Voice Principal / Superintendent ITI-Comp. Exam-2024 (Skill & Entrepreneurship Deptt.)

SPV-25

418193

प्रश्न–पुस्तिका संख्या व बारकोड /
Question Booklet No. & Barcode

इस प्रश्न-पुस्तिका को तब तक न खोलें जब तक कहा न जाए। Do not open this Question Booklet until you are asked to do so.

पुस्तिका में पृष्ठों की संख्या	: 24
Number of Pages in Booklet	: 24
पुस्तिका में प्रश्नों की संख्या	: 150
No. of Questions in Booklet	: 150

Paper Code : 06 **Sub : Information Technology Engineering**

Exam Date - 30/7/2025

समय : 02:30 घण्टे + 10 मिनट अतिरिक्त*
Time : 02:30 Hours + 10 Minutes Extra*

अधिकतम अंक : 150
Maximum Marks : 150

प्रश्न–पुस्तिका के पेपर की सील/पॉलिथीन बैग को खोलने पर प्रश्न–पत्र हल करने से पूर्व परीक्षार्थी यह सुनिश्चित कर लें कि :

- प्रश्न–पुस्तिका संख्या तथा ओ.एम.आर. उत्तर–पत्रक पर अंकित बारकोड संख्या समान हैं।
- प्रश्न–पुस्तिका एवं ओ.एम.आर. उत्तर–पत्रक के सभी पृष्ठ व सभी प्रश्न सही मुद्रित हैं। समस्त प्रश्न, जैसा कि ऊपर वर्णित है, उपलब्ध हैं तथा कोई भी पृष्ठ कम नहीं है/ मुद्रण त्रुटि नहीं है।

किसी भी प्रकार की विसंगति या दोषपूर्ण होने पर परीक्षार्थी वीक्षक से दूसरा प्रश्न–पत्र प्राप्त कर लें। यह सुनिश्चित करने की जिम्मेदारी अभ्यर्थी की होगी। परीक्षा प्रारम्भ होने के 5 मिनट पश्चात् ऐसे किसी दावे/आपत्ति पर कोई विचार नहीं किया जायेगा।

On opening the paper seal/polythene bag of the Question Booklet before attempting the question paper, the candidate should ensure that :

- **Question Booklet Number and Barcode Number of OMR Answer Sheet are same.**
- **All pages & Questions of Question Booklet and OMR Answer Sheet are properly printed. All questions as mentioned above are available and no page is missing/misprinted.**

If there is any discrepancy/defect, candidate must obtain another Question Booklet from Invigilator. Candidate himself shall be responsible for ensuring this. No claim/objection in this regard will be entertained after five minutes of start of examination.

परीक्षार्थियों के लिए निर्देश

1. प्रत्येक प्रश्न के लिये एक विकल्प भरना अनिवार्य है।
2. सभी प्रश्नों के अंक समान हैं।
3. प्रत्येक प्रश्न का मात्र एक ही उत्तर दीजिए। एक से अधिक उत्तर देने की दशा में प्रश्न के उत्तर को गलत माना जाएगा।
4. OMR उत्तर-पत्रक इस प्रश्न-पुस्तिका के अन्दर रखा है। जब आपको प्रश्न-पुस्तिका खोलने को कहा जाए, तो उत्तर-पत्रक निकाल कर ध्यान से केवल नीले बॉल पॉइंट पेन से विवरण भरें।
5. कृपया अपना रोल नम्बर ओ.एम.आर. उत्तर-पत्रक पर सावधानीपूर्वक सही भरें। गलत रोल नम्बर भरने पर परीक्षार्थी स्वयं उत्तरदायी होगा।
6. ओ.एम.आर. उत्तर-पत्रक में करेक्शन पेन/व्हाईटनर/सफेदा का उपयोग निषिद्ध है।
7. प्रत्येक गलत उत्तर के लिए प्रश्न अंक का 1/3 भाग काटा जायेगा। गलत उत्तर से तात्पर्य अशुद्ध उत्तर अथवा किसी भी प्रश्न के एक से अधिक उत्तर से है।
8. प्रत्येक प्रश्न के पाँच विकल्प दिये गये हैं, जिन्हें क्रमश: 1, 2, 3, 4, 5 अंकित किया गया है। अभ्यर्थी को सही उत्तर निर्दिष्ट करते हुए उनमें से केवल एक गोले (बबल) को उत्तर-पत्रक पर नीले बॉल पॉइंट पेन से गहरा करना है।
9. यदि आप प्रश्न का उत्तर नहीं देना चाहते हैं तो उत्तर-पत्रक में पाँचवें (5) विकल्प को गहरा करें। यदि पाँच में से कोई भी गोला गहरा नहीं किया जाता है, तो ऐसे प्रश्न के लिये प्रश्न अंक का 1/3 भाग काटा जायेगा।
10.* प्रश्न-पत्र हल करने के उपरांत अभ्यर्थी अनिवार्य रूप से ओ.एम.आर. उत्तर-पत्रक जाँच लें कि समस्त प्रश्नों के लिये एक विकल्प (गोला) भर दिया गया है। इसके लिये ही निर्धारित समय से 10 मिनट का अतिरिक्त समय दिया गया है।
11. यदि अभ्यर्थी 10% से अधिक प्रश्नों में पाँच विकल्पों में से कोई भी विकल्प अंकित नहीं करता है तो उसको अयोग्य माना जायेगा।
12. मोबाइल फोन अथवा अन्य किसी इलेक्ट्रोनिक यंत्र का परीक्षा हॉल में प्रयोग पूर्णतया वर्जित है। यदि किसी अभ्यर्थी के पास ऐसी कोई वर्जित सामग्री मिलती है तो उसके विरुद्ध आयोग द्वारा नियमानुसार कार्यवाही की जायेगी।

चेतावनी : अगर कोई अभ्यर्थी नकल करते पकड़ा जाता है या उसके पास से कोई अनधिकृत सामग्री पाई जाती है, तो उस अभ्यर्थी के विरुद्ध पुलिस में प्राथमिकी दर्ज कराते हुए राजस्थान सार्वजनिक परीक्षा (भर्ती में अनुचित साधनों की रोकथाम अध्युपाय) अधिनियम, 2022 तथा अन्य प्रभावी कानून एवं आयोग के नियमों-प्रावधानों के तहत कार्यवाही की जाएगी। साथ ही आयोग ऐसे अभ्यर्थी को भविष्य में होने वाली आयोग की समस्त परीक्षाओं से विवर्जित कर सकता है।

