

D 102517

(Pages : 16)

Name.....

Reg. No.....

P.G. ENTRANCE EXAMINATION, APRIL 2024

COMPUTER SCIENCE

Time : Two Hours

Maximum : 400 Marks

*Each question carries 4 marks.
1 mark will be deducted for each wrong answer.*

Part I

1. Which of the following is the first step in SDLC framework ?
 - (a) Feasibility Study.
 - (b) Requirement Gathering.
 - (c) Communication.
 - (d) System Analysis
2. The 4GT Model acts as a package of _____.
 - (a) Software Tools.
 - (b) Software Programs.
 - (c) CASE tools.
 - (d) None of the above.
3. Code is checked in which type of testing ?
 - (a) White box testing.
 - (b) Black box testing.
 - (c) Green box testing.
 - (d) Red box testing.
4. Which of these specifiers would be applied to the constructors only ?
 - (a) Explicit.
 - (b) Implicit.
 - (c) Protected.
 - (d) Public.
5. What is the name of the feature in which we enforce the definitions of the abstract function at the compile time ?
 - (a) Dynamic Polymorphism.
 - (b) Static Polymorphism.
 - (c) Dynamic or Static Polymorphism according to need.
 - (d) Polymorphism.

Turn over

6. Which of these types of values result from a delete operator ?
- (a) Null.
 - (b) Null pointer.
 - (c) Void pointer.
 - (d) Void.
7. A user can make any change in the image using :
- (a) Interactive computer graphics.
 - (b) Non-Interactive computer graphics.
 - (c) Both (a) and (b).
 - (d) None of the above.
8. DDA stands for ———.
- (a) Data differential analyzer.
 - (b) Direct difference analyzer.
 - (c) Digital differential analyzer.
 - (d) Direct Differential Analyzer.
9. According to the Cohen-Sutherland algorithm, where the line lies, if the 4-bit code of both ends is 0000, and also the logical OR gives 0000 ?
- (a) Half outside half inside.
 - (b) Completely inside.
 - (c) Completely outside.
 - (d) None of the above.
10. Which of the following statements regarding Build and Fix Model is wrong ?
- (a) No room for structured design.
 - (b) Code soon becomes unfixable and unchangeable.
 - (c) Maintenance is practically not possible.
 - (d) It scales up well to large projects.
11. Which normalization form is based on the transitive dependency ?
- (a) 1NF.
 - (b) 2NF.
 - (c) 3NF.
 - (d) BCNF.
12. ——— is a powerful language for working with RDBMS.
- (a) Embedded Programs.
 - (b) Dynamic Programs.
 - (c) Query Language.
 - (d) Static Language Programs.

13. Which contains information about a file needed by system programs for accessing file records ?
- (a) File blocks.
 - (b) File operators.
 - (c) File headers.
 - (d) None of these.
14. _____ is a statement that is executed automatically by the system.
- (a) Trigger.
 - (b) Assertion.
 - (c) Durability.
 - (d) Integrity constraint.
15. The only way to undo the effects of a committed transaction is to execute a _____.
- (a) Committed transaction.
 - (b) Compensating transaction.
 - (c) Supplementary transaction.
 - (d) Update query.
16. In _____, one or more users/programs attempt to access the same data at the same time.
- (a) Concurrency.
 - (b) Transaction control.
 - (c) Locking.
 - (d) Two-phase locking.
17. _____ when a process leaves a critical section and more than one process is waiting, the selection of a waiting process is arbitrary :
- (a) Busy waiting is employed.
 - (b) Starvation is possible.
 - (c) Deadlock is possible.
 - (d) All of the above.
18. _____ lends itself to implementation in distributed systems as well as in shared-memory multiprocessor and uni-processor systems.
- (a) Monitor.
 - (b) Message passing.
 - (c) Strong semaphore.
 - (d) Binary semaphore.
19. Which of the following is/are the requirements of memory management ? (i) Relocation ; (ii) Protection ; (iii) Sharing ; (iv) Memory organization.
- (a) (i), (ii) and (iii) only.
 - (b) (ii), (iii) and (iv) only.
 - (c) (i), (iii) and (iv) only.
 - (d) All (i), (ii), (iii) and (iv).

