

D 123848

(Pages : 18)

Name.....

Reg. No.....

CALICUT UNIVERSITY CENTRALIZED ENTRANCE TEST (CU-CET)

APRIL 2025

M.Sc. COMPUTER SCIENCE

Time : Two Hours

Maximum : 400 Marks

Each question carries 4 marks.

1 mark will be deducted for each wrong answer.

Part I

Computer Science

1. Row of a table in DBMS is also called as _____.
(a) Column. (b) Record.
(c) Field. (d) Tuple.
2. What is termed to maintain the data integrity and enforcing the data security ?
(a) User Address. (b) User Annotation.
(c) User Administration. (d) User Retrieval.
3. When a program is executed, the _____ Interacted by sending a message to one another.
(a) Objects. (b) Memory.
(c) Operating System. (d) Kernel.
4. Which language among the following support an Object Oriented approach ?
(a) Ada 95. (b) Modula-3.
(c) Modula-2. (d) Both (A) and (B).
5. A JK flip-flop in the toggle mode has :
(a) $K = 1$ and $J = 0$. (b) $K = 1$ and $J = 1$.
(c) $K = 0$ and $J = 1$. (d) $K = 0$ and $J = 0$.

Turn over

6. Out of these logic families, which one provides the minimum dissipation of power ?
- (a) TTL.
 - (b) CMOS.
 - (c) JFET.
 - (d) ECL.
7. At what frequency can we apply the digital data to a gate ?
- (a) Propagation Frequency.
 - (b) Operating Frequency.
 - (c) Run-time Frequency.
 - (d) AC Frequency.
8. If a page number is not found in the translation lookaside buffer, then it is known as a _____.
- (a) Translation Lookaside Buffer miss.
 - (b) Translation Lookaside Buffer hit.
 - (c) Buffer miss.
 - (d) All of the mentioned.
9. Who among the following can block the running process ?
- (a) Down.
 - (b) Read.
 - (c) Fork.
 - (d) All of these.
10. What is the use of directory structure in an Operating System ?
- (a) It is used to store the program in file format.
 - (b) It is used to solve the problem of the network connection in the Operating System.
 - (c) It is used to store files and folders hierarchically.
 - (d) All of the above.
11. Which of the following method is used to prevent threads or processes from accessing a single resource ?
- (a) PCB
 - (b) Job Scheduler.
 - (c) Semaphores.
 - (d) Non-contiguous Memory Allocation.

12. Which of the following is a valid long literal ?

- (a) ABH8097.
- (b) L990023.
- (c) 904423.
- (d) 0xnf029L.

13. Evaluate the following Java expression, if $x = 3$, $y = 5$, and $z = 10$:

`++z + y - y + z + x++`

- (a) 23.
- (b) 28.
- (c) 21.
- (d) 25.

14. An interface with no fields or methods is known as a _____.

- (a) Runnable Interface.
- (b) Marker Interface.
- (c) Abstract Interface.
- (d) CharSequence Interface

15. What is meant by the classes and objects that depends on each other ?

- (a) Tight Coupling.
- (b) Cohesion.
- (c) Loose Coupling.
- (d) None of the above.

16. What will be the output of the following C code ?

```
#include <stdio.h>

int main(){
    int a = 11;
    while (a < 20) {
        printf("%d ", a);
        a += 2;
    }
    return 0;
}
```

- (a) 11 13 15 17 19 21.
- (b) 11 12 13 14 15 16 17 18 19 20.
- (c) 11 13 15 17 19.
- (d) None of these.

Turn over

17. What is the correct syntax to declare pointer to pointer i.e., double pointer ?
- (a) Type `**pointer_name ;` (b) Type `*&pointer_name ;`
(c) Type `*(**pointer_name) ;` (c) Type `**(*pointer_name) ;`
18. What will happen if a header file is included in a program twice ?
- (a) Program will throw an error.
(b) Program will throw an exception.
(c) Program will run as it is.
(d) None of these.
19. Which of the following is an incorrect call to the function `void sample (int a, int b=0, int c=0) ?`
- (a) `Sample(1, 2, 3) ;` (b) `Sample() ;`
(c) `Sample (5) ;` (d) `Sample(3,4) ;`
20. Which of the following function is used to get the dimensions of the given array ?
- (a) `Getdimension.` (b) `Getarraydimension.`
(c) `Arrayrank.` (d) `Rank.`
21. If we did not create any constructor in the class, then which of the following constructor is automatically added to the class ?
- (a) Copy constructor. (b) Default constructor.
(c) Parameterized constructor. (d) None of the above.
22. Which of the following algorithms is not used in asymmetric-key cryptography ?
- (a) RSA algorithm. (b) Diffie-Hellman algorithm.
(c) Electronic code book algorithm. (d) None of the mentioned.

