

लोक सेवा आयोग
राष्ट्रिय बीमा संस्थान, अधिकृत स्तर, सातौं, नायव व्यवस्थापक (कम्प्युटर ईञ्जिनियर) पदको
प्रतियोगितात्मक लिखित परीक्षा

२०७४/१/१५

KEY [C]

पत्र : प्रथम

समय : १ घण्टा ३० मिनेट

पूर्णाङ्क : १००

विषय : कम्प्युटर ईञ्जिनियरिङ्ग सम्बन्धी

उत्तरपुस्तिकामा प्रश्नपत्रको KEY अनिवार्य रूपले उल्लेख गर्नुपर्नेछ । उल्लेख नगरेमा उत्तरपुस्तिका रद्द हुनेछ । परीक्षामा calculator, mobile प्रयोग गर्न पाइनेछैन । प्रत्येक Section को उत्तर छुट्टाछुट्टै उत्तरपुस्तिकामा लेख्नुपर्नेछ । अन्यथा उत्तरपुस्तिका रद्द हुनेछ ।

Section A : Objective

Multiple Choice

80×1=80 Marks

- Which of the following is not a likely configuration of a Client-Server System?
A) Single Client-Single Server B) Single Client-Multiple Server System
C) Multiple Clients-Multiple Server System D) Multiple Clients-Single Server System
- If one site fails in distributed system
A) all the sites will stop working
B) directly connected sites will stop working
C) the remaining sites can continue operating
D) the remaining sites will wait for the command from the central processor
- The initialization parameter controls the number of possible distributed transactions in which a given instance can concurrently participate, both as a client and a server.
A) DISTRIBUTED - TRANSACTIONS B) TRANSACTION
C) SET TRANSACTION D) CONTROL TRANSACTION
- Which of the following is used to store movie and image files?
A) Clob B) Blob C) Binary D) Image
- Which of the following describes a message-passing taxonomy for a component-based architecture that provides services to clients upon demand?
A) SOA B) EBS C) GEC D) SOB
- WPA2 is used for security in
A) Ethernet B) Wi-Fi C) Bluetooth D) GSM
- SHA-1 has a message digest of .
A) 160 bits B) 512 bits C) 628 bits D) 820 bits
- A hash function guarantees integrity of a message. It guarantees that message has not been
A) replaced B) viewed C) changed D) violated
- Which one of the following is a cryptographic protocol used to secure HTTP connection?
A) stream control transmission protocol (SCTP)
B) transport layer security (TLS)
C) explicit congestion notification (ECN)
D) resource reservation protocol

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10. What is Management Information System (MIS)?
- A) create and share documents that support day-today office activities
 - B) process business transactions like payment, order etc
 - C) capture and reproduce the knowledge of an expert problem solver
 - D) use the transaction data to produce information needed by managers to run the business
11. is a set of processes and procedures that transform data into information and knowledge.
- A) Knowledge system
 - B) Information system
 - C) Computer system
 - D) Database system
12. PERT and CPM are
- A) network techniques
 - B) assignment techniques
 - C) project evaluation techniques
 - D) none of the above
13. Which of the following technique will ensure that impact of risk will be less?
- A) Risk Avoidance technique
 - B) Risk Mitigation technique
 - C) Risk Contingency technique
 - D) All of the above
14. Which of the following is Cloud Platform by Amazon?
- A) Azure
 - B) AWS
 - C) Cloudera
 - D) Amazon store
15. The model originally did not require a cloud to use virtualization to pool resources.
- A) NEFT
 - B) NIST
 - C) NIT
 - D) All of the above
16. Which of the following aims to deploy methods for measuring various aspects of cloud performance in a standard way?
- A) SMI
 - B) SIM
 - C) RIM
 - D) MIS
17. Which of the following is an edge-storage or content delivery system that caches data in different physical locations?
- A) Amazon Relational Database Service
 - B) Amazon Simple DB
 - C) Amazon Cloudfront
 - D) Amazon Associates Web Services
18. For what purpose Feedback neural networks are primarily used?
- A) classification
 - B) feature mapping
 - C) pattern mapping
 - D) none of the above
19. Which is/are uses for Feed forward networks?
- A) pattern mapping
 - B) pattern association
 - C) pattern classification
 - D) all of the above
20. Auto-associative network is
- A) a neural network having no loops
 - B) a neural network that contains feedback
 - C) a neural network that can have only one loop
 - D) a single layer feed-forward neural network with pre-processing