20. The satisfaction of the relocation requirement increases the difficulty of satisfying the _____ requirement.
- (a) Protection.
 - (b) Sharing.
 - (c) Logical Organization.
 - (d) Physical Organization.
21. What is the use of Bridge in Network ?
- (a) To connect LANs.
 - (b) To separate LANs.
 - (c) To control Network Speed.
 - (d) All of the above.
22. Which of the following layer of OSI model also called end-to-end layer ?
- (a) Presentation layer.
 - (b) Network layer.
 - (c) Session layer.
 - (d) Transport layer.
23. The processes on each machine that communicate at a given layer are called :
- (a) UDP process.
 - (b) Intranet process.
 - (c) Server technology.
 - (d) Peer-peer process.
24. What is the main function of the command interpreter?
- (a) To provide the interface between the API and application program.
 - (b) To handle the files in the operating system.
 - (c) To get and execute the next user-specified command.
 - (d) None of the mentioned.
25. For real time operating systems, interrupt latency should be _____.
- (a) One.
 - (b) Minimal.
 - (c) Maximum.
 - (d) Dependent on the scheduling.

26. Whenever a process needs I/O to or from a disk it issues a _____.
(a) System call to the operating system.
(b) A special procedure.
(c) System call to the CPU.
(d) All of the mentioned.
27. The _____ program initializes all aspects of the system, from CPU registers to device controllers and the contents of main memory, and then starts the operating system.
(a) Bootstrap. (b) Main.
(c) Bootloader. (d) Rom.
28. Which of the following is a popular front-end framework for building user interfaces in JavaScript ?
(a) Django. (b) Angular.
(c) Flask. (d) Node.Js
29. What is the special feature of modern web applications ?
(a) Must load the document to manipulate.
(b) Can alter contents without loading document.
(c) Can't be altered at all.
(d) Remains static.
30. What are the disadvantages of arrays ?
(a) Index value of an array can be negative
(b) Elements are sequentially accessed
(c) Data structure like queue or stack cannot be implemented
(d) There are chances of wastage of memory space if elements inserted in an array are lesser than the allocated size

31. Which of the following application makes use of a circular linked list ?
- (a) Recursive function calls.
 - (b) Undo operation in a text editor.
 - (c) Implement Hash Tables.
 - (d) Allocating CPU to resources.
32. The IA-32 system follows which of the following design ?
- (a) CISC.
 - (b) RISC.
 - (c) SIMD.
 - (d) None of the mentioned.
33. For a given FINITE number of instructions to be executed, which architecture of the processor provides for a faster execution ?
- (a) ANSA.
 - (b) Super-scalar.
 - (c) ISA.
 - (d) All of the mentioned.
34. The bit used to signify that the cache location is updated is _____.
- (a) Flag bit.
 - (b) Reference bit.
 - (c) Update bit.
 - (d) Dirty bit.
35. What's the key benefit of using deep learning for tasks like recognizing images ?
- (a) They need less training data than other methods.
 - (b) They're easier to explain and understand than other models.
 - (c) They can learn complex details from the data on their own.
 - (d) They work faster and are more efficient computationally.
36. What elements describe the Candidate-Elimination algorithm ?
- (a) Depends on the dataset.
 - (b) Just a set of candidate hypotheses.
 - (c) Just a set of instances.
 - (d) Set of instances, set of candidate hypotheses.

37. Which of the following statements is not true about boosting ?
- (a) It mainly increases the bias and the variance.
 - (b) It tries to generate complementary base-learners by training the next learner on the mistakes of the previous learners.
 - (c) It is a technique for solving two-class classification problems.
 - (d) It uses the mechanism of increasing the weights of misclassified data in preceding classifiers
38. Assembler is used as a translator for ?
- (a) Low level language.
 - (b) High Level Language
 - (c) COBOL.
 - (d) C.
39. Which of the following is not a process state ?
- (a) Terminated.
 - (b) Running.
 - (c) Blocked.
 - (d) Execution.
40. A person who designs the programs in a software package is called :
- (a) User.
 - (b) Software Manager.
 - (c) System Developer.
 - (d) System Programmer.
41. A pointer variable can be :
- (a) Passed to a function.
 - (b) Changed within a function.
 - (c) Returned by a function.
 - (d) Can be assigned an integer value.
42. Which of the following data type is supported in C++ but not in C ?
- (a) Bool.
 - (b) Char.
 - (c) Double.
 - (d) Float.
43. By which of the following can the if-else statement be replaced ?
- (a) Logical operator.
 - (b) Bitwise operator.
 - (c) Conditional operator.
 - (d) Arithmetic operator.

