UGC NET - COMPUTER SCIENCE
MOCK TEST PAPER

- **PAPER - I** *This paper contains 50 objective type questions. Each question carries 2 marks. Attempt all the questions.*

- **PAPER - II** *This paper contains 50 objective type questions. Each question carries 2 marks. Attempt all the questions.*

- **PAPER -III** *This paper contains 75 objective type questions. Each question carries 2 marks. Attempt all the questions.* **(According to the NEW PATTERN)**

- *Pattern of questions : MCQs*

- *Total marks : 350*

- *Duration of test : Paper I & II - 2.5 Hours
  Paper III - 2.5 Hours*

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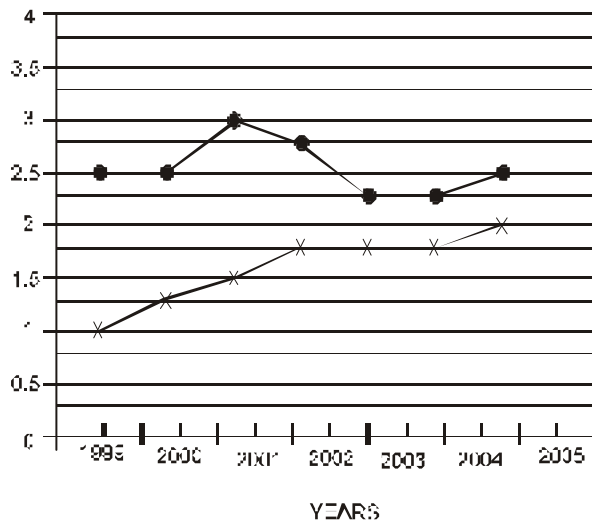**1-C-8, Sheela Chowdhary Road, Talwandi, Kota (Raj.) Tel No. 0744-2429714**

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PAPER – I

1.   A manager must discover various ……….... analyze the reasons for their occurrence and take preventive steps.

(A) Cause to communication

(B) Barrier to communication

(C) Both (a) and (b)

(D) None

2.   "It is communication of feelings, emotions, attitudes, and thoughts through body movements / gestures / eye contact, etc." which type of communication is this?

(A) Oral communication

(B) Written communication

(C) Non verbal communication

(D) None

3.   Which of the following is a part of the English language which helps us to understand sounds of various alphabets?

(A) Phonetics

(B) Homophones

(C) Both (a) and (b)

(D) None

Questions 4-8 Study the following graph carefully to answer the given questions.

PRODUCTION OF TWO COMPANIES A AND B (IN CRORE UNITS) OVER THE GIVEN YEARS

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4. For Company A, how much is the percent increase in production in 2000 from 1999?

(A) 0.25

(B) 2.5

(C) 25

(D) 12.5

5. How many units is the total production of Company A for the given years?

(A) 9 crores

(B) 17.75 crores

(C) 12.25 crores

(D) 11 crores

6. What is the difference in units produced by the two companies in 1999?

(A) 1,50,000,000

(B) 15,00,00,000

(C) 15,00,000

(D) 15,000

7. How many units is the approximate average production of Company B for the given years?

(A) 3 crores

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(B) 2.55 crores

(C) 2.75 crores

(D) 2.25 crores

8. In which year did both the companies have no change in production from the previous year?

(A) 2000

(B) 2002

(C) 2003

(D) 2004

9. If sampled in reconnaissance mode, data limitation requires use of

(A) Maximum

(B) Minimum

(C) Both (a) and (b)

(D) None

10. If estimating average concentrations is planned

(A) Exposure units must be defined

(B) Sufficient samples are required

(C) Both (a) and (b)

(D) None

11. Which Can be used to evaluate if constituents in subsurface are correlated and have the same or different sources?

(A) Scatter plots

(B) Ratio plots

(C) Multivariate plots

(D) None

12. Which of the following Can be used to evaluate if ratios of constituents in subsurface are similar or different from those in indoor/outdoor air?

(A) Scatter plots

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(B) Ratio plots

(C) Multivariate plots

(D) None

13. Which of the following collection techniques were used as the primary research methods for this study?

(A) Qualitative

(B) Quantitative

(C) Both (a) and (b)

(D) None

14. in order to organize, classify and analyze the gathered information, used

(A) Graphs

(B) Statistics

(C) Both (a) and (b)

(D) None

Direction (15-19) The strength of Indian Democracy lies in its tradition, in the fusion of the ideas of democracy and national independence which was the characteristic of the Indian Nationalist Movement long before independence. Although the British retained supreme authority in India until 1947, the provincial elections of 1937 provided real exercise in democratic practice before national independence. During the Pacific war India was not overrun or seriously invaded by the Japanese and after the war was over, the transfer of power to a government of the Indian Congress Party was a peaceful one as far as Britain was concerned. By 1947 'Indianisation' had already gone far in the Indian Civil Service and Army, so that the new government could start with effective instruments of central control.

After independence, however, India was faced with two vast problems; the first, that of economic growth from a very low level of production and the second was that of ethnic diversity and the aspirations of sub nationalities. The Congress leadership was more aware of the former problem than of the second. As a new political elite which had

rebelled not only against the British Raj but also against India's old social order, they were conscious of the need to initiate economic development and undertake social reforms, but

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as nationalists who had led a struggle against the alien rule on behalf of all parts of India, they took the cohesion of the Indian nation too much for granted and underestimated the centrifugal forces of ethnic division, which were bound to be accentuated rather than diminished as the popular masses were more and more drawn into politics. The Congress party was originally opposed to the idea of recognizing any division of India on a linguistic basis and preferred to retain the old provinces of British India which often cut across linguistic boundaries. However, this was later conceded as the basis for a federal 'Indian Union'. The rights granted to the States created new problems for the Central Government. The idea of making Hindi the national language of a united India was thwarted by the recalcitrance of the speakers of other important Indian languages and the autonomy of the States rendered central economic planning extremely difficult. Land reforms remained under the control of the States and many large-scale economic projects required a degree of cooperation between the Central Government and one or more of the States which, it was found, was impossible to achieve. Coordination of policies was difficult even when the Congress party was in power both in the State and at the Centre. When a Congress Government in Delhi was confronted with non-Congress parties in office in the States, it became much harder.

15. Which of the following problems was India faced with after Independence ?

    (A) Military attack from a country across the border.

    (B) Lack of coordination between the Central and State Governments.

    (C) Improper coordination of various Government policies

    (D) Increasing the production from a very low level

16. Which of the following issues was not appropriately realized by the Central Government.

    (A) Ethnic diversity of the people

    (B) A national language for the country

    (C) Implementation of the formulated policies

    (D) Centre -State relations

17. Why was central economic planning found to be difficult?

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(A) Multiplicity of States and Union Territories

(B) Lack of coordination in different Government departments

(C) Autonomy given to the States in certain matters

(D) Lack of will in implementing land reforms

18. Why was the linguistic reorganization of the State accepted?

(A) The States were not cooperating with the Central Government

(B) Non- Congress Governments in the States demanded such a reorganization of the States

(C) No common national language emerged

(D) Strong pressure from the States was exerted on the Central Government to create such States

19. Which, according to the passage, can be cited as an exercise in democratic practice in India before Independence?

(A) The handing over of power by the British to India

(B) The Indianisation of the Indian Civil Service

(C) A neutral role played by the Army

(D) None of the above

20. The information to be collected in survey method are related to

(A) Present Position

(B) Aims of the research

(C) The attainment of aim of research

(D) All of the above

21. Research is done for

(A) Knowledge of research process

(B) Solving a business problem

(C) Interest in research

(D) Experience

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22. A research problem is feasible only when

    (A) It is researchable

    (B) It has some utility

    (C) It is new

    (D) All of the above

23. One of the essential characteristics of research is

    (A) Sensitivity

    (B) Generalizability

    (C) Usability

    (D) Replicability

24. Identify the main Principle on which the Parliamentary System operates.

    (A) Responsibility of Executive to Legislature

    (B) Supremacy of Parliament

    (C) Supremacy of Judiciary

    (D) Theory of Separation of power

25. The reservation of seats for women in the Panchayat Raj Institutions is :

    (A) 30% of the total seats

    (B) 33% of the total seats

    (C) 33% of the total population

    (D) None

26. Match list I with list II and select the correct from the code given below :

    List I (Institutions)   List II (Locations)

    1. Indian Veterinary Research Institute   i. Pune

    2. Institute of Armament Technology   ii. Izat Nagar

    3. Indian Institute of Science   iii. Delhi

    4. National Institute for Educational Pannesi and Administrators   vi. Bangalore

    (A) 1-ii, 2-i, 3-iv, 4-iii

    (B) 1-ii, 2-iv, 3-ii, 4-iii

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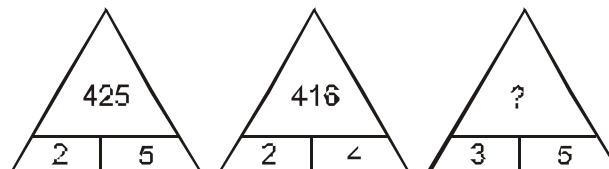
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(C) 1-ii, 2-iii, 3-I, 4-iv

(D) 1-iv, 2-iii, 3-ii, 4-i

27. Who was chairman of the UGC committee 1969 appointed for administrative legislation of the universities?

(A). Dr. Zakir Hussain

(B) Dr. P B Gajendragadkar

(C) Dr. L S Mudaliar

(D) Dr. Radha Krishnan

28. UGC has launched career oriented program in

(A) 1964-65

(B) 1994-95

(C) 1997-98

(D) 1980-81

29. The prime minister of India is appointed from _____

(A) The leading Party in Lok Sabha

(B) The Leading Party in Rajya Sabha

(C) The leading party in Lok Sabha and Rajya Sabha combined

(D) None of the above

30. The study of interrelations between Organism and their environment is called___

(A) Biosphere

(B) Ecology

(C) Synecology

(D) Autecology

31. The term ICT is now also used to refer to the convergence of

(A) Audio visual

(B) Telephone network

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(C) Both (a) and (b)

(D) None

32 Which was the first National Park established in India?

(A) Anshi National Park

(B) Gir National Park

(C) Kanha National Park

(D) Jim Corbett National Park

33 Fossil Fuels include

(A) Oil

(B) Natural Gas

(C) Coal

(D) All of the above

34 Noise in excess of _____ is called noise pollution

(A) 40-65 db

(B) 60-70 db

(C) 80-100 db

(D) None of the above

35 Effectiveness of teaching depends on _____

(A) Handwriting of Teacher

(B) Speaking ability of Teacher

(C) Qualification of the Teacher

(D) Subject Understanding of the Teacher

36 Verbal Guidance is least effective in the learning of _____

(A) Aptitudes

(B) Skills

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(C) Attitudes

(D) Relationship

37 The participation of students will be maximum if _____ method is used for teaching.

(A) Text Books

(B) Discussion Method

(C) Conference Method

(D) Lectures

38 The primary responsibility of the teacher's adjustment lies with

(A) The Students

(B) The Principal

(C) The Community

(D) The Teacher himself

39. The First Kindergarten was started by

(A) William James

(B) A D Clinton

(C) Freidrich Forebel

(D) J H Hills

40. In following questions, number series is given. One of the numbers in each series is wrong. After searching wrong number find the correct number in its place.

510, 254, 126, 64, 30, 14, 6

(A) 252

(B) 62

(C) 130

(D) 9

41. Which reasoning determines whether the truth of a conclusion can be determined for that rule, based solely on the truth of the premises?

(A) Deductive

(B) Inductive

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(C) Abductive

(D) All

42. Insert the missing number or letter from among the given alternatives.

(A) 140

(B) 280

(C) 875

(D) 925

43. In the following question assuming the given statements to be true, find out which of the two assumptions I and II given below them is/are definitely true give answer as.