INSTRUCTIONS FOR CANDIDATES

1. **It is mandatory to fill one option for each question.**
2. **All** questions carry equal marks.
3. Only **one** answer is to be given for each question. If more than **one** answers are marked, it would be treated as wrong answer.
4. The **OMR** Answer Sheet is inside this Question Booklet. When you are directed to open the Question Booklet, take out the Answer Sheet and fill in the particulars carefully with **Blue Ball Point Pen** only.
5. Please correctly fill your Roll Number in **OMR** Answer Sheet. Candidates will themselves be responsible for filling wrong Roll No.
6. **Use of Correction Pen/Whitener in the OMR Answer Sheet is strictly forbidden.**
7. **1/3 part of the mark(s) of each question will be deducted for each wrong answer.** A wrong answer means an incorrect answer or more than one answers for any question.
8. **Each question has five options marked as 1, 2, 3, 4, 5. You have to darken only one circle (bubble) indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN.**
9. **If you are not attempting a question then you have to darken the circle '5'. If none of the five circles is darkened, one third (1/3) part of the marks of question shall be deducted.**
10.* **After solving question paper, candidate must ascertain that he/she has darkened one of the circles (bubbles) for each of the questions. Extra time of 10 minutes beyond scheduled time, is provided for this.**
11. **A candidate who has not darkened any of the five circles in more than 10% questions shall be disqualified.**
12. **Mobile Phone or any other electronic gadget in the examination hall is strictly prohibited. A candidate found with any of such objectionable material with him/her will be strictly dealt with as per rules.**

Warning : If a candidate is found copying or if any unauthorized material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would be liable to be prosecuted under **Rajasthan Public Examination (Measures for Prevention of Unfair means in Recruitment) Act, 2022 & any other laws applicable and Commission's Rules-Regulations.** Commission may also debar him/her permanently from all future examinations.

उत्तर–पत्रक में दो प्रतियाँ हैं – मूल प्रति और कार्बन प्रति। परीक्षा समाप्ति पर परीक्षा कक्ष छोड़ने से पूर्व परीक्षार्थी उत्तर–पत्रक की दोनों प्रतियाँ वीक्षक को सौंपेंगे, परीक्षार्थी स्वयं कार्बन प्रति अलग नहीं करें। वीक्षक उत्तर–पत्रक की मूल प्रति को अपने पास जमा कर, कार्बन प्रति को मूल प्रति से कट लाइन से मोड़ कर सावधानीपूर्वक अलग कर परीक्षार्थी को सौंपेंगे, जिसे परीक्षार्थी अपने साथ ले जायेंगे। परीक्षार्थी को उत्तर–पत्रक की कार्बन प्रति चयन प्रक्रिया पूर्ण होने तक सुरक्षित रखनी होगी एवं आयोग द्वारा माँगे जाने पर प्रस्तुत करनी होगी।

1. What is the purpose of the free-frame list in an operating system ?
   (1) To track which processes are currently running
   (2) To store page tables for each process
   (3) To keep a list of active I/O operations
   (4) To manage frames available for allocation when a page fault occurs
   (5) Question not attempted

2. Which of the following is a Linux System Call for Interprocess Communication (IPC) ?
   (1) semctl (2) bind
   (3) sched_yield (4) link
   (5) Question not attempted

3. The most common technique used for protecting a critical section in Linux is:
   (1) Critical lock protocol
   (2) Spinlock
   (3) Critical Spinning
   (4) Mutex interlocking
   (5) Question not attempted

4. What is the "convoy effect" in CPU scheduling ?
   (1) A situation where multiple processes arrive at the CPU at the same time.
   (2) A condition where all I/O-bound processes are executed before CPU-bound processes.
   (3) A scenario in which one long CPU-bound process delays many shorter I/O-bound processes, reducing overall system utilization.
   (4) A technique used to prioritize processes with the shortest burst time.
   (5) Question not attempted

5. Which of the following is NOT a condition for deadlock to be possible ?
   (1) Mutual Exclusion
   (2) Hold and wait
   (3) Pre-emption
   (4) No resource can be forcibly removed from a process holding it.
   (5) Question not attempted

6. The Kernel dispatcher keeps track of all ____ threads and schedules them in priority order.
   (1) Ready (2) Standby
   (3) Running (4) Waiting
   (5) Question not attempted

7. What is the purpose of the valid-invalid bit in a page table entry ?
   (1) To track page replacement frequency
   (2) To distinguish between read and write access
   (3) To indicate whether the page is in physical memory
   (4) To determine if the page is part of the process's logical address space
   (5) Question not attempted

8. Consider the following memory map using multiprogram with partition model. Dark represent memory in use while white represent free memory as shown in the figure below :

65k	125k	150k	175k	150k

Request for memory follows the following order : 100k, 25k, 125k, 50k. Which of the following allocation satisfies the above request ?
   (A) Best Fit
   (B) First Fit
   (C) Worst Fit
   (1) A, B, C (2) A, B
   (3) B, C (4) A, C
   (5) Question not attempted

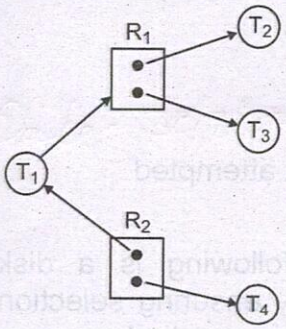
9. Consider a system using 2-level paging and the virtual address is 38 bits. The most significant 10 bits are used to index the page directory and next 16 bits index the page table. Each entry in both levels is 4 Bytes. What is the maximum size of a page table in KB ?
(1) 4 KB (2) 16 KB
(3) 256 KB (4) None of these
(5) Question not attempted

10. Match memory management techniques in Column – I to their descriptions in Column – II.

Column – I	Column – II
a. Simple segmentation	i. it is not necessary to load all of the segments of a process. Non-resident segments that are needed are brought in later automatically.
b. Virtual Memory Paging	ii. A process is loaded by loading all of its pages into available, not necessarily contiguous, frames.
c. Virtual Memory Segmentation	iii. it is not necessary to load all of the pages of a process. Non-resident pages that are needed are brought in later automatically.
d. Simple Paging	iv. A process is loaded by loading all of its segments into dynamic partitions that need not be contiguous.