23. Which of the following statement is true about error detection techniques used on communications link ?
- (a) Cyclic Redundancy Check (CRC) sequence can detect as well as correct errors.
 - (b) Error detection cannot be used on simplex links.
 - (c) Hamming code can detect up to 3-bit errors.
 - (d) All of the these.
24. POTS network works on the principle of :
- (a) Telephone switching.
 - (b) Proxy server.
 - (c) File system.
 - (d) Circuit system.
25. What network utility uses the time-To-Live (TTL) field in the IP header to elicit ICMP error messages ?
- (a) Ping.
 - (b) Route.
 - (c) Traceroute.
 - (d) Ifconfig.
26. What is the maximum data transfer rate of the ISDN ?
- (a) 1024 Mbps.
 - (b) 128 Mbps.
 - (c) 64 kbps.
 - (d) 1024 kbps.
27. Which of the following statements is correct about IRC ?
- (a) It sends the messages in virtual time.
 - (b) It is an application layer protocol.
 - (c) It works on the proxy model.
 - (d) All of the these.
28. How to create a hyperlink in HTML ?
- (a) `<a link = "www.thinkandlearn.com"> thinkandlearn.com </a>.`
 - (b) `<a> www.thinkandlearn.com <thinkandlearn.com /a>.`
 - (c) `<a href = "www.thinkandlearn.com"> thinkandlearn.com </a>.`
 - (d) `<a url = "www.thinkandlearn.com" thinkandlearn.com /a>.`

29. What attribute do we use for data binding ?
- (a) Name.
 - (b) Mayscript.
 - (c) Datasrc.
 - (d) Datafld.
30. Which one of these helps us test if an old browser supports the geolocation ?
- (a) Modernizr.geolocation.
 - (b) Modernizr.
 - (c) Modernizr.js.
 - (d) Navigator.userAgent.
31. Who developed the Python language ?
- (a) Zim Den.
 - (b) Guido van Rossum.
 - (c) Niene Stom.
 - (d) Wick van Rossum.
32. PVM is often called _____.
- (a) Python interpreter.
 - (b) Python assembler.
 - (c) Python volatile machine.
 - (d) Portable virtual machine.
33. The external system bus architecture is created using from _____ architecture :
- (a) Pascal.
 - (b) Dennis Ritchie.
 - (c) Charles Babbage.
 - (d) Von Neumann.
34. The size of each segment in 8086 is :
- (a) 64 kb.
 - (b) 22 kb.
 - (c) 52 kb.
 - (d) 8 kb.
35. DIP stand for :
- (a) Deal in-line package.
 - (b) Dual in-line package.
 - (c) Direct in-line package.
 - (d) Digital in-line package.
36. Which causes the microprocessor to immediately terminate its present activity :
- (a) RESET signal.
 - (b) INTERRUPT signal.
 - (c) Both.
 - (d) None of these.

37. SDRAM refers to :

- (a) Sequential DRAM.
- (b) Synchronous DRAM.
- (c) Static DRAM.
- (d) Semi DRAM.

38. Conversion of the +1000 decimal number into signed binary word results.

- (a) 0000 0011 1110 1000.
- (b) 1111 1100 0001 1000.
- (c) 1000 0011 1110 1000.
- (d) 0111 1100 0001 1000.

39. Direction flag is used with

- (a) String instructions.
- (b) Stack instructions.
- (c) Branch instructions.
- (d) Arithmetic instructions.

40. Which of the following prototypes does not associated with Prototyping Model ?

- (a) Domain Prototype.
- (b) Vertical Prototype.
- (c) Horizontal Prototype.
- (d) Diagonal Prototype.

41. _____ is not considered as an activity of Structured Analysis (SA).

- (a) Transformation of a textual problem description into a graphic model.
- (b) Functional decomposition.
- (c) All the functions represented in the DFD are mapped to a module structure.
- (d) All of the mentioned.

42. Which parameters are essentially used while computing the software development cost ?

- (a) Hardware and Software Costs.
- (b) Effort Costs.
- (c) Travel and Training Costs.
- (d) All of the above.