(A) Only assumption I is implicit

(B) Only assumption II is implicit

(C) Either I or II is implicit

(D) Neither I nor II is implicit

(E) Both I and II are implicit

Statement: The State government has decided to appoint four thousand primary school teachers during the next financial year.

Assumptions:

I. There are enough schools in the state to accommodate four thousand additional primary school teachers.

II. The eligible candidates may not be interested to apply as the government may not finally appoint such a large number of primary school teachers.

**44.** What is the latest write-once optical storage media?

(A) Digital paper

(B) Magneto-optical disk

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(C) WORM disk

(D) CD-ROM disk

45. Which of the following identifies a specific web page and its computer on the Web?

(A) Web site

(B) Web site address

(C) URL

(D) Domain Name

Direction (46-47) In the following figure, rectangle, square, circle and triangle represents the regions of wheat gram, maize and rice cultivation respectively. On the basis of the figure, answer the following questions.
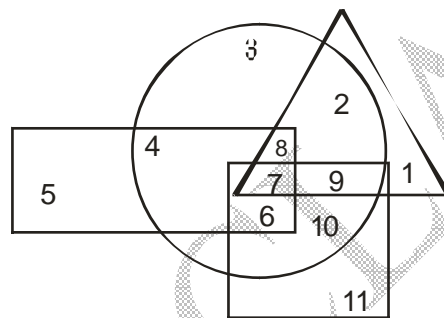
46. Which of the area is cultivated for wheat and maize only?

(A) 8

(B) 6

(C) 5

(D) 4

47. Which of the area is cultivated for maize only?

(A) 10

(B) 2

(C) 3

(D) 4

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48. Pointing to a photograph. Bajpai said, "He is the son of the only daughter of the father of my brother." How Bajpai is related to the man in the photograph?

(A) Nephew

(B) Brother

(C) Father

(D) Maternal Uncle

49. Light Year is a unit of:

(A) Intensity of light

(B) Distance

(C) Time

(D) Planetary motion

50. Tsunamis are huge sea waves caused by :

(A) Earthquakes

(B) Volcanoes

(C) Winds

(D) Icebergs

PAPER II

1. The output of a logic gate is 1 when all its inputs are at logic 0. The gate is either

(A) A NAND or an EX-OR

(B) An OR or an EX-NOR

(C) An AND or an EX-OR

(D) A NOR or an EX-NOR

2. What is the simplification of the following Boolean expression in a Product-Of-Sum form?

$$Out = (A+B+C+\overline{D})(A+B+\overline{C}+D)(A+\overline{B}+C+\overline{D})(A+\overline{B}+\overline{C}+D)$$
$$(\overline{A}+\overline{B}+\overline{C}+D)(\overline{A}+B+C+\overline{D})(\overline{A}+B+\overline{C}+D)$$

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(A) Out = (A+B+ NOT(C)) (A+NOT(C)+ D) (C+NOT(D))

(B) Out = (A+B) (A+NOT(D)) (B+NOT(C)+D)

(C) Out = (B+C+ NOT(D)) (A+C+ NOT(D)) (NOT(C)+D)

(D) Out = (A+NOT(B)+D) (C+D) (B+NOT(C)+D)

3. What is the appropriate form for the given k-map?

(A) F(W,X,Y,Z) = Σm (0,3,4,6,8,10,11,12,14)

(B) F(W,X,Y,Z) = Σm (0,2,5,6,8,10,13,14,15)

(C) F(W,X,Y,Z) = Σm (1,2,5,6,8,9,11,14,15)

(D) F(W,X,Y,Z) = Σm (1,2,3,7,9,10,11,14,15)

4. How many fibres are required by a unidirectional and bidirectional ring respectively, to support their working traffic?

(A) 1 and 1

(B) 2 and 1

(C) 2 and 2

(D) 1 and 2

5. Find odd one out related to transmission media cables?

(A) Basic rate ISDN can transmit data at a rate of 512 kilobits per second on an existing local telephone line.

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(B) A T1 line is a dedicated telephone connection of 24 channels.

(C) A T1 channel can be configured to carry either voice or data traffic.

(D) Cable modems provide high-speed transmission over cable TV lines and are shared by many users.

6. Mechanism to protect private networks from outside attack is

(A) Firewall

(B) Antivirus

(C) Digital signature

(D) Formatting

7. What does a metric of 16 hops represent when using RIP?

(A) Number of hops to the destination

(B) Destination unreachable

(C) Number of routers

(D) Bandwidth

8. If the 8085 adds 87H and 79H, specify the contents of the accumulator and the status of the S, Z, and CY flag?

(A) 10H; S =1, Z = 0, C Y= 1

(B) 01H; S =0, Z = 0, C Y= 1

(C) 00H; S =0, Z = 1, C Y= 1

(D) 11H; S =1, Z = 1, C Y= 0

9. If the stack pointer is initialized with (4FEB) $_H$, then after execution of Push operation in 8085 microprocessor, the Stack Pointer shall be

(A) 4FEA

(B) 4FEC

(C) 4FE9

(D) 4FED

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10. If an input and output port can have the same 8-bit address how does the 8085 differentiate between the ports?

(A) The input port requires the WR and the output port requires the RD signal

(B) The input port requires the RD and the output port requires the WR signal

(C) The input port and output port requires low I/O

(D) None of the above

11. Consider the grammar given below

E→ E+E | E*E | E-E | E/E | E^E | (E) | id

Assume that + and – have the same but least precedence, * and / have the next higher precedence but the same precedence and finally ^ has the highest precedence. Assume + and – associate to the left like * and / and that ^ associates to the right. Choose the correct statement with respect to relations for the ordered pairs (^,^) , (-,-) , (+,+) , (*,*) in the operator precedence table constructed for the grammar

(A) all <

(B) all >

(C) <,>,=,<

(D) <,>,>,>

12. P, Q, R are three languages. If P and R are regular and if PQ=R, then

(A) Q has to be regular

(B) Q cannot be regular

(C) Q need not be regular

(D) Q has to be a CFL

13. Which of the following conversion is not possible (algorithmically)?

(A) regular grammar to context-free grammar

(B) nondeterministic FSA to deterministic FSA

(C) nondeterministic PDA to deterministic PDA

(D) nondeterministic TM to deterministic TM

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14. The following are the set of processes with their respective CPU burst time (in milliseconds).

Processes CPU   Burst time

P1	10
P2	5
P3	5

What will be the average waiting time if the process arrived in the order: P1, P2 & P3?

(A) 6.82 unit

(B) 7.56 unit

(C) 8.33 unit

(D) 9.97 unit

15. Match the following:

Column I	Column II
p) time sharing	(1) Program first executed when a computer is turned on
q) process	(2) Part of an operating system that communicates with the user
r) bootstrap	(3) Technique that allows multiprocessing on a computer with a single CPU
s) shell	(4) Activity of executing a program

	(p)	(q)	(r)	(s)
(A)	(4),	(1),	(2),	(3)
(B)	(3),	(4),	(1),	(2)
(C)	(2),	(3),	(4),	(1)
(D)	(1),	(4),	(2),	(3)

16. In Priority Scheduling a priority number is associated with each process. The CPU is allocated to the process with the highest priority. The problem of starvation is resolved by which of the following?

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(A) Terminating the process.

(B) Aging

(C) Mutual Exclusion

(D) Semaphore

17. Which of the following does not support for Page-Stealer process?

(A) It is a kernel process that makes room for the incoming pages

(B) It is created by the Kernel at the system initialization and invokes it throughout the lifetime of the system.

(C) Kernel locks a region when a process faults on a page in the region, so that page stealer cannot steal the page, which is being faulted in.

(D) All are correct.

18. If you type 'cat prog.c' at a UNIX command prompt, which of the following sequences of system calls would be invoked?

(A) The shell calls fork(); the child process calls exec() and the parent calls wait()

(B) The shell calls fork(); the child calls wait() and the parent calls exec()

(C) The shell calls exec() and then wait() and then fork()

(D) The shell calls wait() then fork(), creating a child which calls exec()

19. The 4.3BSD operating system is the version of:-

(A) UNIX

(B) C

(C) C#

(D) C++

20. The mechanism of understanding what customer wants, analyzing needs, assessing feasibility are provided by

(A) Analyzing process

(B) Requirement engineering

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(C) System modeling

(D) Checking process

21. Which of these describe the activity of a contract review?

(A) Evaluation of the target market

(B) Evaluation of the development risks

(C) Evaluation of the weather during the software development.

(D) Evaluation of the staff's personal background

22. Insufficient identification is a

(A) Technology-related problem

(B) Process-related problem

(C) People-related problem

(D) Product-related problem

23. Which of the following is a formal reference point that measures system characteristics at a specific time?

(A) Benchmark

(B) Baseline

(C) Functional

(D) Control

24. Five nines of reliability refers to

(A) Five software engineering practices that must be in place and assessed at level 9 in order to ensure reliability

(B) A product that is operational 99.999% of the time

(C) A product that fails one time in 10,000 days

(D) A product which fails only five times in 99,999 days

25. Which of the following is not a static testing tool?

(A) Static analyzers

(B) Code inspectors

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(C) Output comparators

(D) Standard enforces

26. Match the following-

	Column I		Column II
p)	Disparate data	(i)	Archive data
q)	Non volatile data	(ii)	Level of detail
r)	Data granularity	(iii)	Query and analysis
		(iv)	Production data

	(p)	(q)	(r)
(A)	(i),	(iv),	(ii)
(B)	(iii),	(ii),	(iv)
(C)	(ii),	(i),	(iii)
(D)	(iv),	(iii),	(ii)

27. Select the options due to which credit theft is impossible with smart card

I. Key to unlock encrypted information required

II. No physical signature on the card

III. There is no external account number on the card

IV. Smart cards can be used with only acquainted merchants

(A) Only I and II

(B) Only II and III

(C) Only I and III

(D) Only I and IV

28. Amazon.com comes under the following model-

(A) B2B

(B) B2C

(C) C2C

(D) C2B

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29. Match the following:

	Column I		Column II
p)	FAT12	(i)	1996 (Windows 95 OSR2)
q)	FAT16	(ii)	1977 (Microsoft Disk BASIC)
r)	FAT32	(iii)	1988 (MS-DOS 4.0)

	(p)	(q)	(r)
(A)	(iii),	(i),	(ii)
(B)	(iii),	(ii),	(i)
(C)	(ii),	(iii),	(i)
(D)	(i),	(iii),	(ii)

30. Which macro sends an output message to the debug window of compiler:

(A) COUT

(B) FOUT

(C) TRACE

(D) Display

31. In windows95 which tool is used to kill errant hidden processes?

(A) Task Manager

(B) Process Manager

(C) PVIEW

(D) Explorer

32. Which question corresponds best to the following query?

SELECT CID, CDUR - 1,' = PRICE'

FROM COURSES

ORDER BY 2

(a) Select three columns from the COURSES table, of which the third one has a constant value, i.e. " = PRICE". Leave an empty line after every second line.

(b) Select two columns from the COURSES table, the second one gets as title " = PRICE". Sort the data according to the second column, in ascending order.

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(c) Select three columns from the COURSES table, of which the third one has a constant value, i.e. "= PRICE". Sort the data according to the second column, in ascending order.

(d) Select two columns from the COURSES table, of which the second one has a constant value, i.e. "= PRICE". Sort the data according to the second column, in ascending order.