Choose the correct option:
(1) a-ii, b-i, c-iii, d-iv
(2) a-iv, b-i, c-iii, d-ii
(3) a-ii, b-iii, c-i, d-iv
(4) a-iv, b-iii, c-i, d-ii
(5) Question not attempted

11. Consider the resource allocation graph. "This system is always in deadlock state." This remark is :



(1) True
(2) False
(3) Unpredictable
(4) Impossible to determine
(5) Question not attempted

12. Which of the following is a scheme for deadlock avoidance ?
(1) Manipulate to find at least one safe path
(2) Requesting all resources at once and keep other task waiting
(3) Pre-emption
(4) Resource ordering
(5) Question not attempted

13. Which statement is correct about the /proc file system in Linux ?
(1) It is a disk-based file system used to save long-term process logs.
(2) It resides in kernel memory and is used for querying process and kernel statistics.
(3) It contains static information for processes that have already exited.
(4) It is designed to store loadable kernel binaries permanently.
(5) Question not attempted

14. Which of the following is not a component of NTFS volume layout ?
(1) Partition boot sector
(2) Master bytes
(3) File area
(4) System files
(5) Question not attempted

15. Which of the following is a disk scheduling policy ensuring selection of the disk I/O request that requires the least movement of the disk arm from its current position ?
(1) Shortest-service-time-first (SSTF)
(2) First In First Out (FIFO)
(3) SCAN algorithm
(4) Back and forth over disk
(5) Question not attempted

16. The most obvious difference between frame relay and ATM is that frame relay uses ____ packets, called frames, and ATM uses _____ packets, called cells.
(1) variable-length , fixed-length
(2) fixed-length, variable-length
(3) variable-length, variable-length
(4) fixed-length, fixed-length
(5) Question not attempted

17. How many subnets and valid hosts are provided by network address 172.16.0.0/19 ?
(1) 7 subnets, 2,046 hosts each
(2) 7 subnets, 8,190 hosts each
(3) 8 subnets, 2,046 hosts each
(4) 8 subnets, 8,190 hosts each
(5) Question not attempted

18. Which of the following statements is true regarding classful and classless routing protocols ?
(1) RIPv1 and OSPF are both classless routing protocols that support variable-length subnet masking (VLSM).
(2) Classful routing protocols allow different subnet masks on each router interface.
(3) RIPv1 and IGRP are classful protocols and do not support classless addressing or VLSM.
(4) Classless routing protocols discard subnet mask information to reduce routing table size.
(5) Question not attempted

19. If a signal consists of V discrete levels and channel bandwidth is B, then according to Nyquist's theorem, the maximum data rate is:
(1) $4B \log_2 V$ bits/sec
(2) $2V \log_2 B$ bits/sec
(3) $2B \log_2 V$ bits/sec
(4) $V \log_2 B$ bits /sec
(5) Question not attempted

20. Which of the following can work as error detecting and correcting code ?
(1) Cyclic Redundancy Checks
(2) Hamming codes
(3) Checksum
(4) 1D parity
(5) Question not attempted

21. In TCP header, if the value of HLEN field is 0111 then how many bytes of options will be included in the segment ?
(1) 16 (2) 8
(3) 20 (4) 40
(5) Question not attempted

22. Which of the following is not an example of Open-Loop Congestion Control ?
(1) Window Policy
(2) Discarding Policy
(3) Admission Policy
(4) Choke Packet
(5) Question not attempted

23. Which is true about OSPF Routing protocol ?
(1) It is based on Distance Vector routing
(2) It is an exterior routing protocol
(3) It does not have authentication capability
(4) It is an interior routing protocol
(5) Question not attempted

24. What is an infrastructure network as per IEEE 802.11 standard ?
(1) A basic service set without an access point.
(2) A basic service set with an access point.
(3) Two or more basic service sets without access point.
(4) Only access points but no basic service set.
(5) Question not attempted

25. Which of the following statements are true regarding fragmentation and reassembly in IPv6 ?
A. IPv6 allows for fragmentation and reassembly at intermediate routers.
B. IPv6 allows for fragmentation and reassembly only at the source and destination.
C. IPv6 allows to intermediate routers forward the oversized packets.
D. IPv6 sends ICMP error message for oversized packets to the sender.
(1) A and C (2) B and D
(3) A and D (4) A and B
(5) Question not attempted

26. A view in SQL is defined by using the _____ command. To define a view, the view is given a name and must state the _____ that computes the view.
(1) create view, query
(2) define view, trigger
(3) make view, trigger
(4) show view, query
(5) Question not attempted

27. In SQL triggers, the action part can be executed in which of the following ways ?
(1) Only once for all affected tuples
(2) Only once per transaction
(3) Either once for each modified tuple or once for all tuples changed in the operation
(4) Only before an update operation
(5) Question not attempted

28. In context of keys of a relation in DBMS, choose the true statements:
I : A superkey of a relation is a set of one or more attributes whose values are guaranteed to identify tuples in the relation uniquely.
II : A candidate key is a minimal superkey, that is, a set of attributes that forms a superkey, but none of whose subsets is a superkey.
III : One of the candidate keys of a relation, containing highest number of attributes, is chosen as its primary key.
(1) I and II only (2) I and III only
(3) II and III only (4) I, II and III
(5) Question not attempted

29. Consider the following relation R and the set of all functional dependencies that hold on it :

R(A,B,C,D,E,F)

AB→C; C→ABDE; ADE→F;

Which of the following statements is true about R ?

(1) It is not in 2NF

(2) It is in 2NF, but not in 3NF

(3) It is in 3NF, but not in BCNF

(4) It is in BCNF

(5) Question not attempted

30. In context of transactions in DBMS, S is a schedule having T1, T2, T3 and T4 as participant transactions. A precedence graph (G) is constructed from S to determine its conflict serializability. Consider the following facts :

I : T1 executes write(Q) before T2 executes read(Q).

II : T2 executes read(Q) before T3 executes write(Q).

III : T3 executes write(Q) before T4 executes write(Q).

Which of the following statements is not true ?

(1) The graph G contains a directed edge from T1 to T2.

(2) The graph G contains a directed edge from T2 to T3.

(3) The graph G contains a directed edge from T3 to T4.

(4) The schedule S is not conflict serializable.

(5) Question not attempted

31. In a particular database system, it is estimated that on an average (across many system crashes) the number of committed transactions is almost 5 times the number of uncommitted transactions in the log at the time of restart after the crash. In which of the following logging mechanisms, the recovery manager attends to the least number of transactions, after being given control after a crash ?

(1) REDO

(2) UNDO

(3) UNDO-REDO

(4) Equal in all logging mechanisms

(5) Question not attempted

32. In context of transactions in DBMS, choose a valid statement about deadlock prevention schemes.

(1) wait-die is a nonpreemptive and wound-wait is a preemptive technique.

(2) wait-die is a preemptive and wound-wait is a nonpreemptive technique.

(3) Both wait-die and wound-wait schemes are nonpreemptive techniques.

(4) Both wait-die and wound-wait schemes are preemptive techniques.

