SUBJECT CODE	SUBJECT	PAPER
B-04-17	COMPUTER SCIENCE & APPLICATIONS	**II**

HALL TICKET NUMBER	QUESTION BOOKLET NUMBER

OMR SHEET NUMBER

200030

DURATION	MAXIMUM MARKS	NUMBER OF PAGES	NUMBER OF QUESTIONS
1 Hour 15 Minutes	**100**	**12**	**50**

This is to certify that, the entries made in the above portion are correctly written and verified.

Candidate's Signature

Name and Signature of Invigilator

SEAL

INSTRUCTIONS FOR THE CANDIDATES

1. Write your Hall Ticket Number in the space provided on the top of this page.
2. This paper consists of fifty multiple-choice type of questions.
3. At the commencement of examination, the question booklet will be given to you. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as below :
   (i) To have access to the Question Booklet, tear off the paper seal on the edge of this cover page. Do not accept a booklet without sticker-seal and do not accept an open booklet.
   (ii) Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to pages/questions missing or duplicate or not in serial order or any other discrepancy should be got replaced immediately by a correct booklet from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given.
   (iii) After this verification is over, the Test Booklet Number should be entered in the OMR Sheet and the OMR Sheet Number should be entered on this Test Booklet.
4. Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.
   Example : (A) (B) ● (D)
   where (C) is the correct response.
5. Your responses to the items are to be indicated in the OMR Answer Sheet given to you. If you mark at any place other than in the circle in the OMR Answer Sheet, it will not be evaluated.
6. Read instructions given inside carefully.
7. Rough Work is to be done in the end of this booklet.
8. If you write your name or put any mark on any part of the OMR Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, you will render yourself liable to disqualification.
9. The candidate must handover the OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. The candidate is allowed to take away the carbon copy of OMR Sheet and used Question Paper Booklet at the end of the examination.
10. Use only Blue/Black Ball point pen.
11. Use of any calculator or log table etc., is prohibited.
12. There is no negative marks for incorrect answers.