33. . A modification to the database expressed in terms of a view must be translated to the –

(A) Actual relation in the conceptual model of the database

(B) Queries in the actual database

(C) Relations of all the views of that database

(D) Need not be translated and the view of a database accommodates the modification

34.   If $D_1, D_2 ….. D_n$ are domains in relational model then the relation is a table which is a subset ---

(A) { $D_1, D_2 ….. Dn$}

(B) $D_1 \times D_2 \times …. Dn$

(C) $D_1 \cup D_2 \cup ….Dn$

(D) Maximum { $D_1, D_2 ….. Dn$}

35.   If the in order and pre order traversal of a binary tree are DBFEGHAC and ABDEFGHC respectively then, the post order traversal of that tree is

(A) DFGABCHE

(B) FHDGEBCA

(C) DFHGEBCA

(D) CGHFEDBA

36.   "n" elements of a queue are to be reversed using another queue. The number of "ADD" and "REMOVE" required to do so is,

(A) 2*n

(B) 4*n

(C) n

(D) the task cannot be done

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37. Prim's algorithm is a method available for finding out the minimum cost of a spanning tree. Its time complexity is given by:

(A) O(n*n)

(B) O(n logn)

(C) O(n)

(D) O(1)

38. Which of the following is a collision resolution technique with open addressing in the context of hashing?

(A) Linear probing

(B) Separate chaining

(C) Folding

(D) Mid-square method

39. Maximum number of children in a node in a B-tree of order "m" is:

(A) m

(B) m/2-1

(C) m/2+1

(D) m/2

40. A has one share in a lottery in which there is 1 prize & 2 blanks; B has three shares in a lottery in which there are 3 prizes & 6 blanks: compare the probability of A's success to that of B's success as

(A) 7 : 16

(B) 16 : 7

(C) 6 : 14

(D) 14 : 6

41. The following 'C' code : -

```
# include < stdio.h >
main ( )
  { file  * FP ;
```

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FP = fopen (" trial " , " r ");

}

FP points to :-

(A) First character in the file

(B) A structure which contains a ' char ' pointer to the first character in the file.

(C) Name of the file.

(D) None.

42. The eccentricity of node labeled 5 in the graph shown below is:
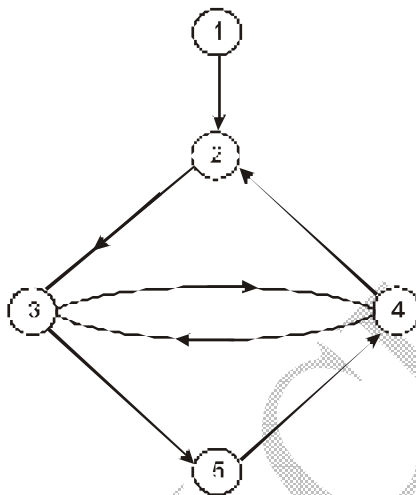
(A) 6

(B) 7

(C) 8

(D) 5

43. Let M be a 3×3 , adjacent matrix corresponding to a given graph of 3 nodes labeled 1, 2, 3. If entry (1, 3) in M^3 is 2, then the graph could be

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(A)

(B)

(C)

(D)
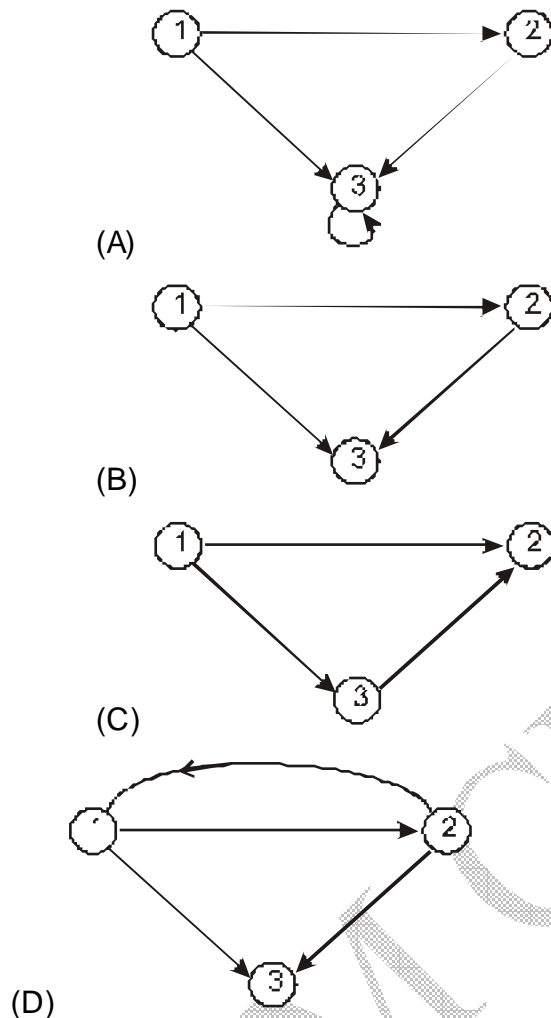
44. Error detection at the data link level is achieved by:-

(A) Bit stuffing

(B) Cyclic redundancy check.

(C) Hamming codes

(D) Equalization

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45. How many characters per second (7 bits + 1 parity) can be transmitted over a 2400 bps line if the transfer is synchronous (1 start and 1 stop bit)?

    (A) 300

    (B) 240

    (C) 250

    (D) 275

46. Represent $(54.78)_{10}$ in normalized binary floating number.

    (A) S = 1 . M = 011011000110, E = 11010011

    (B) S = 0. M = 101101100011, E = 10000100

    (C) S = 0, M= 1010011 10010, E = 10011011

    (D) S =1, M= 101101100011, E = 10000100

47. Which of the following statements are true?

    (i) Constructors may be declared in private, public or protected section.

    (ii) An object with a constructor or destructor can not be used as a member of a union.

    (iii) There can be virtual constructors.

    Choose the correct option:

    (A) Only (i) is true

    (B) Both (i) and (ii) are true

    (C) Only (iii) is true

    (D) Only (ii) is true

48. What happens when an exception is not caught?

    (A) Code in the catch block is generated.

    (B) An error occurs.

    (C) The program is aborted.

    (D) The program executes normally.

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49. _____ is the abstraction process of introducing new characters to an existing class of objects to create one or more new classes of objects.

(A) Specialization

(B) Generalization

(C) Abstraction

(D) Aggregation

50. What will be the result of the following addition?

$(3BCA.5078)_{16} + (9EBD.97F3)_{16} + (5FB.E2C)_{16}$

(A) $(E082.CB2C)_{16}$

(B) $(14916.9241)_{16}$

(C) $(E083.CB2B)_{16}$

(D) $(E916.9241)_{16}$

PAPER III

1. Assertion (A): A digital multiplexer can also be used to implement combinational logic function

Reason (R): In a combinational circuit, the current output depends on the previous outputs also

(A) Both A and R are individually true and R is the correct explanation of A

(B) Both A and R are individually true, but R is not the correct explanation of A

(C) A is true, but R is false

(D) A is false, but R is true

2. 'n' Flip flops will divide the clock frequency by a factor of

(A) n^2

(B) n

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(C) 2^n

(D) log (n)

3.   The content of a 4-bit register is initially 1101. The register is shifted 2 times to the right with the serial input being 1011101. What is the content of the register after each shift?

(A) 1110, 0111

(B) 0001, 1000

(C) 1101, 1011

(D) 1001, 1001

4.   Assume that there are 32 input-output storing units, 32 functions to select and 16 data routes to select. Assume control memory of 16384. How many encoded bits are required assuming that there is a next address field at the microinstructions? Two MUX are used one at input and one at output for a set of 8 registers.

(A) 26

(B) 27

(C) 28

(D) 29

5.   Match the following categories with respect to 8085 instructions:

Column I	Column II
p) Data transfer instruction	(i) CALL
q) Arithmetic Instruction	(ii) CMP
r) Logical Instruction	(iii) STA
s) Branch Instruction	(iv) DCR

	(p)	(q)	(r)	(s)
(A)	(ii),	(iii),	(iv),	(i)
(B)	(iii),	(ii),	(i),	(iv)
(C)	(i),	(iii),	(ii),	(iv)

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(D)   (iii),   (iv),   (ii),   (i)

6.   Find odd one out:

(A) ANA R

(B) PCHL

(C) ORAR

(D) CMA

7.   The PCI bus is the important bus found in all the new Pentium systems because

I.It has plug and play characteristics

II.It has ability to function with a 64 bit data bus

III.Any Microprocessor can be interfaced to it with PCI controller or bridge

(A) Only I and II

(B) Only II and III

(C) Only I and III

(D) All of the above

8.   A single register to clear the lower four bits of the accumulator in 8085 assembly language is?

(A) XRI 0FH

(B) ANI F0H

(C) XRI F0H

(D) ANI 0FH

9.   For correct behaviour during recovery, undo and redo operation must be

(A) Commutative

(B) Associative

(C) Idempotent

(D) Distributive

10.   The part of a database management system which ensures that the data remains in a consistent state is,

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(A) Authorization and integrity manager

(B) Buffer manager

(C) Transaction manager

(D) File manager

11. Isolation of the transactions is ensured by

(A) Transaction management

(B) Application programmer

(C) Concurrency control

(D) Recovery management

12. Which of the following are factors in deciding on database distribution strategies?

I.Organizational forces

II.Frequency of data access

III.Reliability needs

(A) Only I and II

(B) Only II and III

(C) Only I and III

(D) All of the above

13. One way to generate, store and forward messages for completed transactions to be broadcast across a network is through the use of

(A)Stored procedures

(B) Triggers

(C) Functions

(D) SQL statements

14. Evaluate these two SQL statements and determine what is true about them?

I.SELECT last_name, salary , hire_date

FROM EMPLOYEES

ORDER BY salary DESC;

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II.SELECT last_name, salary, hire_date

FROM EMPLOYEES

ORDER BY 2 DESC;

(A) The two statements produce identical results.

(B) The second statement returns a syntax error.

(C) There is no need to specify DESC because the results are sorted in descending order by default.

(D) The two statements can be made to produce identical results by adding a column alias for the salary column in the second SQL statement.

15. Which syntax turns an existing constraint on?

(A)ALTER TABLE table_name

   ENABLE constraint_name;

 (B)ALTER TABLE table_name

   STATUS = ENABLE CONSTRAINT constraint_name;

(C)ALTER TABLE table_name

   ENABLE CONSTRAINT constraint_name;

(D)ALTER TABLE table_name

   STATUS ENABLE CONSTRAINT constraint_name;

16. What is the type of Oracle backup in which all uncommitted changes have been removed from the data files?

(A) Full backup

(B) Consistent backup

(C) Inconsistent backup

(D) Differential backup

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17. Consider the diagram
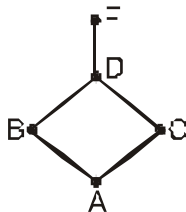
A Euler circuit is,

(A) FDCABF

(B) FDBACDF

(C) FDCACF

(D) None of these

18. If Flags are individual flip-flops, they can be observed on

(A) Multiplexer

(B) Oscilloscope

(C) Stack memory

(D) None of these

19. When a C/SDK program in message handling begins, it immediately registers at least one window class using.

(A) Register class ( ) API function and a RGSCLASS data structure

(B) Register class ( ) API function and a WNDCLASS data structure

(C) Window Register class ( ) API function and a RGSCLASS data structure

(D) Window Register class ( ) API function and a WNDCLASS data structure

20. For window message components, which one is not correct.?

(A) Window message has an unsigned integer containing the actual message.

(B) LPARAM is a 4-byte parameter

(C) WPARAM is a 32-Bits parameter in win 32.

(D) WPARAM contains additional data, required to handle the message.

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21. Which one of the following is not a subdirectory directly under the root?

(A) dev

(B) var

(C) include

(D) None of these

22. What is/are false about UNIX operating system?

(i) Unix consider all files to be a continuous sequence of characters.

(ii) Unix treat physical devices as if they are files & hence programs can access devices with same syntax as files.

(iii) Unix is multi user, multi-programmed but not time scheduled operating system.

(iv) Programs written using UNIX can not be run on a variety of architecture.