(5) Question not attempted

33. Which of the following is a valid value that can be stored in a variable of type `NUMERIC (3,1)` in SQL ?

(1) 444.5 (2) 4.45

(3) 44.5 (4) 4.445

(5) Question not attempted

34. In context of expression equivalence rules used for query optimization in DBMS, choose the false statement.
(1) The set operations union and intersection are commutative.
(2) The set operations union and intersection are not associative.
(3) The projection operation distributes over the union operation.
(4) The set difference operation is not commutative.
(5) Question not attempted

35. A functional dependency of the form $X \rightarrow Y$ is trivial if
(1) $X \subseteq Y$ (2) $Y \subseteq X$
(3) $X = \phi$ (4) $X \subset Y$
(5) Question not attempted

36. Consider the following SQL query to retrieve *Cust_ID* of the customers from *CUSTOMER* table, whose *name* contains P as second character and ends with A :

SELECT *Cust_ID*
FROM *CUSTOMER*
WHERE.....;

Which of the following is most suitable to complete the query ?
(1) *name* like '_P%A'
(2) *name* like '$P%A'
(3) *name* like '2P$A'
(4) *name* like ' %P_A'
(5) Question not attempted

37. The total participation of an entity in a relationship is represented by :
(1) Double rectangle
(2) Double ellipse
(3) Double line
(4) Dashed line
(5) Question not attempted

38. Which of the following SQL statements is a DDL command ?
(1) INSERT (2) UPDATE
(3) DELETE (4) ALTER
(5) Question not attempted

39. In context of the major disadvantages of file processing system over database system, consider the following statements :
I : The same information may be duplicated in several files; and this problem is known redundancy.
II : The various copies of the same data may no longer agree; and this problem is known as data inconsistency.
Which of the above statement(s) is/are true ?
(1) Only I
(2) Only II
(3) Both I and II
(4) Neither I nor II
(5) Question not attempted

40. Let R1 and R2 be two relations with different attributes. What is the output of R1 U R2 ?
(1) A relation with a combined schema of R1 and R2
(2) Syntax error due to mismatched attributes
(3) A Cartesian product
(4) A view of all tuples from both
(5) Question not attempted

41. According to the Bell-LaPadula security model, a subject S is permitted to write to an object O only if the security classification of S satisfies which of the following conditions with respect to O ?
(1) class(S) $\geq$ class(O)
(2) class(S) $>$ class(O)
(3) class(S) $\leq$ class(O)
(4) class(S) $<$ class(O)
(5) Question not attempted

42. Which of the following represents the two approaches to store a relation in the distributed database ?
(1) Replication and Fragmentation
(2) Biasing and Quorum
(3) Indexing and Partitioning
(4) Propagation and Bullying
(5) Question not attempted

43. Consider set F of functional dependencies $A \rightarrow B$, $ABCD \rightarrow E$, $EF \rightarrow G$, $EF \rightarrow H$, and $ACDF \rightarrow EG$. Which of these correctly represents the correct minimal cover for F ?
(1) $A \rightarrow B$, $ACD \rightarrow E$, $EF \rightarrow G$, and $EF \rightarrow H$.
(2) $A \rightarrow B$, $ACD \rightarrow E$, $EF \rightarrow G$, and $EF \rightarrow C$.
(3) $A \rightarrow B$, $ABD \rightarrow E$, $EF \rightarrow G$, and $EF \rightarrow H$.
(4) $A \rightarrow B$, $ACE \rightarrow D$, $EF \rightarrow G$, and $EF \rightarrow C$.
(5) Question not attempted

44. What will the following SQL statement do ?
SELECT COUNT(*) FROM employees;
(1) Count all the employees with NULL values
(2) Count all rows in the employees table
(3) Count only rows with non-NULL values
(4) Return all count column values
(5) Question not attempted

45. Suppose X is a composite attribute of an entity type and has three components – A1, A2 and A3, where only A2 is multi-valued and can be NULL. If domain sets of A1, A2 and A3 have 5, 3, and 4 elements respectively, what is the size of the domain of X ?
(1) 60 (2) 12
(3) 120 (4) 160
(5) Question not attempted

46. Which of following is a technique that facilitates hiding of a message that is to be kept secret inside an image ?
(1) Steganography
(2) Cryptography
(3) Encryption
(4) Calligraphy
(5) Question not attempted

47. In RSA, let the two prime numbers are P = 7, Q = 17 and public key e = 5. Find the Cipher text for the plain text 10.
(1) 40 (2) 77
(3) 96 (4) 119
(5) Question not attempted

48. Which of the following statements are true regarding firewalls ?
A. Only the packets from trusted source address can enter the organization's network.
B. It is important to have firewalls to prevent the network from unauthorized access.
C. A firewall can be implemented using hardware or software or the combination of both.
D. A firewall can not be implemented using software.
(1) A, B, C are correct.
(2) A, B, D are correct.
(3) A and C are correct.
(4) A and B are correct.
(5) Question not attempted

49. In context of Intrusion Detection Systems, which of the following is not true about honeypots ?

(1) Divert attention of a potential intruder from critical systems.

(2) Collect information about the intruder's actions.

(3) Look like real-life systems.

(4) Allow legitimate users to know about or access honeypots.

(5) Question not attempted

50. In the given key pattern :

$1 \rightarrow 4, 2 \rightarrow 8, 3 \rightarrow 1, 4 \rightarrow 5, 5 \rightarrow 7, 6 \rightarrow 2, 7 \rightarrow 6, 8 \rightarrow 3$

The first bit of plaintext moves to the fourth position of ciphertext and so on.

What would be the chipher text in transposition cipher for the following plaintext ?

plaintext : SACKGAUL

(Note : above plaintext should be read from right to left)

(1) UKAGLSCA

(2) KUCGASLA

(3) SCAUKAGL

(4) SAUKCALG

(5) Question not attempted

51. To verify a digital signature, we need the _____.

(1) sender's private key

(2) sender's public key

(3) receiver's private key

(4) receiver's public key

(5) Question not attempted

52. Match List-I with List-II and select the correct answer by using the codes given below the lists :

List-I	List-II
(i) Boot Virus	A. The attacker sends a large number of connection or information requests to a target.
(ii) Worm	B. Infects the key operating system files located in a computer.
(iii) Zombies	C. Malicious program that replicates itself constantly until they completely fill available resources.
(iv) Denial-of-service attack	D. Machines directed remotely.

	(i)	(ii)	(iii)	(iv)
(1)	A	B	C	D
(2)	B	C	D	A
(3)	C	D	A	B
(4)	D	A	B	C

(5) Question not attempted

53. In Data Encryption Standard (DES), the number of rounds is _____.

(1) 8 (2) 16

(3) 24 (4) 56

(5) Question not attempted

54. Act of listening to a private conversation between hosts in a network is called _____ .

(1) Spoofing

(2) Tampering

(3) Eavesdropping

(4) Repudiation

(5) Question not attempted

55. HTTPS uses _____ port number.

(1) 80 (2) 51

(3) 443 (4) 25

(5) Question not attempted

56. Consider Column-I and Column-II in the context of various activities of a generic process framework for software engineering.

Column-I	Column-II
a. Communication	i. coding and testing
b. Planning	ii. requirement gathering
c. Construction	iii. delivery and feedback
d. Deployment	iv. risk, resources and schedules

Which of the following is the most suitable match of Column-I and Column-II ?

(1) a-ii, b-iv, c-i, d-iii

(2) a-ii, b-iii, c-iv, d-i

(3) a-iii, b-iv, c-i, d-ii

(4) a-iv, b-i, c-ii, d-iii

(5) Question not attempted

57. Which of the following domains is NOT typically part of a requirements (analysis) model ?

(1) Information domain

(2) Functional domain

(3) Behavioral domain

(4) Architectural domain

(5) Question not attempted

58. _____ is a collection of programs written to service other programs.