అభ్యర్థులకు సూచనలు

1. ఈ పుట పై భాగంలో ఇవ్వబడిన స్థలంలో మీ హాల్ టికెట్ నంబరు రాయండి.
2. ఈ ప్రశ్న పత్రము యాభై బహుళైచ్ఛిక ప్రశ్నలను కలిగి ఉంది.
3. పరీక్ష ప్రారంభమున ఈ ప్రశ్నాపత్రము మీకు ఇవ్వబడుతుంది. మొదటి ఐదు నిమిషములలో ఈ ప్రశ్నాపత్రమును తెరిచి కింద తెలిపిన అంశాలను తప్పనిసరిగా సరిచూసుకోండి.
   (i) ఈ ప్రశ్న పత్రమును చూడడానికి కవర్‌పేజి అంచున ఉన్న కాగితపు సీలును చించండి. స్టిక్కర్ సీలులేని మరియు ఇదివరకే తెరిచి ఉన్న ప్రశ్నాపత్రమును మీరు అంగీకరించవద్దు.
   (ii) కవరు పేజి పై ముద్రించిన సమాచారం ప్రకారం ఈ ప్రశ్నపత్రములోని పేజీల సంఖ్యను మరియు ప్రశ్నల సంఖ్యను సరిచూసుకోండి. పేజీల సంఖ్యకు సంబంధించి గాని లేదా సూచించిన సంఖ్యలో ప్రశ్నలు లేకపోవుట లేదా నిజ్రప్రతి కాకపోవుట లేదా ప్రశ్నలు క్రమపద్ధతిలో లేకపోవుట లేదా ఏదైనా తేడాలుండుట వంటి దోషపూరితమైన ప్రశ్న పత్రాన్ని వెంటనే మొదటి ఐదు నిమిషాల్లో పరీక్ష పర్యవేక్షకునికి తిరిగి ఇచ్చివేసి దానికి బదులుగా సరిగ్గా ఉన్న ప్రశ్నపత్రాన్ని తీసుకోండి. తదనంతరం ప్రశ్నపత్రము మార్పుబడదు అదనపు సమయం ఇవ్వబడదు.
   (iii) పై విధంగా సరిచూసుకొన్న తర్వాత ప్రశ్నపత్రం సంఖ్యను OMR పత్రము పై ఆదేవిధంగా OMR పత్రము సంఖ్యను ఈ ప్రశ్నాపత్రము పై నిర్దిష్టస్థలంలో రాయవలెను.
4. ప్రతి ప్రశ్నకు నాలుగు ప్రత్యామ్నాయ ప్రతిస్పందనలు (A), (B), (C) మరియు (D) లుగా ఇవ్వబడ్డాయి. ప్రతి ప్రశ్నకు సరైన ప్రతిస్పందనను ఎన్నుకొని కింద తెలిపిన విధంగా OMR పత్రములో ప్రతి ప్రశ్న సంఖ్యకు ఇవ్వబడిన నాలుగు వృత్తాల్లో సరైన ప్రతిస్పందనను సూచించే వృత్తాన్ని బాల్ పాయింట్ పెన్‌తో కింద తెలిపిన విధంగా పూరించాలి.
   ఉదాహరణ : (A) (B) ● (D)
   (C) సరైన ప్రతిస్పందన అయితే
5. ప్రశ్నలకు ప్రతిస్పందనలను ఈ ప్రశ్నపత్రముతో ఇవ్వబడిన OMR పత్రము పైన ఇవ్వబడిన వృత్తాల్లోనే పూరించి గుర్తించాలి. అలాకాక సమాధాన పత్రంపై వేరొక చోట గుర్తిస్తే మీ ప్రతిస్పందన మూల్యాంకనం చేయబడదు.
6. ప్రశ్న పత్రము లోపల ఇచ్చిన సూచనలను జాగ్రత్తగా చదవండి.
7. చిత్తుపనిని ప్రశ్నపత్రము చివర ఇచ్చిన ఖాళీస్థలములో చేయాలి.
8. OMR పత్రము పై నిర్దిత స్థలంలో సూచించబవలసిన వివరాలు తప్పించి ఇతర స్థలంలో మీ గుర్తింపును తెలిపే విధంగా మీ పేరు రాయడం గాని లేదా ఇతర చిహ్నలను పెట్టడం గాని చేసినట్లయితే మీ అనర్హతకు మీరే బాధ్యులవుతారు.
9. పరీక్ష పూర్తయిన తర్వాత మీ OMR పత్రాన్ని తప్పనిసరిగా పరీక్ష పర్యవేక్షకుడికి ఇవ్వాలి. వాటిని పరీక్ష గది బయటకు తీసుకువెళ్ళకుందు. పరీక్ష పూర్తయిన తరువాత అభ్యర్థులు ప్రశ్న పత్రాన్ని, OMR పత్రం యొక్క కార్బన్ కాపీని తీసుకువెళ్ళవచ్చు.
10. నీలి/నల్ల రంగు బాల్ పాయింట్ పెన్ మాత్రమే ఉపయోగించాలి.
11. లాగరిథమ్ టేబుల్స్, క్యాలిక్యులేటర్లు, ఎలక్ట్రానిక్ పరికరాలు మొదలుగునవి పరీక్షగదిలో ఉపయోగించడం నిషేధం.
12. తప్పు సమాధానాలకు మార్కుల తగ్గింపు లేదు.

COMPUTER SCIENCE & APPLICATIONS
Paper - II

1. An Operating System uses Shortest Remaining Time First (SRT) process scheduling algorithm. Consider the arrival times and execution times with the following processes.

Process	Execution Time	Arrival Time
P1	20	0
P2	25	15
P3	10	30
P4	15	45

What is the total waiting time for the process P2 ?

(A)   5   (B)   15

(C)   40   (D)   55

2. The Data blocks of a very large file in the unix file system are allocated using :

(A)   Contiguous allocation

(B)   Linked allocation

(C)   Indexed allocation

(D)   An extension of indexed allocation

3. Match the following system calls :

(a) chmod   (i)   Executes a process

(b) fork   (ii)   Creates a File

(c) exec   (iii)   Creates a Child Process

(d) create   (iv)   Change the permission of file

Codes :

	(a)	(b)	(c)	(d)
(A)	(i)	(ii)	(iv)	(iii)
(B)	(iv)	(iii)	(i)	(ii)
(C)	(ii)	(iv)	(iii)	(i)
(D)	(iii)	(i)	(ii)	(iv)

4. Which of the following system calls is not related to the UNIX file system ?

(A)   create   (B)   close

(C)   stat   (D)   wait

5. Let the time taken to switch between user and kernel of execution to be t_1 while the time taken to switch between the two processes be t_2. Which of the following is True ?