(A) (i), (ii), (iv)

(B) (ii), (iii), (iv)

(C) (iii), (iv)

(D) (ii), (iv)

23. Given LPP $\max z = 6x_1 + 4x_2$

Subject to $x_1 + 2x_2 \leq 720$

$2x_1 + x_2 \leq 780$

$x_1 \leq 320$

$x_1, x_2, x_3 \geq 0$

The optional value of objective function will be

(A) 2550

(B) 2560

(C) 2540

(D) None of these

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24. The set $\{(x, y) : y < x^2 + 2x + 1\}$ is

(A) Convex set

(B) Non convex set

(C) Convex polyhedron

(D) None of these

25. A DMS X has four symbols x_1, x_2, x_3, and x_4 with $P(x_1) = \frac{1}{2}$, $P(x_2) = \frac{1}{4}$, and $P(x_3) = P(x_4) = \frac{1}{8}$. What is the entropy for Shannon – fano coding?

(A) 2.75

(B) 1.75

(C) 0.75

(D) 1.05

26. A push down automation has

(A) Infinite set of pushdown symbols

(B) Only one special pushdown symbol

(C) Finite set of input symbols

(D) all of these

27. In TM, the tape has k-tuple of tape symbol, where k is,

(A) Number of tracks

(B) Number of alphabets

(C) Set of tape symbols

(D) None of these

28. The given language

$L = \{ a^m b^m : m \text{ positive} \}$ is,

(A) Regular

(B) Not regular

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(C) unpredictable

(D) None of these

29. XML content is structured as,

(A) Accessible by Application

(B) Inaccessible by user

(C) Containing formatted content

(D) None of these

30. The Breadth - first search Tree are used in,

(A) Banking

(B) Defense

(C) Law

(D) All of these

31. Which of the following parser is more powerful and expensive?

(A) Simple LR

(B) Look ahead LR

(C) Canonical LR

(D) None of these

32. Which of the following is not the required condition for binary search algorithm?

(A) The list must be sorted

(B) there should be the direct access to the middle element in any sublist

(C) There must be mechanism to delete and/or insert elements in list

(D) none of above

33. A BCNF is

(A) Loss less join and dependency preserving

(B) Loss less join and not dependency preserving

(C) Not loss less join and dependency preserving

(D) None of these

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34. Functional dependencies are generalization of

(A) Key dependencies

(B) Relational dependencies

(C) Database dependencies

(D) Functional dependencies

35. The network of the given figure is:

(A) a single layer feed-forward neural network

(B) an autoassociative neural network

(C) a multiple layer neural network

(D) a multiple layer feed-forward neural network
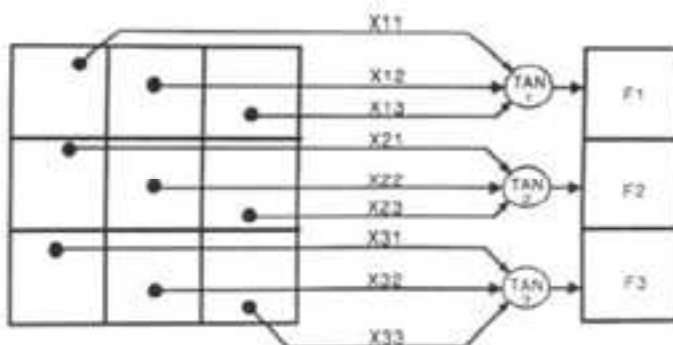
36. What can we find by using the following formula?

Total Fixed Costs

Contribution per unit

(A) Budgeted Profit

(B) Margin of Safety

(C) Break-Even Output

(D) Budgeted Output

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37.   The network shown in the following Figure is trained to recognize the characters H and T as shown below:

If the following pattern was given
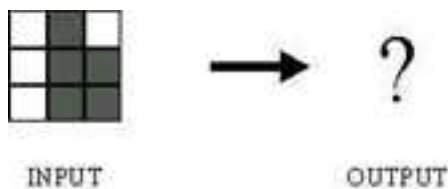
What would be the output of the network?

(a)

(b) OR

(c) OR OR

(d) OR

38.   _____protocol is typically used for error reposing.

(A) DNS

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(B) ICMP

(C) POP-3

(D) IMCP

39.   Macromedia Dreamweaver, Microsoft Frontpage are the examples of which type of Authoring tools?

(A) Pure code based editor

(B) Pure WYSIWYG editor

(C) Compound editor

(D) None of these

40.   _____ is appropriate to use as multipurpose input device when combined with a program for character recognition.

(A) Stylus & grid

(B) light pen

(C) Joystick & track ball

(D) Mouse

41.   When a disk is formatted, the OS creates areas on its surface:

(i) FAT (File Allocation Table)

(ii) Root Folder

(iii) Page Allocation Table

(iv) Data Area

(v) Data Sector

Choose the correct code.

(A) (ii), (iii), (iv)

(B) (i), (ii), (iii), (iv), (v)

(C) (i), (ii), (iv)

(D) (i), (ii), (iii), (iv)

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42. In contiguous memory allocation, each process is contained

(A) In a single contiguous section of memory

(B) In a double contiguous section of memory

(C) In a multiple contiguous section of memory

(D) Both (A) and (B)

43. When processing on output in XML, "new line" symbols are

(A) Copied into output "as is", i.e. "CR + LF" for window, CR for macintosh, LF for Unix.

(B) Converted to single CR symbol

(C) Converted to single LF symbol

(D) Discarded

44. How can you open a link in a new browser window?

(A) < a hrsf = "url" new>

(B) < a href = "url" target = "-blank" >

(C) <a href = "url" target = "new">

(D) None of these

45. Using which tag we insert a Java script in HTML page?

(A) < save script type = "text/javescript" > </javascript>

(B) < script type = "text/javascript"></jscript>

(C) <Jscript type = "text/javascript"> </jscript>

(D) <HTML script type = "text/javascript"> </HTML script>

46. Which of the following aggregate methods does not work if hiring and lay off are possible?

(A) The linear rule

(B) Simulation

(C) The management coefficients model

(D) The transportation method.

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47..(i) DPSH with eight phases will enable the bit rate to be tripled over the corresponding two phase modulation.

(ii) The diameter of a single mode fiber is generally greater than the diameter of a multi mode fiber.

Which of the following option is correct w.r.t the above statement?

(A) (i) – T   (ii) – F

(B) (i) – F   (ii) –F

(C) (i)–F   (ii) – T

(D) (i) – T   (ii) – T

48.   If the ……….…….. Bit in X.25 standard is set to 1, it means that there is more than one packet.

(A) Q

(B) D

(C) M

(D) P

49.   Match the following

(a) Time domain reflectometry	(i) transmission
(b) Frequency hopping and spread spectrum techniques are involved in	(ii) A technique that detects cable breaks bad taps or loose cannectors
(c) 10 base 2	(iii) Multiplexing
(d) Sharing of communication channel.	(iv) thin ethernet

Which of the following option is correct for the given match-ups?

(A) (a) – (ii)   (b) – (i)   (c) – (iv)   (d) – (iii)

(B) (a) – (i)   (b) – (ii)   (c) – (iv)   (d) – (iii)

(C) (a) – (iii) (b) – (ii)   (c) – (i)   (d) – (iv)

(D) (a) – (iv) (b) – (i)   (c) – (iii)   (d) – (ii)

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50. What is the maximum burst length on a 155.52 Mops ATM ABR connection whose PCR value 200,000 and whose L value is 25 µsec?

(A) 13

(B) 12

(C) 14

(D) 15

51. Solve the minimum-span problem for the network given in Fig. The numbers on the branches represent the costs of including the branches in the final network.
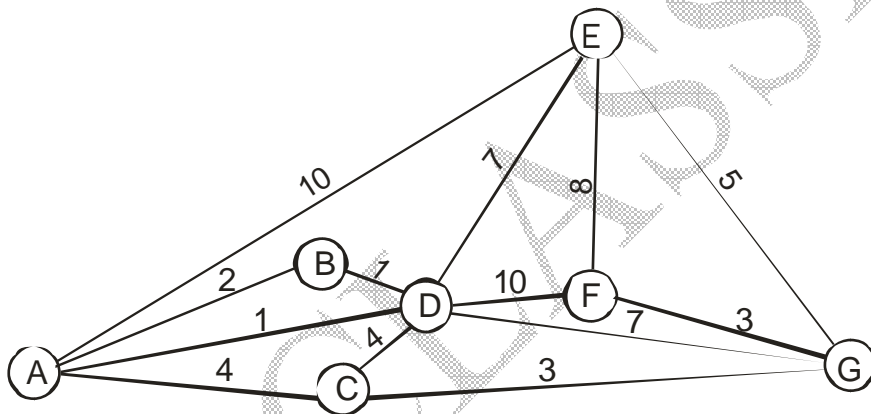
Find the minimum cost for connecting the network.

(A) 16

(B) 15

(C) 17

(D) 18

52. Consider the following CFG

$S \rightarrow OB$ $S \rightarrow bA$

$B \rightarrow b$ $A \rightarrow a$

$B \rightarrow bS$ $A \rightarrow aS$

$B \rightarrow aBB$ $A \rightarrow bAA$

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Consider the following derivation

$S \Rightarrow aB$

$\Rightarrow aaBB$

$\Rightarrow aaBb$

$\Rightarrow aabSb$

$\Rightarrow aabbAb$

$\Rightarrow aabbab$

This derivation is

(A) A leftmost derivation

(B) A rightmost derivation

(C) Both leftmost and rightmost derivation

(D) Neither leftmost nor rightmost derivation

53. Which of the following regular expression identity is true

(A) $r(*) = r*$

(B) $(r* s*)* = (r + s)*$

(C) $(r + s)* = r* + s*$

(D) $r*s* = r* + s*$

54. Consider following grammar

$S \rightarrow gA$

$A \rightarrow aA/eB/g$

$B \rightarrow gA$

Equivalent left linear grammar will be

$S \rightarrow Ag$

$A \rightarrow Aa / Bg / g$

(A) $B \rightarrow Ag$

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            S → gA

            A → aA / gB / g

(B) B → gA

            S → AB

            A → aA / gB / g

(C) B → gA

(D) None of above

55. A self relocating program is one which

(A) Cannot be made to execute in any area of storage other than the one designated

for it at the time of its coding or translation.

(B) Consists of a program and relevant information for its relocation.

(C) Can itself perform the relocation of its address-sensitive portions

(D) All of the above

56. Arrange the following steps of structured design methodology in the correct order

(i) First level factoring

(ii) Restate the problem as a data flow diagram

(iii) Identify the input and output data elements

(iv) Factoring of input, output and transform branches.

(A) (ii)-(iii)-(iv)-(i)

(B) (ii)-(iii)-(i)-(iv)

(C) (ii)-(iv)-(iii)-(i)

(D) (i)-(ii)-(iii)-(iv)

57. Which of the following options is true for the given statement?

(i) On line data capture is preferable to batch data entry because it reduces human

effort in entering data.

(ii) Prototyping motivates the end user and required his active participation.

(A) (i) — T (ii) — F

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(B) (i) — F (ii) — T

(C) (i) — F (ii) — F

(D) (i) — T (ii) — T

58. Software metrics cannot be applied in

(A) Cost and size estimation techniques.

(B) Controlling software development projects

(C) Prediction of quality levels

(D) None of these

59. Which of the following systems are relatively independent?

(A) Loosely coupled systems

(B) Uncoupled systems

(C) Highly coupled systems

(D) None of these

60. Representation of list in PROLOG is

(A) {2, 4, 8, 10, 12}

(B) [2, 4, 8, 10, 12], ['jack', 'jill', 'jane 1']

(C) [2, 4, 8, 10, 12]

(D) {'jack', 'jill', 'jane 1'}

61. In which of the following language variables must begin with a capital letter and could be followed by other letters, digits underscores or hyphenations but no blanks?

(A) C

(B) C++

(C) PROLOG

(D) JAVA

62. Which of the following is a control structure in PROLOG?

p:- a, b, c;

(A) p:-d, e, f;

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p:-a; b; c;

(B) p:-d; e; f;

p:-a, b, c;

(C) p:-d, e, f;

(D) None of these

63. _____ is the number of arguments in a predicate form.