(1) System software

(2) Application software

(3) Both System software & Application software

(4) Neither System software Nor Application software

(5) Question not attempted

59. Which of the following are represented by the box icons divided into horizontal parts in UML class diagrams ?

(1) classes only

(2) interfaces only

(3) neither a class nor an interface

(4) classes, abstract classes and interfaces

(5) Question not attempted

60. Which one of the following pairs is not correctly matched :

(1) Co-incidental cohesion – unplanned and random cohesion.

(2) Temporal cohesion – elements of module are processed at different points of time.

(3) Sequential cohesion – output of one element serves as input to another.

(4) Procedural cohesion – elements of module are grouped together, which are executed sequentially in order to perform a task.

(5) Question not attempted

61. In case of flow-oriented requirement modeling, context diagram is also known as

(1) Level 0 DFD (2) Level 1 DFD

(3) Level 2 DFD (4) Level 3 DFD

(5) Question not attempted

62. Which of the following is not an element of interface design ?

(1) the user interface (UI)

(2) external interfaces to other systems, devices, networks, or other producers or consumers of information

(3) internal interfaces between various design components

(4) Modularity

(5) Question not attempted

63. In context of software design, choose the correct option for the following Assertion and Reason :

Assertion (A) : It is desirable to have the lowest possible coupling between modules.

Reason (R) : Simple connectivity among modules results in software that is easier to understand and less prone to a "ripple effect" of errors across the system.

(1) Both (A) and (R) are true, and (R) is the correct explanation of (A).

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

(3) (A) is true, but (R) is false.

(4) (A) is false, but (R) is true.

(5) Question not attempted

64. At the architectural design level, a software architect uses an _____ to model the manner in which software interacts with entities external to its boundaries.

(1) Architectural Activity Diagram (AAD)

(2) Architectural Context Diagram (ACD)

(3) Architectural State Diagram (ASD)

(4) Architectural Design Diagram (ADD)

(5) Question not attempted

65. Which of the following best describes the Open-Closed Principle (OCP) in object-oriented component-level design ?

(1) A component should be either open or closed for both modification and extension.

(2) A component should be open for extension and closed for modification.

(3) A component should be open for modification and closed for extension.

(4) A component should be neither open nor closed for both modification and extension.

(5) Question not attempted

66. The intent of _____ is to conceal the details of data structures and procedural processing behind a module interface.

(1) Modularity

(2) Information hiding

(3) Coupling

(4) Exposing

(5) Question not attempted

67. Which of the following statement(s) is/are true in the context of software testing ?

I : Verification is to ensure that software correctly implements a specific function.

II : Validation is to ensure that the software that has been built is traceable to customer requirements.

(1) Only I
(2) Only II
(3) Both I and II
(4) Neither I nor II
(5) Question not attempted

68. If software is developed as a product to be used by many customers, most software product builders use a process called _____ to uncover errors that only the end user seems able to find.

(1) alpha and beta testing
(2) integration testing
(3) recovery testing
(4) system testing
(5) Question not attempted

69. In the context of basis path testing, let the flow graph G (V, E) is drawn using the procedural design or source code. If graph G have 17 edges and 13 nodes, what is cyclomatic complexity of G ?

(1) Five
(2) Four
(3) Six
(4) Three
(5) Question not attempted

70. Which of the following testing techniques does not come under control structure testing ?

(1) Condition testing
(2) Data flow testing
(3) Loop testing
(4) Graph-based testing
(5) Question not attempted

71. Which of the following is the correct sequence of software testing process ?

(1) Prepare test data → Design test cases → Run program with test data → Compare results to test cases
(2) Design test cases → Prepare test data → Run program with test data → Compare results to test cases
(3) Design test cases → Run test cases → Prepare test data → Compare results
(4) Design test cases → Prepare test data → Compare results
(5) Question not attempted

72. Match the following List-1 with the List-2 :

List-1	List-2
(i) Unit Testing	(a) It is concerned with scheduling and resourcing all of the activities in the testing process. It involves defining the testing process, taking into account the people and the time available.
(ii) Test planning	(b) This type of testing should focus on testing component interactions. Where some or all of the components in a system are integrated and the system is tested as a whole.
(iii) Component testing	(c) This type of testing should focus on testing the functionality of objects or methods.
(iv) System Testing	(d) This type of testing should focus on testing component interfaces.

(1) (i)-a, (ii)-b, (iii)-c, (iv)-d
(2) (i)-c, (ii)-a, (iii)-d, (iv)-b
(3) (i)-c, (ii)-a, (iii)-b, (iv)-d
(4) (i)-a, (ii)-c, (iii)-d, (iv)-b
(5) Question not attempted

73. The levels of granularity in software testing include all of the following except _____ .
(1) unit testing
(2) segment testing
(3) component testing
(4) system testing
(5) Question not attempted

74. _____ is the process of fixing errors and problems that have been discovered by testing.
(1) Validation (2) Verification
(3) Debugging (4) Refutation
(5) Question not attempted

75. _____ testing executes a system in a manner that demands resources in abnormal quantity, frequency, or volume.
Which of the following correctly fill in the blank ?
(1) Performance (2) Stress
(3) Recovery (4) Theta
(5) Question not attempted

76. In context of mining descriptive statistical measures of data, which of the following sets represents measures of the central tendency and measures of the dispersion of data respectively ?
(1) {Mean, Mode, Range}, {Median, Variance, Standard Deviation}
(2) {Mean, Mode, Median}, {Range, Variance, Standard Deviation}
(3) {Median, Variance, Standard Deviation}, {Mean, Mode, Range}
(4) {Mean, Range, Variance}, {Mode, Median, Standard Deviation}
(5) Question not attempted

77. In the context of data warehousing, the semantic heterogeneity and structure of data, are challenges in which of following ?
(1) Data reduction
(2) Data integration
(3) Data cleaning
(4) Data transformation
(5) Question not attempted

78. How does the time complexity of the K-means algorithm change as the number of clusters K increases ?
(1) Time complexity decreases linearly with K.
(2) Time complexity remains constant with respect to K.
(3) Time complexity increases linearly with K.
(4) Time complexity increases exponentially with K.
(5) Question not attempted

79. In context of multidimensional data models for a data warehouse, the fact table contains :
(1) Names of the facts as well as keys to each of the related dimension tables.
(2) List of dimensions.
(3) List of users or expert.
(4) Fact table is abstract and it remains empty.
(5) Question not attempted

80. Which of the following statement(s) is/are true about schemas for multidimensional data models ?
I : The dimension tables of the star schema model is kept in normalized form to reduce redundancies.
II : There are multiple fact tables to share dimension tables in snowflake schema.
(1) Only I (2) Only II
(3) Both I and II (4) Neither I nor II
(5) Question not attempted