(A) $t_1 > t_2$

(B) $t_1 = t_2$

(C) $t_1 < t_2$

(D)   Nothing can be said about the relation between t_1 and t_2

6. If A = {1,2,3,4} and R = {(1,2), (2,3), (3,4), (4,2)} and S = {(1,3), (2,4), (4,2), (4,3)} then SoR is :

(A) {(1,1), (2,3), (4,3), (4,4)}

(B) {(1,3), (2,3), (3,4), (4,4)}

(C) {(1,1), (2,2), (4,3), (4,4)}

(D) {(1,4), (2,2), (4,3), (4,4)}

7. The number of different relations from a set with m elements to a set with n elements is :

(A) 2^m

(B) mn

(C) 2^{mn}

(D) 2^n

8. Number of integers between 1 and 10^4 that contain exactly one 8 and one 9 is :

(A) $2 \times 3 \times 8^2$

(B) $4 \times 3 \times 8^2$

(C) $8 \times 9 \times 8^2$

(D) $8 \times 3 \times 9^2$

9. The language $L = \{a^n b^n c^n : n \geq 1\}$ is :

(A) Not context free but context sensitive

(B) Not regular but context free

(C) Not context sensitive but regular

(D) Not context sensitive but context free

10. A path in graph G which contains every vertex of G once and only once is :

(A) Eular tour

(B) Hamiltonian path

(C) Eular trial

(D) Hamiltonian tour

11. Which of the following is a connection oriented protocol ?

(A) TCP

(B) IP

(C) SNMP

(D) DNS

12. The kind of switching predominantly used in Internet is :

(A) Circuit Switching

(B) Packet Switching

(C) Streaming

(D) Automatic Switching

13. The address of a class B host is to be split into subnets with a 6 bit subnet number. What is the maximum number of subnets and the maximum number of hosts in each subnet ?

(A) 62 subnets and 262142 hosts

(B) 64 subnets and 262142 hosts

(C) 62 subnets and 1022 hosts

(D) 64 subnets and 1024 hosts

14. One of the header fields in an IP datagram is Time to Live (TTL) field, which of the following statement best explains the need for this field ?

    (A) It can be used to prioritize packets.

    (B) It can be used to reduce delay.

    (C) It can be used to optimize throughput.

    (D) It can be used to drop the packets.

15. The transport protocols used for real time multimedia, file transfer, DNS and e-mail respectively are :

    (A) TCP, UDP, UDP and TCP

    (B) UDP, TCP, TCP and UDP

    (C) UDP, TCP, UDP and TCP

    (D) TCP, UDP, TCP and UDP

16. Consider the relation R (A, B, C, D, E) with functional dependencies AB → E and D → C. Which of the following is the primary key for the relation R ?

    (A) ABC

    (B) ABCDE

    (C) ABCE

    (D) ABD

17. Which of the following statements is False ?

    (A) BCNF eliminates redundancies with respect to functional dependencies.

    (B) All Normal forms based on functional dependencies are nested.

    (C) 3NF eliminates redundancies with respect to multivalued dependencies.

    (D) 3NF preserves functional dependencies.

18. Which of the following is not in isolation level in SQL ?

    (A) Read-committed

    (B) Repeatable-read

    (C) Read-uncommitted

    (D) Read-Write committed

19. 2PL produces optimal schedules.

    (A) The statement is true for all schedules.

    (B) The statement is true for some schedules.

    (C) The statement is false for all schedules.

    (D) None of the above

20. Which of the following forms can be taken by the Cardinalities of ternary relationships ?

(A) 1 : 1 : 1

(B) M : N : P

(C) 1 : M : N

(D) All of the above

21. Assembler can convert mneumonic instruction to machine instruction in :

(A) One Pass

(B) Two Pass

(C) Three Pass

(D) All of the above

22. A Linker is a program :

(A) Which combines several machine level programs together.

(B) Combines library modules

(C) Resolves the references of symbols

(D) All of the above

23. A High level language program can be converted to machine level program by :

(A) Interpreter

(B) Compiler

(C) Assembler

(D) (A) and (B) only

24. Which of the following is **not** an intermediate code ?

(A) Quadruples

(B) Triples

(C) Machine code

(D) Pcode

25. Match the following :

(a) Lexical Analysis (i) Checking grammar

(b) Syntax Analysis (ii) Creating lexemes

(c) Code generation (iii) Strength reduction

(d) Optimization (iv) Machine code production

Codes :

	(a)	(b)	(c)	(d)
(A)	(iv)	(iii)	(ii)	(i)
(B)	(i)	(ii)	(iii)	(iv)
(C)	(ii)	(i)	(iv)	(iii)
(D)	(iv)	(ii)	(iii)	(i)

26. The description of particular product, program or set of programs that perform a set of functions in target environment is referred to :

(A) Software Requirements specification.