44. Why is haptic feedback important ?
- (a) It helps with a sense of presence for a better immersive experience.
 - (b) It helps eyes to focus when there is a lot of contrasting light.
 - (c) It monitors the field of view and adjusts accuracy of digital images.
 - (d) It creates a mesh for a better view of the surrounding space.
45. What is the term for the ability to physically move around in a virtual space ?
- (a) Teleportation.
 - (b) Locomotion.
 - (c) Haptic feedback.
 - (d) Gesture recognition.
46. Which of these cannot be used for a variable name in Java ?
- (a) Identifier and keyword.
 - (b) Identifier.
 - (c) Keyword.
 - (d) None of the mentioned.
47. What is Truncation in Java ?
- (a) Floating-point value assigned to a Floating type.
 - (b) Floating-point value assigned to an integer type.
 - (c) Integer value assigned to floating type.
 - (d) Integer value assigned to integer type.
48. Which of the following statement is true ?
- (a) DELETE does not free the space containing the table and TRUNCATE free the space containing the table.
 - (b) Both DELETE and TRUNCATE free the space containing the table.
 - (c) Both DELETE and TRUNCATE does not free the space containing the table.
 - (d) DELETE free the space containing the table and TRUNCATE does not free the space containing the table.

49. What is the purpose of the SQL AS clause ?

- (a) The AS SQL clause is used to change the name of a column in the result set or to assign a name to a derived column.
- (b) The AS clause is used with the JOIN clause only.
- (c) The AS clause defines a search condition.
- (d) All of the mentioned.

50. Which of the following is not an operator in C ?

- (a) ,
- (b) sizeof()
- (c) ~
- (d) None of the mentioned.

Part II

(a) Electronics

51. An ideal Op-amp is an ideal :

- (a) Voltage controlled current source.
- (b) Voltage controlled voltage source.
- (c) Current controlled current source.
- (d) Current controlled voltage source.

52. Free electrons exist in :

- (a) First band.
- (b) Second band.
- (c) Third band.
- (d) Conduction band.

53. Which of the following is correct about semiconductors in electronic devices ?

- (a) Elemental semiconductors have direct band gap.
- (b) Compound semiconductors have indirect band gap.
- (c) Extrinsic semiconductors are injected with impurities.
- (d) Doping is done in Intrinsic semiconductors.

54. Which of the following semiconductor is mostly used to construct electronic circuits ?
- (a) Silicon.
 - (b) Germanium.
 - (c) Selenium.
 - (d) Tin.
55. Which of the following effects is responsible for violating the mass action law in degenerative type semiconductor electronic devices ?
- (a) Thermal effect.
 - (b) Bandgap narrowing effect.
 - (c) Lattice vibration effect.
 - (d) Electronic drift effect.
56. Which of the following is true about Zener diode ?
- (a) It is lightly doped
 - (b) It is mostly used in voltage regulator electronic circuits
 - (c) It is used in forward bias
 - (d) It has avalanche breakdown
57. Electromagnetic waves are produced by :
- (a) A static charge.
 - (b) An accelerated charge.
 - (c) A moving charge.
 - (d) Charged particles.
58. The ratio of the amplitude of the magnetic field to the amplitude of the electric field for electromagnetic wave propagation in a vacuum is equal to :
- (a) Unity.
 - (b) Speed of light in vacuum.
 - (c) Reciprocal of the speed of light in vacuum.
 - (d) The ratio of magnetic permeability to electrical susceptibility in a vacuum.
59. What kind of bonding cement is supposed to get cured instantaneously in the fabrication process of strain-gauge used as a pressure measuring transducer ?
- (a) Duco Cement.
 - (b) Epoxy Cement.
 - (c) Acrylic Cement.
 - (d) Phenolic Bakelite Cement.