21. The first AI programming language was called
A) BASICS B) FORTRAN C) IPL D) LISP
22. In the structure of fiber, the light is guided through the core due to total internal
A) deflection B) reflection C) diffraction D) refraction
23. Which agency developed standards for physical connection interfaces and electronic signaling specifications?
A) ISO B) ITU-T C) ANSI D) EIA
24. In Unix System/Linux System, the encrypted password of a user is stored in
A) /etc/shadow B) /etc/.passwd C) /etc/passwd D) /etc/enpasswd
25. Which of the following identifiers associated with a process decide its privilege level
A) uid B) suid C) euid D) gid
26. Which type of worker knows how and when to apply technology?
A) computer scientist B) technology-literate knowledge worker
C) technology analyst D) computer savvy
27. The indicator used to monitor and compare developments in information and communication technology (ICT) between countries and overtime is
A) ICTI B) IT index C) IDI D) IT measure
28. Which of following is a negative impact of ICT?
A) Faster communication speed B) Lower communication cost
C) Paperless environment D) Online addiction
29. The major challenge that developing country faces in implementing e-government is
A) proper planning and management B) investment
C) complexity D) development in technology
30. ICT is a blend of
A) IT and communication B) Technology and communication
C) Codes and information D) IT and social networking
31. Threats in SWOT analysis is
A) internal factor of organization B) external factor of organization
C) both A and B D) none of the above
32. Which of the following is not an element of Porter's 5 Forces Model?
A) the firm's existing competition
B) the bargaining power of suppliers
C) the potential competition from new entrants
D) the firm's macroeconomic environment
33. SWOT analysis is based on key pieces of information grouped into
A) internal and external factors B) reliable and secure factors
C) tangible and intangible factors D) direct and indirect factors

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34. Improving quality through small, incremental improvement is a characteristic of what type of quality management system?
A) Just-In-Time B) Six Sigma
C) Total Quality Management D) Kaizen
35. Which micro controller do not match with its architecture below?
A) Microchip PIC-Harvard B) MSP430-Harvard
C) ARM7-Von Neumann D) ARM9-Harvard
36. Which one of the following is not a E-commerce business model?
A) G2B B) B2B C) C2C D) G2G
37. What is term used when the government employs technology to deal with citizens, businesses and other government agencies?
A) G2BC B) Web C) Consumer D) E-government
38. The major components of PKI are
A) VA and RA B) VA and CA C) RA and CA D) VA, CA and RA
39. The member secretary of NITC board is
A) Secretary, Ministry of Science and Technology B) Executive Director, NITC
C) Member, National Planning Commission D) Assistant Director, NITC
40. Denial of Service (DoS) attack that sends flood of synchronization requests and never sends the final acknowledgement is typically known as which of the following?
A) Smurf B) Ping flood C) SYN flood D) Fraggle
41. In the layer hierarchy, as the data packet moves from the upper to the lower layers, headers are
A) added B) removed C) rearranged D) modified
42. This layer is an addition to OSI model
A) application B) session C) presentation D) both B and C
43. Which layer of the OSI model contains the LLC sub-layer and the MAC sub-layer?
A) physical layer B) transport layer C) data link layer D) session layer
44. The OSPF protocol
A) is a link state route discovery protocol
B) has the ability to discover a network's specific topology
C) provides better performance than RIP in large internet works
D) all of the above
45. The circuit used to store one bit of data is known as
A) Encoder B) OR gate C) Flip Flop D) Decoder
46. The method of synchronizing the processor with the I/O device in which the device sends a signal when it is ready is
A) Signal handling B) Exceptions C) DMA D) Interrupts
47. Memory access in RISC architecture is limited to instructions
A) CALL and RET B) PUSH and POP C) STA and LDA D) MOV and JMP

Contd.....

48. The time elapsed between initiation of a memory operation and the completion of that operation is called
A) memory cycle time B) memory access time
C) transfer time D) skip time
49. The error correcting codes have 2 hamming distance, it can detect bit errors and correct ... bit errors.
A) 3,1 B) 1,0 C) 2,2 D) 2,1
50. SNR (Signal to Noise Ratio) is equals to
A) Avg. signal power/ Avg. noise power B) Avg. signal power/ Avg. distortion
C) Avg. noise power/ Attenuation D) Avg. attenuation/ Avg. distortion
51. The sequence of operations in which PCM is done is
A) Sampling, quantizing, encoding B) Quantizing, encoding, sampling
C) Quantizing, sampling, encoding D) None of the above
52. Calculate the Nyquist rate for sampling when a continuous time signal is given by
 $X(t) = 5 \cos 100\pi t + 10 \cos 200\pi t - 15 \cos 300\pi t$
A) 300 Hz B) 600 Hz C) 150 Hz D) 200 Hz
53. A mathematical model with a collection of operators defined on that model is called
A) Data structure B) Abstract data type
C) Primitive data type D) Algorithm
54. A function has unrestricted access to
A) global data B) global name C) local data D) local variable
55. C++ allows objects of different types to respond differently to same function call, is called
A) inheritance B) polymorphism C) syndicate D) encapsulation
56. Which of the function is called automatically for each time an object is destroyed?
A) Destructor B) Destroyer C) Remover D) Terminator
57. What is the time taken by binary search algorithm to search a key in a sorted array of n elements?
A) $O(\log_2 n)$ B) $O(n)$ C) $O(n \log_2 n)$ D) $O(n^2)$
58. Two main measures for the efficiency of an algorithm are
A) processor and memory B) complexity and capacity
C) time and space D) data and space
59. Which of the following data structure is linear type?
A) Stack B) Tree C) Binary tree D) Graph
60. Which is the postfix form of the expression $(A+B)*(C*D-E)*F/G$ is?
A) $AB+CD*E-FG/**$ B) $AB+CD*E-F**G/$ C) $AB+CD*E-*F*G/$ D) $AB+CDE*-*F*G/$
61. Which model can be selected if user is involved in all the phases of SDLC?
A) RAD model B) Waterfall model
C) Prototyping model D) Both B and C