(A) Atom

(B) Arity

(C) Parameter

(D) Clause

64. Which of the following is not a graphic standard?

(A) MHEG

(B) PREMO

(C) OAD

(D) Acrobat

65. Arrange the following steps of animation in the correct sequence.

(i) Object definitions

(ii) Generation of in-between frames

(iii) Storyboard layout

(iv) Keyframe specifications

(A) (iii), (i), (iv), (ii)

(B) (iii), (iv), (ii), (i)

(C) (i), (ii), (iii), (iv)

(D) (iv), (ii), (i), (iii)

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66. _____ allow object motion characteristics to be specified as part of the object definitions

(A) Key frame systems

(B) Parameterized systems

(C) Scripting systems

(D) None of these

67. Which of the following statement is true?

(A) Macro definition can not appear within other macro definition in assembly language programs

(B) Overlaying is used to run a program which is longer than the address space of computer.

(C) Mutual memory can be used to accommodate a program which is longer than the address space of computer.

(D) It is not possible to write interrupt service routines in a high level language.

68. In anomaly detection, to detect anomalous login time for a user we use,

(A) Monitoring system calls commands

(B) Linux based commands

(C) Monitoring shell commands

(D) Monitoring kernel commands

69. A customer is running Windows NT and has 20 GB of unformatted hard disk space. The customer wants to format the 20 GB drive, move the data from his 5 GB drive and label the 20 GB drive as drive B. What Windows NT applet can perform all these tasks for him?

(A) File Administrator

(B) Partition Magic

(C) Drive Administrator

(D) Disk Administrator

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70. Which of the following MPI call determines number of processes in a group associated within?

(A) MPI_Init( )

(B) MPI_Comm_Size( )

(C) MPI_Comm_Rank( )

(D) MPI_Processes

71. main( )

```
{
        int x = 4, y = 0, z;
        while(x > = 0)
        {
        if (x = = y)
        break;
        else
        printf("\n %d%d", x, y);
        x- -;
        y++;
        }
}
```

What will be the output of the given program

(A) 3 1
    4 0

(B) 4 0
    3 1

(C) 1 3
    0 4

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(D) $\begin{array}{cc} 3 & 3 \\ 4 & 0 \end{array}$

72. _____ and _____ are the two advantages of high level programming language

(A) Readability, Robustness

(B) Portability, Robustness

(C) Readability, Portability

(D) None of these

73. Which of the following options is correct for the given statements?

(i) A PROLOG program does not involve a number of facts and rules

(ii) PROLOG is known for its in-built depth first search engine and for its case in quick prototyping.

(iii) A matching in PROLOG is performed argument to argument only.

(A) Only (i) is correct

(B) Only (ii) is correct

(C) (i) and (ii) both are correct

(D) All are correct

74. For passing message buffers, which of the following encoding option follows?

(A) Pvm data in

(B) Pvm data flow

(C) Pvm data default

(D) None of these

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75.
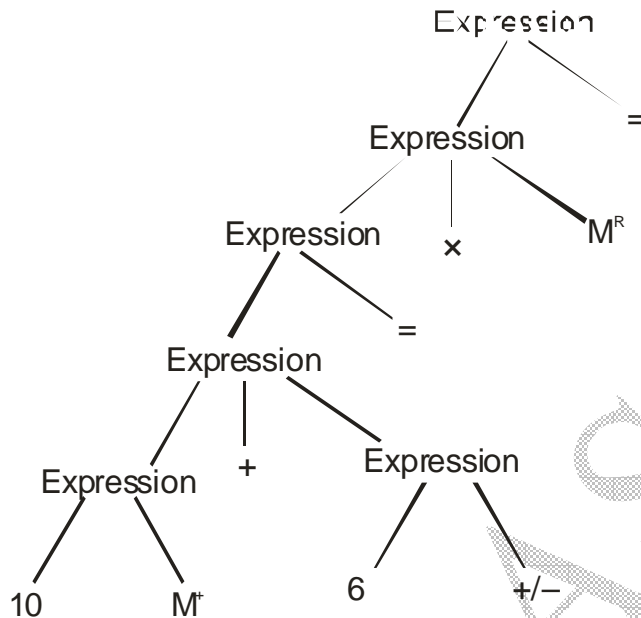
Above abstract syntax tree is for expression

(A) $10\ M^* * / - + 6 = X = M^R$

(B) $10\ M^* + 6^*/- = X\ M^R =$

(C) $10M^* + 6 * /- X\ M^R = =$

(D) $10M^* * /- + 6\ X\ M^R = =$

ANSWER KEY

PAPER-I

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Answer	B	C	A	C	D	A	B	D	A	C	A	B	A	C	D	A	C	D	B	D
Question	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Answer	B	D	C	A	D	A	B	B	A	B	C	D	D	C	D	D	B	D	C	B
Question	41	42	43	44	45	46	47	48	49	50										
Answer	A	D	A	D	D	D	C	D	B	A										

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PAPER - II

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Answer	D	C	B	D	A	A	B	C	D	B	D	C	C	C	B	B	D	A	A	B
Question	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Answer	A	B	B	B	C	D	C	B	C	C	C	C	A	B	C	D	A	A	A	A
Question	41	42	43	44	45	46	47	48	49	50										
Answer	D	B	A	B	A	B	D	C	A	C										

PAPER - III

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Answer	C	C	A	D	D	B	D	B	C	C	C	D	B	A	C	B	A	C	B	D
Question	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Answer	C	C	B	B	B	C	A	B	A	D	C	C	B	A	A	C	B	B	C	A
Question	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	C	A	C	B	B	D	A	C	A	B	C	D	B	A	C	B	C	D	A	B
Question	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75					
Answer	C	A	B	C	A	B	B	C	D	B	B	C	B	C	B					

HINTS AND SOLUTIONS

PAPER –I

1. (B) An effective and efficient communication system requires managerial proficiency in delivering and receiving messages. A manager must discover various barriers to communication, analyze the reasons for their occurrence and take preventive steps to avoid those barriers. Thus, the primary responsibility of a manager is to develop and maintain an effective communication system in the organization.

2. (C) non verbal communication is communication of feelings, emotions, attitudes, and thoughts through body movements / gestures / eye contact, etc.

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3. (A) Phonetics is a part of the English language which helps us to understand sounds of various alphabets. How an alphabet should sound is taught to us with the help of Phonetics.

4.(C) % increase = $\dfrac{0.25\,\text{crore}}{1\,\text{crore}} \times 100$

$= 25\,\%$

5.(D) for company A

$1 + 1.25 + 1.5 + 1.75 + 1.75 + 1.75 + 2$

$= 11$ crore

6.(A) $(2.5 - 1)$ crores $= 1.5 \times 100\,00\,000$

$= 150\,00\,000$

7.(B) Total production of B

$= 2.5 + 2.5 + 3 + 2.75 + 2.25 + 2.25 + 2.5$

$= 17.75$

Average production $= \dfrac{17.75}{7} = 2.55$

8.(D) In year 2004.

9.(A) If sampled in reconnaissance mode, data limitation requires use of maximums. Results are screening level- not definitive.

10.(C) If estimating average concentrations is planned

Exposure units must be defined Must be considered in developing DQOs for project, or results may not be accepted.

Sufficient samples are required 8-10 samples when contaminant concentrations vary within a narrow range 10-15 sample when concentrations are less predictable

Calculate 90th Upper Confidence Limit (UCL)

11.(A) Scatter plots Can be used to evaluate if constituents in subsurface are correlated and have the same or different sources.

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12.(B) Ratio plots Can be used to evaluate if ratios of constituents in subsurface are similar or different from those in indoor/outdoor air, potentially informing decisions about confounding ambient sources.

13.(A) Qualitative data collection techniques were used as the primary research methods for this study. Participant and direct observation plus note taking were the most important techniques used.

14.(C) qualitative data collection techniques were used as primary research methods. However in order to organize, classify and analyze the gathered information, we used graphs and statistics as a way to measure the students' level of improvement through the use of reading strategies

15.(D) Production was at very low level.

16.(A) Ethnic diversity of the people was not appropriately realized by the Central Government.

17.(C) Central economic planning found to be difficult because autonomy was given to the States in certain matters

18.(D) Because that time no common language emerged.

19.(B) "The Indianisation of the Indian Civil Service" , can be cited as an exercise in democratic practice in India before Independence

20.(D) The information to be collected in survey method are related to present position, aims of the research &the attainment of aim of research

21. (B) Research is done for solving a business problem

22. (D) A research problem is feasible only when it is researchable, it has some utility, and it is new .

23. (C) One of the essential characteristics of research is usability.

24.(A) A parliamentary system is a system of democratic government in which the ministers of the Executive Branch derive their legitimacy from and are accountable to a Legislature or parliament; the Executive and Legislative branches are interconnected. It is a political

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system in which the supreme power lies in a body of citizens who can elect people to represent them.

25.(D) The Cabinet approved the proposal for enhancing reservation for women in Panchayats on from the present 33 per cent to 50 per cent with the provision being applicable to all seats filled through direct election, office of chairpersons and of offices reserved for SC/ST.

26.(A) IVRI is situated in Izat Nagar.

IAT is situated in Pune

IISc is situated in Banglore

NIEPA is situated in Delhi.

27.(B) Dr. P B Gajendragadkar was chairman of the UGC committee 1969 appointed for administrative legislation of the universities.

28.(B) UGC has launched career oriented program in 1994-95.

29.(A) The prime minister of India is appointed from the leading Party in Lok Sabha.

30.(B) The study of interrelations between Organism and their environment is called ecology.

31.(C) The term ICT is now also used to refer to the convergence of audio-visual and telephone networks with computer networks through a single cabling or link system.

32.(D) Jim Corbett National Park was the first National Park established in India.

33.(D) Fossil fuels are fuels made by natural processes such as anaerobic decomposition of buried dead organisms.

Ex. Oil, Natural gas, coal etc.

34.(C) Noise in excess of 80-100DB is called noise pollution.

35.(D) Effectiveness of teaching depends on Subject Understanding of the Teacher

36.(D) Verbal Guidance is least effective in the learning of Relationship.

37. (B) The participation of students will be maximum if Discussion Method is used for teaching.

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38.(D) The primary responsibility of the teacher's adjustment lies with The Teacher himself

39.(C) The First Kindergarten was started by Freidrich Forebel

40.(B)
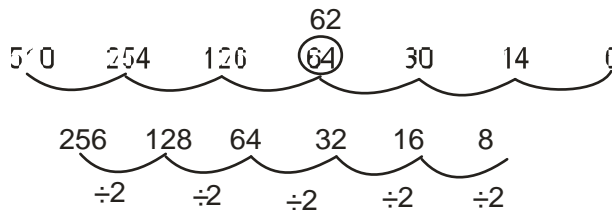
30, 64 is wrong & must be replaced by 62.

41.(A) Deductive reasoning determines whether the truth of a conclusion can be determined for that rule, based solely on the truth of the premises.

42.(D) $(2)^2 = 4$, $(5)^2 = 25 \Rightarrow 425$

$(2)^2 = 4$, $(4)^2 = 16 \Rightarrow 416$

$(3)^2 = 9$, $(5)^2 = 25 \Rightarrow 925$.

43. (A) Such decisions as given in the statement are taken only after taking the existing vacancies into consideration. So, I implicit while II does not implicit.

44.(D) CD-ROM disk is the latest write-once optical storage media

45.(D) Domain Name identifies a specific web page and its computer on the Web.

46.(D) The required region is the one which is common only to the rectangle and circle and is not a part of either the triangle or square

47.(C) The required region is the one which lies inside the circle but outside the rectangle, square and triangle,

48.(D) The man in the photo is the son of the sister of Bajpai. Hence, Bajpai is the maternal uncle of the man in the photograph.

49.(B) Light Year is a unit of distance.

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50.(A) Tsunamis are huge sea waves caused by earthquakes.

PAPER- II

1.(D) The output of a logic gate is 1 when all inputs are at logic 0. The gate is either a NOR or an EX-   NOR.