60. How does the appearance of any noise rather than the electrical noise that intrude in the current output signal of two-wire transmitter get eliminated ?
- (a) By common-mode rejection of transmitting device.
 - (b) By common-mode rejection of interfacing device.
 - (c) By common-mode rejection of receiving device.
 - (d) None of the above.

(b) Physics

61. In the equilibrium state :
- (a) Probability is maximum.
 - (b) P parameters of two systems are equal.
 - (c) Both (a) and (b).
 - (d) Number of particles is maximum.
62. Out of n particles in a gas, the number of particles having exactly the most probable velocity
- (a) Zero.
 - (b) n .
 - (c) $n/2$.
 - (d) 10.
63. A spaceship of mass 10^6 kg is to be accelerated to $0.80c$. How much energy does this require ?
- (a) $2.5 \times 10^{23} \text{ J}$.
 - (b) $1.5 \times 10^{23} \text{ J}$.
 - (c) $7.2 \times 10^{23} \text{ J}$.
 - (d) $6.0 \times 10^{23} \text{ J}$.
64. A satellite is powered by a small nuclear generator that puts out 15 W. How much matter is converted into energy over the 10 year life span of the generator ?
- (a) 53 μg .
 - (b) 56 g.
 - (c) 17 g.
 - (d) 16 kg.
65. What is the main point of the de-Broglie equation ?
- (a) The position of the light cannot be precisely determined.
 - (b) Matter only behaves like a particle.
 - (c) Matter has wave like properties.
 - (d) Einstein's theory of relativity was incorrect.

66. The probability density of a particle is :

- (a) Always positive.
- (b) Negative.
- (c) Can be negative or positive.
- (d) complex quantity.

67. How is information extracted from a wave function ?

- (a) Operators.
- (b) Expectation value.
- (c) Differential.
- (d) Partial differential.

68. For which of the following is the field of view maximum ?

- (a) Concave mirror.
- (b) Convex mirror.
- (c) Plane mirror.
- (d) Cylindrical mirror.

69. Which of the following statements is true for total internal reflection ?

- (a) Light travels from rarer medium to denser medium.
- (b) Light travels from denser medium to rarer medium.
- (c) Light travels in water only.
- (d) Light travels in the air only.

70. For a telescope, the larger the diameter of the objective lens :

- (a) Greater the resolving power.
- (b) Greater the magnifying power.
- (c) Smaller the resolving power.
- (d) Smaller the magnifying power.

(c) Mathematics

71. For a determinant containing 4 elements $a_1 b_1 a_2 b_2$, what will the elements of the leading diagonal ?

- (a) $a_1 b_1$.
- (b) $a_1 b_2$.
- (c) $a_2 b_1$.
- (d) $a_2 b_2$.

72. Find the positive root of the equation $x^3 + 2x^2 + 10x - 20$ using Regula Falsi method and correct upto 4 decimal places.
- (a) 1.3688. (b) 1.3866.
(c) 1.4688. (d) 1.6488.
73. The converse of Cauchy- integral theorem is :
- (a) Euler's theorem. (b) Liouville's theorem.
(c) Morera's theorem. (d) Goursat's theorem.
74. Piecewise smooth curve is also known as :
- (a) Contour. (b) Smooth curve.
(c) Circle. (d) Regular curve.
75. The volume of a right circular cylinder depends on its _____.
- (a) Width. (b) Radius of curvature.
(c) Height. (d) Radius and height.
76. The volume of a rectangular box depends on its length, width and _____.
- (a) Height. (b) Area.
(c) Curvature. (d) Width.
77. Opposite vertical angles are also _____.
- (a) Scalene. (b) Equal
(c) Not equal. (d) Opposite.
(e) None of These.
78. Two angles are complementary, one of angle is of 52° . What will be the angle, of the second ?
- (a) 78° . (b) 90° .
(c) 38° . (d) 138° .
79. There is a metric space (E, d) such that every Cauchy sequence in (E, d) is convergent, then the metric space is :
- (a) Semi-complete. (b) Incomplete.
(c) Complete. (d) None of these.