81. Suppose the original training set contains 100 positive and 1000 negative tuples. After under sampling, the new training set will contain :
(1) 1000 positive and 1000 negative tuples
(2) 100 positive and 100 negative tuples
(3) 550 positive and 550 negative tuples
(4) All positive tuples only
(5) Question not attempted

82. Which of following is not a data classification technique ?
(1) Bayesian belief networks
(2) Support Vector Machine
(3) KNN (K-nearest neighbours)
(4) Principal component analysis
(5) Question not attempted

83. Which of the following defines the measure 'precision' in the context of metrics for evaluating classifier performance, if TP, TN, FP, FN refer to the number of true positive, true negative, false positive and false negative respectively ?
(1) TP/(TP+FP) (2) TN/(TN+FN)
(3) TP/(TN+FN) (4) TN/(TP+FP)
(5) Question not attempted

84. In data warehouse technology, a multiple dimensional view can be implemented using different OLAP storage models. Which of the following correctly distinguishes between ROLAP, MOLAP, and HOLAP ?

(1) ROLAP uses multidimensional arrarys
MOLAP uses relational tables
HOLAP uses only materialized views

(2) ROLAP use a relational or extended-relational DBMS to store and manage warehouse data
MOLAP uses array-based multidimensional storage engines
HOLAP combines ROLAP and MOLAP technology

(3) ROLAP is faster than MOLAP in indexing of summarized data
MOLAP supports sparse data better than ROLAP
HOLAP doesn't support drill-down operations

(4) ROLAP can only support numeric data types
MOLAP supports single-level storage
HOLAP requires columnar storage engines

(5) Question not attempted

85. In the context of data warehousing, let 'smoothing by bin boundaries' is applied for data cleaning on the data [4, 8, 15, 21, 21, 24, 25, 28, 34] with equal-frequency bins of size 3 (namely bin1, bin2 and bin3). After smoothing bin2 data is given by :

(1) 21, 21, 24 (2) 22, 22, 22
(3) 21, 24, 24 (4) 21, 22.5, 24
(5) Question not attempted

86. If a decision tree classifier keeps expanding until every training instance is correctly classified but test error rate begin to increase what is the most likely outcome ?

(1) Underfitting
(2) Generalization
(3) Overfitting
(4) Cross-validation error minimized
(5) Question not attempted

87. Which of the following statement(s) is/are true about OLAP ?

I : These systems have very large number of users than that of database systems.
II : Accesses to these systems are mostly read-only operations.

(1) Only I (2) Only II
(3) Both I and II (4) Neither I nor II
(5) Question not attempted

88. In the context of data warehousing, which of the following is not a data transformation strategy ?

(1) Normalization
(2) Discretization
(3) Attribute construction
(4) Wavelet transforms
(5) Question not attempted

89. What is the total number of non-empty subsets of a 100-item frequent itemset ?

(1) 100 (2) 2^{100}
(3) $2^{100} - 1$ (4) 100!
(5) Question not attempted

90. Match the clustering approach (Column 1) with its correct description (Column 2) :

No.	Clustering Approach		Description
1.	Agglomerative Method	A.	Begins with each data object as its own cluster and merges them iteratively
2.	Divisive Method	B.	Uses density rather than distance to form clusters, enabling discovery of arbitrary shapes
3.	Density - Based Method	C.	Starts with all data in one cluster and then recursively splits into smaller clusters

(1) 1-A, 2-C, 3-B (2) 1-C, 2-A, 3-B
(3) 1-B, 2-C, 3-A (4) 1-C, 2-B, 3-A
(5) Question not attempted

91. The 0-D cuboid, which holds the highest level of summarization is also known as :
(1) Base cuboid
(2) Apex cuboid
(3) Intermediate cuboid
(4) Multi-dimensional cube
(5) Question not attempted

92. What does a quantile-quantile (Q-Q) plot display ?
(1) It displays all of the data for the given attribute and it plot quantile information
(2) It is a graphical method for summarizing the distribution of a given attribute
(3) The quantiles of one univariate distribution against the corresponding quantiles of another
(4) It is a useful method for providing a first look at bivariate data to see clusters of points and outliers
(5) Question not attempted

93. Which of the following techniques is NOT used to improve the efficiency of the Apriori algorithm ?
(1) Hash-based technique
(2) Transaction reduction
(3) Partitioning
(4) Selection
(5) Question not attempted

94. Which of the following techniques cannot be used for removal of noise from data ?
(1) Smoothing by bin means
(2) Smoothing by bin medians
(3) Smoothing by bin compliment
(4) Smoothing by bin boundaries
(5) Question not attempted

95. Which of the following statement is incorrect ?
(1) OLTP adopts Entity-Relationship model
(2) OLAP adopts star or snowflake model
(3) OLTP consists of read-only operations
(4) OLTP consists of short, atomic transactions
(5) Question not attempted

96. Which standard is used to define protocol, host computer, port and path on the Internet ?
(1) IP address
(2) Uniform Resource Locator (URL)
(3) MAC address
(4) POP address
(5) Question not attempted

97. _____ is a supplementary protocol that allows non-ASCII data to be sent through e-mail.
(1) SMTP (Simple Mail Transfer Protocol)
(2) Multipurpose Internet Mail Extensions (MIME)
(3) IMAP (Internet Mail Access Protocol)
(4) POP (Post Office Protocol)
(5) Question not attempted

98. Which of the following is not true about IMAP4 protocol ?
(1) A user can check the e-mail header prior to downloading.
(2) A user can search the contents of the e-mail for a specific string of characters prior to downloading.
(3) A user can create, delete, or rename mailboxes on the mail server.
(4) A user cannot create a hierarchy of mailboxes in a folder for e-mail storage.
(5) Question not attempted

99. What will be the output of the following Python code ?

```
a = True
b = False
c = False

if not a or b:
    print (1)
elif not a or not b and c:
    print (2)
elif not a or b or not b and a:
    print (3)
else:
    print (4)
```

(1) 1 (2) 2
(3) 3 (4) 4
(5) Question not attempted

100. What will be the output of the following PHP code ?

```
<?php
$x = 5;
$y = 10;
function fun()
{
   $y = $GLOBALS['x'] + $GLOBALS['y'];
}
fun();
echo $y;
?>
```

(1) 5 (2) 10
(3) 15 (4) 25
(5) Question not attempted

101. The maximum number of levels in the inverted tree structure of Domain Name Space can be :
(1) 64 (2) 128
(3) 256 (4) 192
(5) Question not attempted

102. Which of the following pairs is not correctly matched ?
(1) TELNET-logon to a remote machine
(2) MIME-transfer multimedia messages
(3) SMTP-Email Services
(4) NVT-Name Server
(5) Question not attempted

103. Which of the statement is correct in JavaScript regarding var and let keywords ?

(1) var has global scope, and let has block scope
(2) var has block scope, and let has global scope
(3) var has local scope, and let has global scope
(4) var has global scope, and let also has global scope
(5) Question not attempted