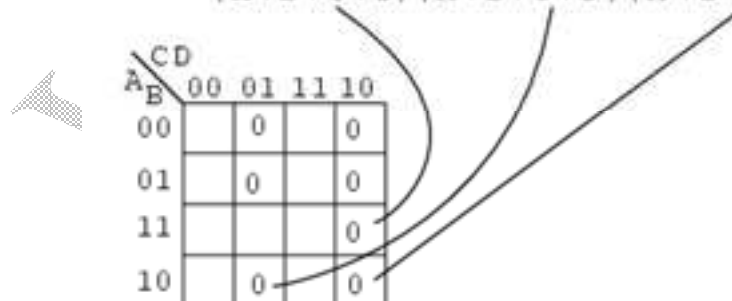| Input		Output
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

Truth Table for NOR Gate

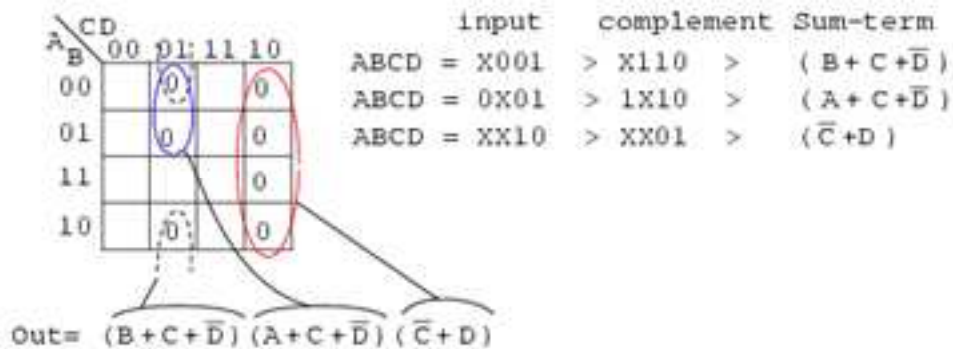| Input		Output
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

Truth Table for EX-NOR Gate

2. (C) Transfer the seven maxterms to the map below as **0**s.

$$Out = (A+B+C+\overline{D})(A+B+\overline{C}+D)(A+\overline{B}+C+\overline{D})(A+\overline{B}+\overline{C}+D)$$
$$(\overline{A}+\overline{B}+\overline{C}+D)(\overline{A}+B+C+\overline{D})(\overline{A}+B+\overline{C}+D)$$

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Map the **0**s as they appear left to right top to bottom on the map above. Now form groups of cells.


```
  \CD
A  \ 00 01 11 10     input    complement  Sum-term
 B
00                ABCD = X001  >  X110  >  ( B + C + D̄ )
01                ABCD = 0X01  >  1X10  >  ( A + C + D̄ )
11                ABCD = XX10  >  XX01  >  ( C̄ + D )
10
```

Out = (B + C + D̄) (A + C + D̄) (C̄ + D)

The final result is product of the three sums i.e.
Out = (B+C+ NOT(D)) (A+C+ NOT(D)) (NOT(C)+D)

3.**(B)**
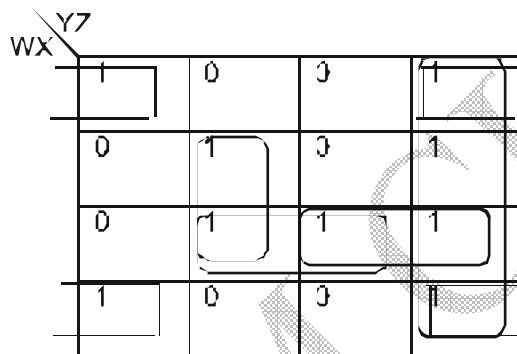
$F(W,X,Y,Z) = \Sigma m\ (0,2,5,6,8,10,13,14,15)$

4.(D) SONET rings can be classified by the routing principle and the SONET overhead used for triggering protection switching. A ring is called a unidirectional ring if bidirectional working signals follow opposite physical routes around a ring , while bidirectional working signals in a bidirectional ring follow the same route. Due to this routing principle, a unidirectional and a bidirectional ring, require one and two fibers respectively, to support their working traffic.

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5.(A) Each ISDN line is made up of separate 64-Kbps "channels" for sending and receiving calls, plus a channel that is used primarily for signaling.

6.(A) Firewall is the mechanism to protect private networks from outside attack. It is a software or hardware used to isolate a private network from a public network.

7.(B) Routing Information Protocol is a distance vector routing protocol that uses hop count as its metric. The maximum hop count is 15. 16 hops are considered unreachable. RIP updates are broadcast every 30 seconds by default. RIP has an administrative distance of 120.

8.(C) The sum of 87H and 79H =100H. Therefore, the accumulator will have 00H, and the flags will be S =0, Z = 1, CY = 1

9.(D) If the stack pointer is initialized with $(4FEB)_H$, then after execution of push operation in 8085 microprocessor, stack pointer shall be 4FED.

10.(B) The 8085 differentiates between the input and output ports of the same address by the control signal. The input port requires the RD and the output port requires the WR signal.

11.(D) Relations for the ordered pairs $(^,^),(-,-)$, $(+,+)$, $(*,*)$ in the operator precedence table constructed for the grammar will be $<,>,>,>$ as exponent is of right associative to itself and

$+$, $-$, $*$ and $/$ are left associative

12. (C) Proof as follows:

1. Let P=Q=R=EMPTY SET. The equation is satisfied. So this rules out (B).

2. Let P=R be $\sum^*$ then any Q will satisfy the equation. The demands of (A) & (D) are invalid.

3. So the answer is (C).

13. (C) It is not possible to convert nondeterministic PDA to deterministic PDA

**14. (C)** CPU burst time indicates the time for which the process needs the CPU.

Considering FCFS scheduling

Processes CPU   Burst time

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P1   10

P2   5

P3   5

For processes arriving in the order: P1 , P2 , P3

The Gantt Chart for the schedule is:.

P1	P2	P3

0   10   15   20
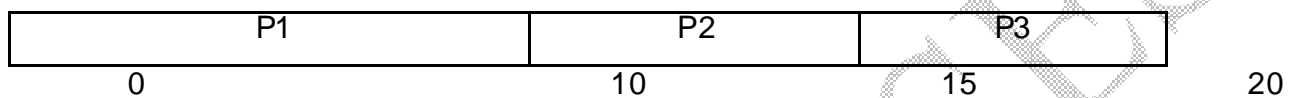
Waiting time for P1 = 0; P2 = 10; P3 = 15

Average waiting time: (0 + 10 + 15)/3 = 8.33 unit of time

15.(B) p) time sharing-Technique that allows multiprocessing on a computer with a single CPU

q) process-Activity of executing a program

r) bootstrap-Program first executed when a computer is turned on

s) shell-Part of an operating system that communicates with the user

16. (B) Aging resolves or avoids the problem of starvation.

17. (D) Option (A), (B) and (C) all are correct.

• Page-Stealer process is the Kernel process that makes room for the incoming pages, by swapping the memory pages that are not the part of the working set of a process.

• It is created by the Kernel at the system initialization and invokes it throughout the lifetime of the system.

• Kernel locks a region when a process faults on a page in the region, so that page stealer cannot steal the page, which is being faulted in.

18.(A) The shell calls fork(); the child process calls exec() and the parent calls wait(). The shell is just another process that can take a string as standard input, look for the program

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referenced by the string, and then run this program. Unless the program is put in the background, the shell will wait until the program has finished.

19.(A) 4.3BSD was released in June 1986. Its main changes were to improve the performance of many of the new contributions of 4.2BSD that had not been as heavily tuned as the 4.1BSD code.

20.(B) The mechanism of understanding what customer wants, analyzing needs, assessing feasibility are provided by Requirement engineering

21.(A) Evaluation of the target market is an activity of a contract review

22.(B) Insufficient identification is a process-related problem. Unidentified, partially identified, and unplanned risks pose a threat to the success of a software project. You need to intensively identify risks and evolve a risk management plan such that the project is completed successfully, on time

23.(B) Baseline is a formal reference point that measures system characteristics at a specific time.

24.(B) Five nines of reliability refer to a product that is operational 99.999% of the time.

25. (C)

- <u>Static analyzers</u> A static analyzer operates from a pre-computed database of descriptive information derived from the source text of the program.

- <u>Code inspectors</u> A code inspector does a simple job of enforcing standards in a uniform way for many programs. These can be single statement or multiple statement rules.

- <u>Output comparators</u> These are used in dynamic testing-both single-module and multiple-module varieties to check that predicted and actual outputs are equivalent.

- <u>Standard enforces</u> This tool is like a code inspector. The main distribution is that a full-blown static analyzer looks at whole programs, whereas a standard enforcer looks at only single statements.

26.(D)

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- Disparate data-   Production data

- Non volatile data-   Query and analysis

- Data granularity-   Level of detail

27.(C) Credit theft is impossible with smart card as key to unlock encrypted information is required and also due to the absence of external account number on the card.

28.(B) Amazon.com comes under B2C model where the consumer accesses the system of the supplier. It is still a two-way function but is usually done solely through the Internet. In B2C e-commerce, companies sell goods to consumers online in a dynamic environment. Each transaction under B2C represents an individual buying online.

29.(C)

- FAT12 is a 12-bit version developed by Microsoft in 1977 for Microsoft Disk BASIC

- FAT16 is a 16-bit version introduced in July 1988 for MS-DOS 4.0

- FAT32 is a 32-bit version introduced in August 1996 for Windows 95 OSR2

30.(C) TRACE macro sends an output message to the debug window of compiler. User can also see the trace messages without the debugger running using DebugView.

31.(C) PVIEW is used to kill errant hidden processes in windows 95. With PView, user can modify status of processes running on the system. As a result the entire system's processes can be stopped and potentially halt.

32.(C) Select three columns from the COURSES table, of which the third one has a constant value, i.e. "= PRICE". Sort the data according to the second column, in ascending order

33.(A) It must be translated to the actual relation in the conceptual model of the database

34.(B) Because it may have the values from all the domains.

35.(C) In order traversal is left->root->right and pre order is root->left-> right so it can used to find the post order traversal. first check the node in preorder and then find the root in in order, check left and right nodes and create a tree and then find the post order

36.(D) The queue can not be reversed as it is based on the concept of FIFO.

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37.(A) The time complexity of Prim's Algorithm is O(n*n).

38.(A) Linear probing is a scheme in computer programming for resolving hash collisions of values of hash functions using two values - one as a starting value and one as an interval between successive values in modular arithmetic. The second value, which is the same for all keys and known as the stepsize, is repeatedly added to the starting value until either the entire table is traversed, or until a free space is found. This algorithm, which is used in open-addressed hash tables, provides good memory caching, through good locality of reference, but also results in clustering, an unfortunately high probability that where there has been one collision there will be more

39.(A) If a B-tree is created with order m then the node may have max. of m children and then it splits into two and middle child becomes the root

40.(A) A can draw a ticket in $^3C_1 = 3$ ways.

Number of cases in which A can get a prize is 1. Probability of A's success $= \dfrac{1}{3}$

B can draw a ticket in $^9C_3$ ways $= \dfrac{9.8.7}{3.2.1} = 84$ ways.

Number of ways in which B gets all blanks $= {}^6C_3 = \dfrac{6.5.4}{32.1} = 20$

Number of ways of getting a prize $= 84 - 20 = 64$

Thus the probability of B's success $= 9\dfrac{64}{84} = \dfrac{16}{21}$

So A's probability of success : B's probability of success $= \dfrac{1}{3} : \dfrac{16}{21}$

41.(D) Here P represents file pointer. It points to the structure, in which char pointer exists which points to the first character of file.

42.(B) Eccentricity of a given node is the maximum of minimum path from other nodes to the given node.

Cost of minimum path from 1 to 5 is 7.