80. The metric space R^2 is a topological space is the union of open intervals is called real Eudidean —
_____.

- (a) Space.
- (b) Line.
- (c) Plane.
- (d) None of these.

(d) Statistics

81. The best fit line method for data in Linear Regression ?

- (a) Least Square Error.
- (b) Maximum Likelihood.
- (c) Logarithmic Loss.
- (d) Both (a) and (b).

82. Linear regression uses _____ for graphical representation in determining the strength of the relationship between two variables.

- (a) Barchart.
- (b) Pie chart.
- (c) Scatter diagram.
- (d) Anova.

83. The control charts and procedures of descriptive statistics which are used to enhance a procedure can be. classified into which of these categories ?

- (a) Behavioural tools.
- (b) Serial tools.
- (c) Industry statistics.
- (d) Statistical tools.

84. Company A produces 10 % defective products, Company B produces 20 % defective products and C produces 5 % defective products. If choosing a company is an equally likely event, then find the probability that the product chosen is defective.

- (a) 0.14.
- (b) 0.23.
- (c) 0.22.
- (d) 0.12.

85. The annual salaries of workers in a manufacturing factory are normally distributed with a mean of Rs. 48,000 and a standard deviation of Rs. 1,500. Find the probability of workers who earn between Rs. 35,000 and Rs. 52,000.

- (a) 22 %.
- (b) 42.1 %.
- (c) 63 %.
- (d) 76.2 %.

86. To find the optimal solution, we apply _____.
(a) LPP. (b) VAM.
(c) MODI Method. (d) Rim.
87. For maximization in TP, the objective is to maximize the total _____.
(a) Solution. (b) Profit Matrix.
(c) Profit. (d) None of the above.
88. Power spectral density function is a ?
(a) Real and even function. (b) Periodic.
(c) Non-negative function. (d) All of the mentioned.
89. Which of the following is not an assumption of parametric inference methods :
(a) Data is quantitative.
(b) Population has a known distribution.
(c) Sample is sufficiently large.
(d) Data is qualitative.
90. Parameters are constants in :
(a) Sample. (b) Probability distribution.
(c) Estimators 1 2. (d) None of the above

(e) Chemistry

91. The _____ is used as the agricultural fertilizer.
(a) Bio ethanol. (b) Bio ethane.
(c) Bio methanol. (d) Digestrate.
92. One of the disadvantages of solid fuel is _____.
(a) Clinker formation. (b) Moderate ignition temperature.
(c) Storage. (d) Transportation.
93. The formation of coal is explained by _____.
(a) Nuclear theory. (b) In-situ theory.
(c) Molecular theory. (d) Ex-situ theory.

94. Which of the mentioned is the formula of Oleum ?

- (a) $\text{H}_2\text{S}_2\text{O}_8$. (b) $\text{H}_2\text{S}_2\text{O}_6$.
(c) $\text{H}_2\text{S}_2\text{O}_7$. (d) $\text{H}_2\text{S}_2\text{O}_5$.

95. Cryogenics deal with which of the following mentioned ?

- (a) Production and utilization of low temperatures from 0 K to 123K.
(b) Production and utilization of low temperatures from 0 K to 273.15 K.
(c) Production and utilization of high temperatures from 273.15K to 1000K.
(d) Production and utilization of high temperatures from 273.15K to 500K.

96. Which of the following have lowest percentage of uranium present in them ?

- (a) Pitchblende.
(b) Monazite sands.
(c) Camotite.
(d) Phosphate rock inclusions.

97. Which of the mentioned names is apt for Acetic Acid ?

- (a) Methanoic Acid. (b) Ethanoic Acid
(c) Butanoic Acid. (d) Pentanoic Acid

98. Viscosity of liquid _____ with rise in temperature.

- (a) Increases. (b) Is independent.
(c) Remains constant. (d) Decreases.

99. The vapor pressure is directly proportional to the temperature because of :

- (a) More kinetic energy only.
(b) Faster particle movement only.
(c) More potential energy.
(d) More kinetic energy and faster particle movement.

100. What is S. I. unit of Surface Tension ?

- (a) Dyne/meter. (b) Dyne-meter.
(c) Newton/meter. (d) Newton-meter.