104. Which element is used to embed a multimedia object in an HTML document ?

(1) tag
(2) <embed> tag
(3) <emb> tag
(4) <embedded> tag
(5) Question not attempted

105. Match the following URL Schemes with their uses :

URL Scheme Name		Used for
a. mailto	i.	Streaming media
b. rtsp	ii.	Browser information
c. https	iii.	Sending email
d. about	iv.	Hypertext with security

(1) a-i, b-iii, c-iv, d-ii
(2) a-iii, b-i, c-iv, d-ii
(3) a-ii, b-i, c-iv, d-iii
(4) a-iii, b-ii, c-iv, d-i
(5) Question not attempted

106. What will be the output of the following Python script ?

```
>>>L=['spam','Spam','SPAM!']
>>>L[-2]
```

(1) 'Spam' (2) 'spam'
(3) 'SPAM!' (4) 'SP!'
(5) Question not attempted

107. What will be the output of the following PHP program ?

```
<?php
$fruits = array ("apple",
"orange", array ("pear",
"mango"),"banana") ;
print (count($fruits, 1));
?>
```

(1) 6 (2) 5
(3) 4 (4) 3
(5) Question not attempted

108. What is the meaning of status code 400 in HTTP ?

(1) Accepted
(2) Moved Permanently
(3) Not Found
(4) Bad Request
(5) Question not attempted

109. Which of the following is the role of pickle module in Python ?

(1) Convert objects into an ordered sequence of bytes
(2) Convert Python objects into JSON notation
(3) Convert a byte stream into Python object hierarchy
(4) Convert a list into a datatable
(5) Question not attempted

110. Which of the following correctly explains why DNS uses both UDP and TCP ?

(1) DNS uses UDP only for all types of data transfer.
(2) DNS uses only UDP because it is faster and always reliable.
(3) DNS uses TCP for tasks like zone transfers or large responses.
(4) DNS switches from TCP to UDP when data exceeds 512 bytes.
(5) Question not attempted

111. What is the primary purpose of using Intents in Android ?
(1) To manage the app's memory allocation
(2) To execute background threads
(3) Message passing framework
(4) To compile and build the Android project
(5) Question not attempted

112. In which of the following problem areas expert system does not provide real assistance ?
(1) Weather forecasting
(2) Medical diagnosis
(3) Legal reasoning
(4) Decoupling
(5) Question not attempted

113. Amazon.com provides what kind of E-Com services ?
(1) B2G (2) C2B
(3) C2G (4) B2C
(5) Question not attempted

114. Which of the following is NOT a typical or emerging application of multimedia technologies in the field of Information Technology ?
(1) Video teleconferencing and distributed lectures for remote education
(2) Telemedicine systems supporting patient consultations over networks
(3) Voice-controlled interactive environments like kitchen-wall web browsers
(4) Static text-based documentation systems with no interactivity or media integration
(5) Question not attempted

115. Full form TIFF image file format is _____.
(1) Targeted Image File Format
(2) Tagged Image File Format
(3) Tuned Image File Format
(4) Tilted Image File Format
(5) Question not attempted

116. SHA-2 algorithm generate _____ length of hash value.
(1) 128 bits (2) 512 bits
(3) 256 bits (4) 1024 bits
(5) Question not attempted

117. Find an AI agent that evaluates different actions based on a function and it measures the "value" or "satisfaction" of achieving a goal in different ways.
(1) Model-based Reflex Agent
(2) Goal-based Agent
(3) Utility based Agent
(4) Simple Reflex Agent
(5) Question not attempted

118. What would be an appropriate call to action for a digital marketing campaign in the awareness stage of the customer journey ?
(1) Asking the audience to purchase a product
(2) Encouraging the audience to subscribe to a newsletter
(3) Inviting the audience to listen to a podcast episode or read a blog post
(4) Recommending the audience to download a whitepaper
(5) Question not attempted

119. What is the role of content Providers in Android ?
(1) Controls the life cycle of activities
(2) Provides a consistent and non-intrusive mechanism for signaling to users
(3) Share data between applications
(4) Supports non-code resources like strings and graphics
(5) Question not attempted

120. Which of the following attack is used for identity theft ?
(1) Phishing attack
(2) TCP flooding attack
(3) Virus infection
(4) DNS amplification attack
(5) Question not attempted

121. Output of 2-inputs NAND gate if one of its i/p is permanently connected to '0' is :
(1) 0
(2) 1
(3) High impedance state
(4) Not defined
(5) Question not attempted

122. The decimal number represented by the Binary number (0.10101) is :
(1) $(0.56)_{10}$ (2) $(0.6875)_{10}$
(3) $(0.3125)_{10}$ (4) $(0.65625)_{10}$
(5) Question not attempted

123. One's complement representation of $(-8)_{10}$ is :
(1) $(01000)_2$ (2) $(10111)_2$
(3) $(11000)_2$ (4) $(00111)_2$
(5) Question not attempted

124. If there are 3 inputs of a logic gate, A, B, C with the output $(\bar{A} + \bar{B} + \bar{C})$ then the logic gate is :
(1) NOR (2) Ex-OR
(3) OR (4) NAND
(5) Question not attempted

125. The minimized expression for a 4-variables logic function, $f(A, B, C, D) = \sum m(0, 1, 2, 3, 5, 7, 8, 9, 11, 14)$, using K-map is
(1) $(\bar{A} + B + \bar{C} + D) \cdot (\bar{A} + \bar{B} + C) \cdot (\bar{A} + \bar{B} + \bar{D}) \cdot (A + \bar{B} + D)$
(2) $ABC\bar{D} + \bar{B}\bar{C} + \bar{B}D + \bar{A}D + \bar{A}\bar{B}$
(3) $\bar{B} + A\bar{C} + \bar{A}CD$
(4) $\bar{A}\bar{B}\bar{C}D + BC + B\bar{D} + A\bar{D} + A\bar{B}$
(5) Question not attempted

126. The number of select inputs required for a 8:1 multiplexer are
(1) 2 (2) 4
(3) 3 (4) 1
(5) Question not attempted

127. Which one is the Unipolar logic family ?
(1) RTL (2) DTL
(3) TTL (4) NMOS
(5) Question not attempted

128. The characteristic equation of the T flip-flop is
(1) $\bar{T}Q + Q\bar{T}$ (2) $\bar{T}Q + T\bar{Q}$
(3) TQ (4) $T\bar{Q}$
(5) Question not attempted

129. In a 4-stage ripple counter, the propagation delay of a flip-flop is 50 ns. If the pulse width of the strobe is 30 ns, find the maximum frequency at which the counter operates reliably.
(1) 10.0 MHz (2) 20.0 MHz
(3) 7.5 MHz (4) 4.35 MHz
(5) Question not attempted

130. The number of unused states in a 4-bit switch tail ring counter, (Johnson Counter) are
(1) 2 (2) 4
(3) 8 (4) 12
(5) Question not attempted

131. What will be the output of the following code ?

```
#include <stdio.h>
struct info {
    int x;
};
int main() {
    struct info a = {10};
    struct info b = a;
    b.x = 20;
    printf("%d %d", a.x, b.x);
    return 0;
}
```

(1) 10 10 (2) 20 20
(3) 10 20 (4) 20 10
(5) Question not attempted

132. What will be the output of following code ?

```
int main(){
  int i=1;
  printf("%d",i);
for(i = 0; i < 3; i++);
  if (i == 1)
    printf("%d ", i);
  return 0;
}
```

(1) 13 (2) 11
(3) 1 (4) 112
(5) Question not attempted

133. Which of the following statement(s) is/are correct ?

I. Keywords are those words whose meaning is already defined by Compiler.
II. Keywords cannot be used as variable name.
III. There are 32 keywords in ANSI C.
IV. C keywords are also called as reserved words.