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Cost of minimum path from 2 to 5 is 6

Cost of minimum path from 3 to 5 is 4

Cost of minimum path from 4 to 5 is 7

43.(A) If (1, 3) entry in M3 is 2, it means there are 2 path of length 3, connecting nodes 1 and 3. If you see the graphs in option (a) then we have two paths ($\rightarrow 2 \rightarrow 3 \rightarrow 3$ & $1 \rightarrow 3 \rightarrow 3 \rightarrow 3$)

44.(B) At Data link layer there are 3 techniques for error detection:-

(1) Parity check

(2) Check summing method

(3) Cyclic redundancy check.

45.(A) Start and stop bits are not needed in synchronous transfer of data, so it is 2400/8 = 300.

46.(B) $(54.78)_{10} = (110110.1100011)_2$

$$= 1.10110110011 \times 2^5$$

$\therefore$ M = 101101100011

E = 5 + 127 = $(132)_{10}$ = $(10000100)_2$

and s = 0 (positive)

$\therefore$ s = 0, M = 101101100011, E = 10000100

47.(D) A constructor is a special member function whose task is to initialize the objects of its class. It is special because its name is same as that of the class.

A destructor is used to destroy the objects that have been created by a constructor.

Constructors should be declared in the public section. An object with a constructor or destructor cannot be used as a member of a union. Constructors can never be virtual.

48.(C) When an exception is not caught, the program is aborted. Whenever an exception is generated (in the code which is placed in the 'try' block), it is thrown using a 'throw' statement in the 'try' block which is caught by the 'catch' block where it is handled appropriately.

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49.(A) Abstraction is simplification mechanism used to hide superfluous details of a set of objects. It allows one to concentrate on the properties that are of interest to the application.

Generalization is the abstraction process of viewing sets of objects as a single general class by concentrating on the general characteristics of the constituent sets while suppressing or ignoring their difference.

Specialization is the abstraction process of introducing new characteristics to an existing class of objects to create one or more new classes of objects.

Aggregation is the process of compiling information on an object, thereby abstracting a higher-level object.

50.(C) Addition in hexadecimal number system is same as other number system. Since hexadecimal number, upto 15(F) are defined, a carry will be generated if addition is larger than F. Another way is to convert the hexadecimal numbers into equivalent binary numbers and then add the numbers.

```
      2  2  2  1     2  0   ← Carry
      3  B  C  A  ·  5  0  7  8
   +  9  E  B  D  ·  9  7  F  3
   +  0  5  F  B  ·  E  2  C  0
 ─────────────────────────────
 Sum  E  0  8  3  ·  C  B  2  B
```

Starting from least significant digit

$8 + 3 + 0 = 11_{10} = B16$ (Sum = B Carry = 0)

$0 + 7 + F + C = 7_{10} + 15_{10} + 12_{10} = 34_{10} = 22_{16}$ (Sum = 2 Carry = 2)

$2 + 0 + 7 + 2 = 11_{10} = B_{16}$ (Sum = B Carry = 0)

$0 + 5 + 9 + E = 5_{10} + 9_{10} + 14_{10} = 28_{10} = 1C_{16}$ (Sum = C Carry = 1)

$1 + A + D + B = 1_{10} + 10_{10} + 13_{10} + 11_{10} = 35_{10} = 23_{16}$ (Sum = 3 Carry = 2)

$2 + C + B + F = 2_{10} + 12_{10} + 11_{10} + 15_{10} + = 40_{10} = 28_{16}$ (Sum = 8 Carry = 2)

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$2 + B + E + 5 = 2_{10} + 11_{10} + 14_{10} + 5_{10} = 32_{10} = 20_{16}$ (Sum = 0 Carry =2)

$2 + 3 + 9 + 0 = 14_{10} = E_{16}$ (Sum = E Carry = 0)

PAPER- III

1.(C) A digital multiplexer can also be used to implement combinational logic function - True

In a combinational circuit, the current output depends on the previous outputs also - False

2.(C) The division is in the frequency of the clock pulse input. Since each FF divides the frequency by factor of 2, the FF is called a divide-by-two circuit. Since each FF divides the clock frequency by 2, n FFs will divide the clock frequency by 2^n.

3.(A) The content of the register after first shift will be -> 1110 , as

| 101110 | | 1 | 1 | 1 | 0 | | 1 |
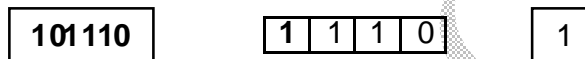
The content of the register after second shift will be -> 0111 , as

| 10111 | | 0 | 1 | 1 | 1 | | 0 1 |
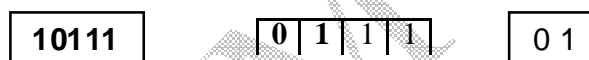
4.(D)

- 32 functions need 5 bit encoding in control memory microinstruction to enable selection of one of the function.

- 16 data routes need 4 bit encoding in control memory microinstruction to enable selection of one of the data route.

- 32 − 2 − 8 = 22 independent storing units. Number of control signals, 22 * 2 = 44. Two control signals are needed for two MUXs. Total number of control signals 46 signals

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for storing input-output register. Since $44 > 2^5$, 6 bit encoding is required in control memory microinstruction to enable selection of one of the unit.

- 16384 ($= 2^{14}$) addresses are there in control memory. 14-bits are thus required from next-address field in the control memory.

Therefore, for all the 4 fields the control memory need $(5 + 4 + 6 + 14)$ encoding bits in each microinstruction.

5.(D) Categories of 8085 instructions that manipulate data:

- STA is a data transfer instruction
- DCR is a arithmetic Instruction
- CMP is a logical Instruction
- CALL is a branch Instruction

6 (B)

- ANAR - logical group instructions for 8085- AND accumulator with register
- PCHL - unconditional branch instructions. PCHL instruction exchange the contents of the program counter with the contents of the H and L registers.
- ORAR - logical group instructions for 8085- OR accumulator with register
- CMA - logical group instructions for 8085- Complement the Accumulator

7.(D) The PCI bus is found in all the new Pentium systems as it has plug and play characteristics, has the ability to function with a 64 bit data bus and any microprocessor can be interfaced to it with PCI controller or bridge.

8. (B) ANI stands for "Logical AND with Accumulator Using Immediate Data". This ANDs the accumulator with immediate. F leaves the high nibble whatever it is, 0 clears the lower nibble

9. (C) In a system the undo and redo operations are required to be idempotent to cope up with a record crash when recovery is going on after the crash.

10.(C) A transaction manager is the part of an application that is responsible for coordinating transactions across one or more resources. Transaction managers are

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responsible for ensuring that resources are not left in an inconsistent state, if there is a system failure and the application crashes.

11.(C) Isolation of the transactions is ensured by Concurrency control**.** Even though multiple transactions may execute concurrently, the system guarantees that for every pair of transaction Ti and Tj, it appears to Ti that either Tj finished execution before Ti started or Tj started execution after Ti finished. Thus each transaction is unaware of other transactions executing concurrently in the system.

12.(D) Organizational forces, frequency of data access, need for growth and expansion, technological capabilities and need for reliable service are the factors for deciding on database distribution strategies

13.(B) For real-time requirements, store and forward messages for each completed transaction can be broadcast across the network informing all nodes to update data as soon as possible, without forcing a confirmation to the originating node before the database at the originating node is updated. One way to generate such messages is by using triggers. A trigger can be stored at each local database so that when a piece of replicated data is updated, the trigger executes corresponding update commands against remote database replicas.

14.(A) These two statements produce identical results, because it is possible even to use numbers to indicate the column position where Oracle should order the output from a statement.

15.(C) ALTER TABLE statement with ENABLE CONSTRAINT keyword is correct answer to enable an existing constraint.

16.(B) A consistent backup is one in which the files being backed up contain all changes up to the same system change number. This means that the files in the backup contain all the data taken from a same point in time. Unlike an inconsistent backup, a consistent whole database backup does not require recovery after it is restored. An inconsistent backup is a

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backup of one or more database files that user make while the database is open or after the database has shut down abnormally.

17.**(A)** Hamming code is error correcting code, to transmit 4 data bits 3 parity bits located at position $2^0, 2^1$ & 2^2 from left are added as

$$P_1 \, P_2 \, D_3 \, D_4 \, D_5 \, D_6 \, D_7$$

When P → Party & D → Data bit

P_1 is set to be a or a1 where bits are 1, 3, 5, 7

P_2 is set to be a or a1 where bits are 2, 3, 6, 7

P_1 is set to be a or a_1 where bits are 1, 3, 5, 7

P_4 is set to be a or a_1 where bits are 4, 5, 6, 7

P_3	P_2	P_1
0	0	0
0	0	1
0	1	0
0	1	1
1	0	0
1	0	1
1	1	0
	1	1

So here

Bits 1, 3, 5, 7 (P_1 1 1 1) must be even parity (1).

Bits 2, 3, 6, 7 (P_2 1 0 1) must be even parity (0)

Bits 2, 3, 6, 7 (P4 1 0 1) must be even parity (0)

18.(C) They cannot be observed on an oscilloscope and multiplexer. The flag register is internal to the microprocessor. However, they can be tested through conditional branch instructions, and they can be examined by storing them on the stack memory.

19.(B) WNDCLASS data structure include a pointer to a class() function for handling the window's message.

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20.(D) WPARAM is of 32 Bits in win-32 & is not used in handling the message.

21.(C) Include is a subdirectory which comes under the subdirectory user.

22.(C) Unix is also a time shared OS & programs using UNIX can be run on variety of architecture as it assumes to have no knowledge of architectures.
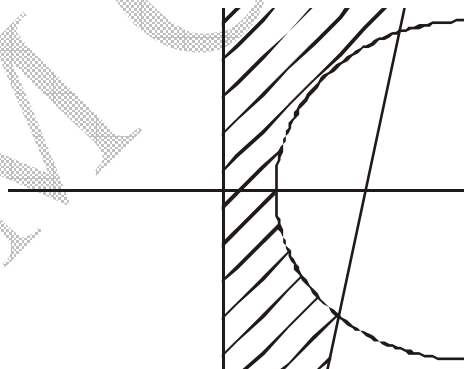
23.(B)

Basic	x_1	x_2	s_1	s_2	s_3	Solution	Ratio
z_1	0	2	1	0	−1	400	200
s_2	0	1	0	1	−2	140	140 →
s_3	1	0	0	0	1	320	
z	0	−4	0	0	6	320	

Entering variable = x_2, Leaving variable s_2.

Basic	x_1	x_2	s_1	s_2	s_3	Solution	Ratio
s_3	0	0	1/3	2/3	1	40	
s_2	0	1	2/3	−1/3	0	220	
s_1	1	0	−1/3	2/3	0	280	
z	0	0	2/3	8/3	0	2560	

24.(B) $y < x^2 + 2x + 1$

Hence given set is non convex set

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25.(B)

x_i	$P(x_i)$	Step 1	Step 2	Step 3	Code
x_1	1/2	0			0
x_2	1/4	1	0		10
x_3	1/8	1	1	0	110
x_4	1/8	1	1	1	111

$$I(x_1) = -\log_2 \frac{1}{2} = 1 = n_1$$

$$I(x_2) = -\log_2 \frac{1}{4} = 2\ n_2$$

$$I(x_3) = -\log_2 \frac{1}{8} = 3 = n_3$$

$$I(x_4) = -\log_2 \frac{1}{8} = 3 = n_4$$

We know that, $H(X) = \sum_{i=1}^{4} P(x_i) I(x_i)$

Or $H(X) = \frac{1}{2}(1) + \frac{1}{4}(2) + \frac{1}{8}(3) + \frac{1}{8}(3) = 1.75$

26.(C) A pushdown automation consists of

i. a finite nonempty set of states denoted by Q,

ii. a finite nonempty set of input symbols denoted by Σ,

iii. a finite nonempty set of pushdown symbols denoted by Γ ,

iv. a special state called the initial state denoted by q_0,

v. a special pushdown symbol called the initial symbol on the pushdown store denoted by Z_0.