(B) Software Design Document

(C) Software Test Plan

(D) Risk Management Plan

27. The metric that is derived using an empirical relationship based on countable measures of software information domain and assessment of software complexity is called :

(A) Coupling

(B) Cohesion

(C) Coupling between object classes

(D) Function point

28. The final deliverable which is produced as a result of transforming or mapping a data flow diagram using transform or transaction flow is :

(A) Context level DFD

(B) 2nd Level DFD

(C) Structure Chart

(D) Architecture diagram

29. One of the following testing mechanisms involve re-execution of some subset of tests that have already been conducted to ensure that changes have not propagated unintended side effects :

(A) Stress testing

(B) Performance testing

(C) Regression testing

(D) Glass box testing

30. If there are four variables used in a program, then the number of test cases needed to check the correctness of boundary value analysis are :

(A) 16   (B) 64

(C) 256   (D) 25

31. Which one of the following is a valid conclusion from the premises $P \lor Q$, $Q \to R$, $P \to M$, and $\sim M$?

(A) $R \lor (P \land Q)$

(B) $P \land (Q \lor R)$

(C) $P \lor (Q \land R)$

(D) $R \land (P \lor Q)$

32. An SR flip flop is converted to _____ flip flop by inserting an inverter between S and R by assigning a single input.

(A) Master Slave

(B) T

(C) JK

(D) D

33. Find the 7's complement of 65402 (Octal Number).

(A) 12375   (B) 12376

(C) 11375   (D) 11376

34. A generic shift register has which of the following capabilities ?

(A) An input for clock pulse to synchronize all operations.

(B) 'n' parallel output lines.

(C) A shift left operation and a serial input line associated with shift left.

(D) All of the above

35. $(2FA0C)_{16}$ is equivalent to :

(A) $(195084)_{10}$

(B) $(101111101000001100)_2$

(C) Both (A) and (B)

(D) $(375014)_8$

36. What is the meaning of following declaration ?

int(*P[10])( );

(A) P is a pointer to function

(B) P is array of pointer to function

(C) P is a pointer to such function whose return type is array.

(D) P is a pointer to array of function.

37. Polymorphism means :

(A) Data fields should be declared private.

(B) Class can extend another class.

(C) Variables of super type can refer to a subtype object.

(D) Class can contain another class.

38. What is the output of the following program ?

```cpp
#include<iostream.h>

using namespace std;

long factorial(long a)

{

   If(a>1)

        return(a*factorial(a+1));

   else

        return(1);

}

int main()

{

        long num=3;

        count<<num<<"!="<<factorial(num);

        return 0;

}
```

(A) 6

(B) 24

(C) 18

(D) Segmentation fault

39. If $X=63$ and $Y=30$. If X and Y occupy one byte each, what will be the value of $X^\wedge Y$ (where $\wedge$ is exclusive OR operator)?

(A) 47

(B) 40

(C) 65

(D) 33

40. How many "#" are printed when the following code gets executed ?

```c
#include<stdio.h>

void func(int n)

{

        int i=0;

        if(n>1)

                func(n-1);

        for(i=0;i<n;i++)

                printf("#");

}

int main()

{

        func(5);

}
```

(A) 15

(B) 60

(C) 10

(D) 20

41. The maximum number of nodes on level "i" of binary tree is :

(A) 2^{i-1} (B) $2^i - 1$
(C) 2^i (D) 2^{i+1}

42. Every n-vertex connected undirected graph contains :

(A) (n-2) edges
(B) At most (n-2) edges
(C) Exactly (n-1) edges
(D) At least (n-1) edges

43. Which of the following is/are the levels of implementation of data structure ?

(A) Abstract level
(B) Application level
(C) Implementation level
(D) All of the above

44. A graph is said to be _____ if the vertices can be split into two sets V_1 and V_2 such that there are no edges between any two vertices of V_1 or any two vertices of V_2.

(A) Partite (B) Bipartite
(C) Rooted (D) Weighted

45. What would be the asymptotic time complexity to add an element in the linked list ?

(A) O(1)
(B) O(n)
(C) $O(n^2)$
(D) None of the above

46. Smart cards are examples of :

(A) Electronic Data Interchange
(B) ERP Systems
(C) Electronic data capture systems
(D) Electronic Payment Systems

47. ATM Stands for :

(A) Any Time Money
(B) Automated Teller Machine
(C) Automated Transfer of Money
(D) All Time Monitoring

48. OLAP is based on :

(A) E-R Modelling
(B) Data Cube Structure
(C) Relational model
(D) Hierarchical model

49. In which of the following, redundancy is minimized ?

(A) Star schema model
(B) Fact consolation schema
(C) Snow flakes schema
(D) Star cubing schema

50. Which one of the following networks uses dynamic or adaptive routing ?

(A) TYMNET (B) SNA
(C) DNA (D) ARPANET

- o 0 o -

Space For Rough Work

Space For Rough Work