHG d) XLAT

31. The result of following subtraction is CH=?

MOV CH, 22H

SUB CH, 44H

a) DEH b) 22H

c) DBH d) DFH

32. After execution of MUL BL instruction, result is stored in _____ register.

a) BX b) BL

c) AL d) AX

33. After execution of IMUL EDI instruction, result is _____ bit.

a) 16 b) 32

c) 64 d) 128

34. In 16/8 division the remainder is in _____ register.

a) AL b) BL

c) AH d) BH

35. The Pentium 4 processor operated in 64-bit mode performs 64-bit division on signed or unsigned numbers. The 64-bit division uses the _____ register pair to hold the dividend.

a) RDX:RAX b) R8-R9

c) R8-R10 d) RCX:RBX

36. Content of AL after execution of following code

MOV DX,1234H

MOV BX,3099H

MOV AL,BL

ADD AL,DL

DAA

a) 33H b) 23H

c) CDH d) ADH

37. Content of AX after execution of following code

MOV AL,5

MOV CL,3

MUL CL

AAM

a) 0105H b) 0015H

c) 000FH d) 1515H

38. In NEG AX instruction AX is one's complemented

a) True b) False

39. RCR AH,CL instruction _____ (2M)

a) AH rotates right through carry by one

b) CL rotates right through carry by one

c) AH rotates right through carry the number of places specified by CL

d) CH rotates right through carry the number of places specified by AH

40. The _____ jump is a 2-byte instruction that allows jumps or branches to memory locations with in +127 and –128 bytes from the address following the jump.

a) Short b) Long

c) Far d) Relative

41. The interrupt vector table is located in the first _____ bytes of memory at addresses

000000H-0003FFH

a) 256 b) 512

c) 1024 d) 2048

42. An _____ interrupt occurs whenever an undefined opcode is encountered in a program.

a) Type 3 b) Type 4

c) Type 5 d) Type 6

43. The _____ interrupt occurs when a coprocessor is not found in the system

a) Type 5 b) Type 6

c) Type 7 d) Type 8

44. The 80386DX addresses _____ of memory through its 32-bit data bus and 32-bit address.

a) 1GB b) 16MB

c) 4GB d) 16GB

45. In 80386, memory is divided into four 8-bit wide memory banks, each containing up to _____ of memory.

a) 1GB b) 16MB

c) 4GB d) 16GB

46. The Pentium memory system is divided into _____ banks where each bank stores byte-wide data with a parity bit.

a) 2 b) 4

c) 8 d) 16

47. The Pentium uses a 64-bit data bus to address memory organized in banks that each bank contain _____ of data.

a) 1MB b) 256MB

c) 512MB d) 1GB

48. In Pentium, There is an _____ data cache and an _____ instruction cache.

a) 2KB,4KB b) 4KB,4KB

c) 8KB,8KB d) 8KB,16KB

49. The Pentium microprocessor is organized with _____ Execution units.

a) 1 b) 2

c) 3 d) 4

50. In Pentium, Page size extension enables _____ memory pages when set.

a) 4KB b) 4MB

c) 8KB d) 8MB

51. The _____ addresses 16M bytes of memory with its 24-bit address bus via its 16-bit data bus.

a) 80186 b) 80386DX

c) 80386SX d) 80486

52. In 80386, A0, Al and A2 are encoded in the bus enable to select any or all of the four bytes in a 32-bit wide memory location.

a) True b) False

53. Reset initializes the 80386, causing it to begin executing software at memory location _____.

a) FFFFFFF0H b) FFFFFFFFH

c) 00000000H d) 0000FFFFH

54. _____ pin is a coprocessor request asks the 80386 to relinquish control and is a direct connection to the 80387 arithmetic coprocessor.
(Note : # indicate active low signal)

a) #INTR b) #BUSY

c) #NDP d) #PEREQ

55. In Pentium pro microprocessor, the size of level 2 cache either 256KB or 512 KB.

a) True b) False

56. The _____ checks the instruction pool and removes decoded instructions that have been executed.

a) IFDU b) DEU

c) RU d) IP

57. In Pentium4, The XMM registers are double-width MMX registers.

a) True b) False

58. The _____ instruction accesses information that indicates the type of microprocessor as well as the features supported by the microprocessor.

a) MMX b) XMM

c) CPUID d) HTT

59. _____ interrupt occurs after execution of each instruction if TF=1.

a) TYPE0 b) TYPE1

c) TYPE2 d) TYPE3

60. In Protected mode 80386 provides a virtual 8086 operating environment to executes the 8086 programs.

a) True b) False