27.(A) In a multiple track TM, a single tape is assumed to be divided into several tracks. Now the tape alphabet is required to consist of k-tuples of tape symbols, k being the

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number of tracks. Hence the only difference between the standard TM and the TM with multiple tracks is the set of tape symbols.

28.(B) Suppose L is regular. Then, there exists a finite state automation M which accepts L. Suppose M has K states. Let $w = a^k b^k$. Then $|w| > k$. By the pumping Lemma $w = xyz$ where y is not empty and $w_2 = xy^2z$ is also accepted by M. If y consists of only a's or only b's, then w_2 will not have the same number of a's as b's. If y contains both a's and b's, then w_2 will have a's following b's. In either case w_2 does not belong to L, which is a contradiction. Thus L is not regular.

29(A) XML content are stored with out formatting and accessible to user, Application and platform.

30.(D) Breadth first search are heuristic technique used in medicine, law, biology and chemistry etc.

31.(C) 1. Simple LR (SLR for short), is the easiest to implement, but the least powerful of the three. It may fail to produce a parsing table for certain grammars on which the other methods succeed.

2. Canonical LR is the most powerful and the most expensive.

3. Look ahead LR (LALR for short), is intermediate in power and cost between the other two. The LALR method will work on most programming-language grammars and, with some effort, can be implemented efficiently

32(C) Deletion and insertion of elements is not required in binary search.

33(B) Dependency preserving is not condition for BCNF.

34.(A) In key dependencies as in Functional dependencies there is the dependency of keys.

35.(A) The network of the given figure is a single layer feed-forward neural network

because   there is only one neuron between any input and output. The network is not

    autoassociative i.e. doesn't have feedback because there are no loops in it.

36.(C) Break-Even Output

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The 'contribution per unit' is defined as Average Revenue minus Average Variable Cost and tells us how much each unit is contributing over and above its variable (running) costs to the fixed costs already incurred. When enough units are produced to cover all these fixed costs, then we have reached the 'break-even output'.

37(B). The top square of the output is black because the top pattern differs in two squares from a T and in 3 squares from an H.

The middle square is not defined because the middle row of the input defers the same amount from both T and H(differs in 1). Therefore, the output can be either black or white.

The bottom square is black because it differs from a T and in 2 from an H

38.(B) ICMP is the Internet control Message protocol. It is an application layer protocol. It is used by hosts, routers, & gateways to communicate network layer information to each other. The most typical use of ICMP is for error reporting.

39.(C) Compound editor is one of the type of Authoring tools. With a compound editor, you can accomplish most tasks in a WYSIWYG editing mode but switch from the word processor-style editing window to a source code view to modify the page's underlying HTML.

40.(A) Stylus & grid is appropriate to use as a multipurpose input device for character recognition. Grid & stylus devices may be transparent media placed directly on a visual indicator.

41.(C) When a disk is formatted, the OS creates four areas on its surface:

• Boot sector

• File allocation table

• Root folder

• Data area

42.(A) In contiguous memory allocation, each process is contained in a single contiguous section of memory.

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43.(C) For processing an output in XML, "new line" symbol are first converted to single LF symbol.

44.(B) If you want to open a link in a new browser then it will be opened with <a href = "url" target ="-blank"> syntax.

45.(B) <Script type = "text/javascript"></jscript> using this tag , we insert a javascript in HTTH page. In all project this can be used.

46.(D) The transportation method does not work if hiring and layoff is possible. This is an aggregate method.

47.(A) Eight phase digital transmission implies 2^3 bits/second. Hence, the bit rate can be tripled over corresponding two phase modulation.

Multi mode fiber allows more than one ray of light at a moment. It is generally greater in diameter than a single mode fiber.

48.(C) If the M bit in X.25 standard is set to 1, it means that there is more than one packet. The M-bit or More Data indicates whether this particular packet is carrying the total intended message or whether there is more data to follow as part of this transmission.

49.(A) Multiplexing is sharing of communication channel. Multiplexing involves multiple signals or streams of information on a carrier at the same time in the form of a single, complex signal.

10Base2 cabling is also popularly known as thin Ethernet. It supports transmission up to a maximum distance of 20mts. Such Cables are cheaper and used for smaller low-cost LAN's.

Frequency hopping and spread spectrum techniques are involved in transmission. Spread Spectrum is the wide range of frequencies during transmission.

Time Domain Reflectometry is a technique that detects cable breaks, bad taps or loose connectors. The TDR measures the time it takes for the signal to travel down the cable and reflect back. The TDR then converts this time to distance and displays the information as a waveform and/or distance reading.

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50.(B) Use the formula $\quad N = \dfrac{1+L}{(T-\delta)}$

Here $\quad\quad\quad\quad$ T = 5 μses

$\quad\quad\quad\quad\quad\quad$ L = 25 μsec, and

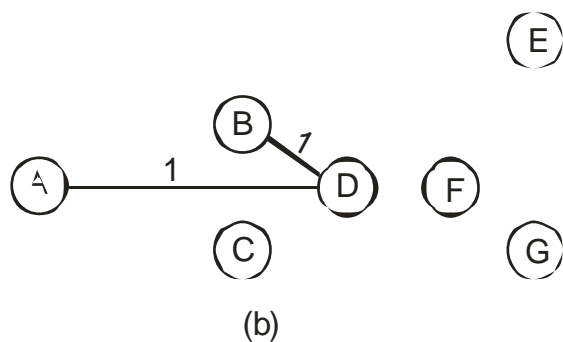$\quad\quad\quad\quad\quad\quad$ D = 2.73 μsec.

Putting the values and solving, we get

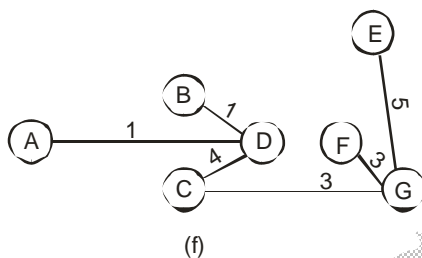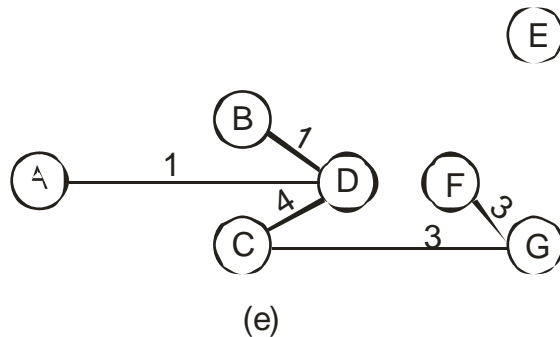$\quad\quad\quad$ N = 12.01 which round down to 12 cells.

51.(C) We arbitrarily choose A as our starting node and consider all branches incident on it, they are AE, AB, AD, and AC, with costs 10, 2, 1, and 4 respectively. Since AD is the cheapest, we add this branch to the solution, as shown in Fig.(a) Nodes A and D are now connected.

$\quad$ We next consider all branches incident on either A or D that connect to other nodes. Such branches are AE, AB, AC, DB, DE, DF, DG, and DC, with costs 10, 2, 4, 1, 7, 10, 7, and 4, respectively. Since DB is the cheapest to include, we adjoin it to Fig-(a) and obtain Fig-(b). The connected nodes are now A, B, and D.

(a)

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(b)

(c)

(d)

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(e)

(f)

We next consider all branches incident on A, B, or D that connect to other nodes. These are AE, AC, DE, DF, DG, with costs 10, 4, 7, 10, 7, and 4. The cheapest branch of interest is either AC or DC. We arbitrarily select DC and adjoin it to Fig. (b) to obtain Fig-(c).

Continuing in this manner, we obtain sequentially Fig-(d) through Fig(f). Fig(f) contains all the nodes; hence it is a minimal-span network. The minimum cost for connecting the network is

$$Z^* = 1 + 1 + 4 + 3 + 3 + 5 = 17$$

52.(D) Given derivation is neither leftmost nor rightmost derivation because this is not restricted for left-right recursion/replacement.

53.(B) $(r^*s^*)^* = (r + s)^* = (r^* + s^*)^*$ this is the one of the identity from the 12 identities of regular grammar.

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54.(A) A grammar is called left most grammar if and only if all steps involved in derivation have leftmost variable replacement only. From the definition it is clear that for the given grammar option (A) is correct.

55.(C) A self relocating program is one which can itself perform the relocation of its address-sensitive portions.

56.(B) The basic principle behind the structured design methodology in problem partitioning the four major steps are

       1. Restate the problem

       2. Identify the input and output

       3. First level factoring

       4. Factoring of input, output and transform branches.

57.(C) None of the given statements are true.

58.(D) Areas of application of software metrics are :

       1. Prediction of quality levels for software in terms of reliability

       2. Cost and size estimation techniques

       3. Controlling software development projects through measurement.

59.(A) Coupling is the measure of the degree of inter-dependence between modules. With respect to coupling, systems are divided into three parts:

       1. Loosely coupled systems

       2. Highly coupled systems

       3. Uncoupled systems

Loosely coupled systems are made up of modules which are relatively independent.

60.(B) Lists in PROLOG constitute elements separated by commas and enclosed within square brackets. The elements could comprise of any data type.

        eg – [2, 4, 8, 10, 12] and ['jack', 'jill', 'jane' 1]

61.(C) Option C is correct

      Example of few valid variables in PROLOG are –

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My_favourite-food_items

Menu-Items-1

Neha

Does_Neha_like_coffee

p:-a, b, c

62.(A) p:-d, e, f , This represents the control structure in PROLOG. Given representation means that p is true if either (a and b and c) is true or (d and e and f) is true the comma implies an AND.

63.(B) Arity is the number of arguments in a predicate form. It is represented by a/n placed after the predicate name. n is the number of arguments for instance the predicate relishes/2 takes two arguments.

64.(C) Some of the important standards for providing structure to multimedia applications are–

  1. MHEG
  2. PREMO
  3. ODA
  4. Acrobat
  5. Hytime
  6. SGML

65.(A) The steps involved in the animation are-

  (i) Storyboard layout

  (ii) Object definitions

  (iii) Keyframe specifications

  (iv) Generation of in-between frames

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66.(B) Parameterized systems allow object motion characteristics to be specified as part of the object definitions. The adjustable parameters control such object characteristics as degrees of freedom, motion limitations and allowable shape changes.

67.(B) All (a), (c) and (d) are false. The difference between (B) and (C) is vital.

80386 processor has 32 bit address capacity (32 pins for address) hence it its capable of accessing $2^{32} = 2^2 \times 2^{30} = 4GB = 4096$ MB of main memory. Present day computers have atmost 32 MB RAM. The address space of 386 processor is 4GB and hence virtual memory can be atmost 4 GB. If a program is of 5 GB, we have to use only overlying technique.

68.(C) Monitoring shell commands is an example of anomaly detection. Monitoring shell commands is used to detect anomalous commands for a given user or detecting an anomalous login time for a user.

69.(D) Disk Administrator perform all the given tasks of formatting the 20 GB drive, moving the data from the 5 GB drive and labeling the 20 GB drive as drive B.

70.(B) MPI_Comm_Size( ) determines number of processes in a group associated within

MPI_Comm_Size (Comm.size)

71.(B) Option (B) gives the correct O/P for the program

72.(C) Readability – Programs written in high level languages are more readable than assembly and machine language.

Portability – Programs could be run on different machines with little or no change.

73.(B) A PROLOG program comprises a description of the problem using a number of facts and rules. Matching in PROLOG is performed predicate to predicate and argument to argument.

74.(C) Pvm data default involves XDR encoding which is used by default because PVM cannot know whether the user is going to add a heterogeneous machine before this message is sent.

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75.(B) Option B is correct. Most of the operations associate to the left because of the way keystrokes are processed from left to right.

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