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62. Which of the following is not considered as a risk in software project management?
- A) specification delays B) product competition
C) testing D) staff turnover
63. Which of the following is not a software life cycle model?
- A) spiral model B) waterfall model
C) prototyping model D) capability maturity model
64. Which one of the following is not a step of requirement engineering?
- A) elicitation B) design C) analysis D) documentation
65. In the analysis phase, the development of the occurs, which is a clear statement of the goals and objectives of the project.
- A) program specification B) flowchart
C) design D) documentation
66. Which of the following term is used to refer to a row?
- A) attribute B) tuple C) field D) instance
67. Which normal form normalization will be needed where all attributes in a relation tuple are not functionally dependent only on the key attribute?
- A) first B) second C) third D) fourth
68. Select * from employee where age>35 and dept_id=10; which of the following fields are displayed as output?
- A) age, dept_id B) employee
C) age D) all the field of employee relation
69. Media recovery refers to recovery database
- A) after a system crash
B) after some individual transactions has failed
C) after database has been physically damaged
D) none of the above
70. Check points are a part of
- A) recovery measures B) security measures
C) concurrency measures D) authorization measures
71. Moving process from main memory to disk is called
- A) scheduling B) cache C) swapping D) spooling
72. Which of the following condition is required for deadlock to be possible?
- A) mutual exclusion
B) a process may hold allocated resources while awaiting assignment of other resources
C) no resources can be forcibly removed from a process holding it
D) all of the above

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73. What are common security threats?

- A) file shredding
- B) file sharing and permission
- C) file corrupting
- D) file integrity

74. What is related to RAID level 1?

- A) disk arrays with striping
- B) disk mirroring
- C) both A and B
- D) disk replacing

75. File system fragmentation occurs when

- A) unused space or single file are not contiguous
- B) used space is not contiguous
- C) unused space is non contiguous
- D) multiple file are non contiguous

76. What is CGI?

- A) a set of standards that define how information is exchanged between web server and a custom script
- B) a set of combined language
- C) a web framework
- D) none of the above

77. Which of the following is considered as platform independent code?

- A) source code
- B) compiled file
- C) library file
- D) all of the above

78. The evolution of JAVA language is governed by

- A) JSR
- B) JLS
- C) JCP
- D) JAVA Inc.

79. Fundamental HTML block is known as

- A) HTML Body
- B) HTML Tag
- C) HTML Attribute
- D) HTML Element

80. Which of the following PHP statement will output "Hello World" on the screen?

- A) Echo ("Hello world");
- B) Print ("Hello world");
- C) Print f ("Hello world");
- D) All of the above

Section B : Subjective

20 Marks

1. Prepare a proposal for IT based any business process of National Insurance Corporation. Justify your proposal. 10
2. You are asked to develop a software for payroll system. Listing out the entities, draw a context diagram and dataflow diagram between entities. 10

- THE END -

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प्रतियोगितात्मक लिखित परीक्षा

२०७४/१/१६

पत्र : द्वितीय
समय : ३ घण्टा

पूर्णाङ्क : १००

विषय : कम्प्युटर ईंजिनियरिङ्ग सम्बन्धी

प्रत्येक Section को उत्तर छुट्टाछुट्टै उत्तरपुस्तिकामा लेख्नुपर्नेछ । अन्यथा उत्तरपुस्तिका रद्द हुनेछ ।

Section : A

50 Marks

1. How does design patterns differ from framework? List down the key software design patterns. 5
2. Describe the functions of Pulse Code Modulation (PCM) with necessary figures. 5
3. How does IPv6 differ from IPv4? State. 5
4. Differentiate between memory mapped I/O and DMA. 5
5. Explain briefly how right ahead log strategy helps in ensuring the conformity of transaction. 5
6. Explain briefly the working principle of Java virtual machine. 5
7. What are the various approaches of requirement collection? Explain. 5
8. Describe application fields of 'Kerberos' and 'Transport Layer Security' in different security systems. 5
9. What is an online analytical processing (OLAP) in MIS? Describe. 5
10. How does CPM and PERT help in project scheduling and management? Explain with suitable examples. 5

Section : B

50 Marks

11. What are the characteristics of real time operating system? State. 5
12. Explain the various types of malicious software with example. 5
13. Differentiate between public and private cloud. 5
14. Electronic Transaction Act, 2063 has ensured the establishment of IT tribunal. Explain briefly the functionality of IT tribunal. 5
15. What do you mean by RSA algorithm? How does it help in strengthening the E-commerce? Describe. 5
16. Explain briefly on the importance of value chain analysis on strategic management. 5
17. Beema Sansthan is considering to automate its premium collection system. Design a context diagram and level one dataflow diagram to capture the premium collection process. 10
18. A corporate office requires to connect its three branches in a networked environment. All branches have their own local network. Design a network diagram with required equipments to connect all branches to the corporate office. 10

- THE END -