(1) I and II only
(2) II and III only
(3) I, II and IV only
(4) I, II, III and IV
(5) Question not attempted

134. Complete the following loop to print even numbers from 2 to 10:

```
#include <stdio.h>
int main()
{
   int i;
   for(i=2; i <=10;_____)
   printf("%d ", i);
   return 0;
}
```

(1) i += 1 (2) i += 2
(3) i ++ (4) i+2
(5) Question not attempted

135. What is the worst case complexity of selection sort ?

(1) O(nlogn) (2) O(logn)
(3) O(n) (4) $O(n^2)$
(5) Question not attempted

136. Which best describes how Kruskal's algorithm constructs a Minimum Spanning Tree (MST) ?

(1) Adds edges in increasing order of weight while avoiding cycles.
(2) Adds the smallest edge that connects a visited vertex to an univisted one.
(3) Grows the MST by adding the maximum weight edge from a starting node.
(4) Selects a root and grows the MST by always choosing the closest neighbour.
(5) Question not attempted

137. Which of the following is true for adjacency matrix representation of a graph with n vertices ?

(1) Space complexity is O(n)
(2) Can not be used for directed graph
(3) Space complexity is $O(n^2)$
(4) Can not be used for weighted graphs
(5) Question not attempted

138. Which of the following sorting algorithms have a worst-case time complexity of O(n logn) ?

A1. Bubble Sort
A2. Heap Sort
A3. Quick Sort
A4. Insertion Sort
A5. Selection Sort

(1) A2 only
(2) A2 and A3 only
(3) A1, A2 and A3 only
(4) A2 and A5 only
(5) Question not attempted

139. What is the recurrence relation of the best case in quicksort ?

(1) $T(n)=2T(n/2)+\Theta(n)$
(2) $T(n)=T(n-1)+\Theta(n)$
(3) $T(n)=T(n/2)+\Theta(n^2)$
(4) $T(n)=2T(n/2)+\Theta(n^2)$
(5) Question not attempted

140. Output of the Linked list node access in the following code :

```
struct node {
   int data;
   struct node* next;
};
int main() {
   struct node nl = {10, NULL};
   struct node n2 = {20, NULL};
   nl.next=&n2;
   printf("%d", nl .data+nl .next->data);
}
```

(1) 10 (2) 20
(3) NULL (4) 30
(5) Question not attempted

141. Choose the correct output of the following code when executed in GCC compiler :

```
#include<stdio.h>
int main() {
   intarr[] = {1,2,3,4,5};
   printf("%c", *(arr + 3)+65);
}
```

(1) 69 (2) 68
(3) D (4) E
(5) Question not attempted

142. What will be the output of the following C code in GCC compiler ?

```
# include<stdio.h>
int main() {
   int a = 5,i=0;
   for(;i<3;a++,i++){}
      printf("%d", a++);
   return 0;
}
```

(1) 5 (2) 6
(3) 7 (4) 8
(5) Question not attempted

143. Complete the following code to get sum of array elements :

```
#include <stdio.h>
int main() {
   intA[]={1,2,3,4,5},i,sum;
   for(i = 0;i<5;i++)
   {
      _____;
   }
      printf("%d",sum);
      return 0;
}
```

(1) A[i] (2) sum=sum+i
(3) sum+=A[i] (4) sum[i]
(5) Question not attempted

144. What will be the output of the following code ?

```
#include <stdio.h>
void modify (int a, int b) {
   a += 10;
   b += 20;
   printf("Inside modify: %d %d\n", a, b);
}
int main () {
   int x = 5, y = 7;
   modify(x, y);
   printf ("Inside main: %d %d\n", x, y);
   return 0;
}
```

(1) Inside modify : 15 27
Inside main : 5 7
(2) Inside modify : 15 27
Inside main : 15 27
(3) Inside modify : 5 7
Inside main : 5 7
(4) Inside modify : 5 7
Inside main : 15 27
(5) Question not attempted

145. What is the difference between & & and & operators in C ?

(1) No difference; both are logical AND

(2) && is logical AND, & is bitwise AND

(3) && is a syntax error

(4) & is a syntax error

(5) Question not attempted

146. Consider the code segment :

```
#include <stdio.h>
#include <unistd.h>
int main()
{
   int i, n ;
   for(i = 1;i < n; i++) {
      if(fork() ==0)
         printf("CHILD\n");
   }
   printf("OS\n");
   return 0;
}
```

Number of times CHILD and OS are printed ?

(1) 2^n and 2^n

(2) 2^(n-1) and 2^(n-1)

(3) 2^(n-1)-1 and 2^(n-1)

(4) 2^n and 2^(n-1)

(5) Question not attempted

147. What is the purpose of swapping in an operating system ?

(1) To permanently terminate long-running processes.

(2) To move processes between different CPU cores for load balancing.

(3) To increase the CPU's clock speed during peak usage.

(4) To temporarily remove a process from memory and resume it later.

(5) Question not attempted

148. Which of the following statements are correct with respect to the given system call ?

System Call	Statement
A. `fork()` –	Creates a new process that starts from the main() function again.
B. `wait()` –	Waits for the child process to terminate and retrieves its exit status.
C. `exec()` –	Replaces the current process image with a new program executable.

(1) Options B, C are correct.

(2) Options A, C are correct.

(3) Options A, B are correct.

(4) Options A, B, C are correct.

(5) Question not attempted

149. Which of the following does NOT characterize an executing process ?

(1) Program counter

(2) Context Data

(3) Priority

(4) Source Code Length

(5) Question not attempted

150. What is the key difference between user-level threads and kernel-level threads ?

(1) User threads are created by the hardware, while kernel threads are created by the user.

(2) Kernel threads can run without an operating system, while user threads cannot.

(3) User threads are managed without kernel support, while kernel threads are managed by the operating system.

(4) There is no relationship between kernel threads and user threads.

(5) Question not attempted