Turn over

43. Once the requirements are stabilized, the basic architecture of the software can be established. Which of the following version of the COCOMO model conforms to the given statement ?
- (a) Application composition model.
 - (b) Post-architecture-stage model.
 - (c) Early design state model.
 - (d) All of the above.
44. What does RAD stand for ?
- (a) Rapid Application Document.
 - (b) Rapid Application Development.
 - (c) Relative Application Development.
 - (d) None of the above.
45. Which one of the following is a sequence of statements from one place in the program to another ?
- (a) Gateway.
 - (b) Route.
 - (c) Both (A) and (B).
 - (d) Sub-path.
46. What is an abbreviation of MTTF...
- (a) Mean-time-to-function.
 - (b) Manufacture-time-to-function.
 - (c) Mean-time-to-failure.
 - (d) None of the mentioned.
47. Bugs and failures in the software are due to ?
- (a) Software Developers.
 - (b) Software companies.
 - (c) None of these.
 - (d) Both (a) and (b).

48. Which of the following statement is false ?

- (a) Web-based system should be developed and delivered incrementally.
- (b) Web brings the concept of software as service.
- (c) Web-based systems have led to degradation of programming languages.
- (d) The web has led to the availability of software services and the possibility of developing highly distributed service-based systems.

49. Which of the following models doesn't necessitate defining requirements at the earliest in the lifecycle ?

- (a) RAD and Waterfall.
- (b) Prototyping and Waterfall.
- (c) Spiral and Prototyping.
- (d) Spiral and RAD.

50. The process of developing a software product using software engineering principles and methods is referred to as :

- (a) Software Engineering.
- (b) Software Evolution.
- (c) System Models.
- (d) Software Models.

Part II

(a) *Electronics*

51. At room temperature the current in an intrinsic semiconductor is due to :

- (a) Holes.
- (b) Electrons.
- (c) Ions.
- (d) Holes and electrons.

52. Voltage series feedback (Also called series-shunt feedback) results :

- (a) Increase in both I/P and O/P impedances.
- (b) Decrease in both I/P and O/P impedances.
- (c) Increase in I/P impedance and decrease in O/P impedance.
- (d) Decrease in I/P impedance and increase in O/P impedance.

Turn over

53. How many free electrons does a p type semiconductor has ?
- (a) Only those produced by thermal energy.
 - (b) Only those produced by doping.
 - (c) Those produced by doping as well as thermal energy.
 - (d) Any of the above.
54. An electron in the conduction band :
- (a) Has higher energy than the electron in the valence band.
 - (b) Has lower energy than the electron in the valence band.
 - (c) Loses its charge easily.
 - (d) Jumps to the top of the crystal.
55. The dynamic resistance of a forward biased p - n diode :
- (a) Varies inversely with current.
 - (b) Varies directly with current.
 - (c) Is constant.
 - (d) Is either constant or varies directly with current.
56. For a NPN bipolar transistor, what is the main stream of current in the base region ?
- (a) Drift of electrons.
 - (b) Drift of holes.
 - (c) Diffusion of electrons.
 - (d) Diffusion of holes.
57. The dynamic resistance of a forward biased p - n diode :
- (a) Varies inversely with current
 - (b) Is either constant or varies directly with current
 - (c) Is constant.
 - (d) Varies directly with current.

58. In a half wave rectifier, the load current flows :
- (a) For full cycle.
 - (b) Only for the positive half cycle of the input signal.
 - (c) Only for the negative half cycle of the input signal.
 - (d) For less than fourth cycle.
59. If too large current passes through the diode :
- (a) All holes will freeze.
 - (b) All electrons will leave.
 - (c) Diode will emit light.
 - (d) Excessive heat may damage the diode.
60. When diodes are connected in series to increase voltage rating the peak inverse voltage per junction :
- (a) Should not exceed one third the breakdown voltage.
 - (b) May be equal to or less than breakdown voltage.
 - (c) Should not exceed the breakdown voltage.
 - (d) Should not exceed half the breakdown voltage.
- (b) *Physics*
61. An ideal Carnot engine extracts 100J from a heat source and dumps 40J to a heat sink at 300K. The temperature of the heat source is :
- (a) 600K.
 - (b) 750K.
 - (c) 700K.
 - (d) 650K.
62. Fermions have spin value :
- (a) $\frac{1}{2}$.
 - (b) 1.
 - (c) 0.
 - (d) Any one.

63. In grand-canonical ensemble the expression for probability distribution is :
- (a) $\rho(E) = e[\Omega + n\mu - EkT]$. (b) $\rho(E) = e[\Omega + n - \mu EkT]$.
(c) $\rho(E) = e[\Omega + n - E\mu kT]$. (d) $\rho(E) = e[\Omega\mu + n - EkT]$.
64. Microcanonical ensemble is a collection of essentially independent systems having :
- (a) Same temperature, volume and no of identical particles.
(b) Same energy, volume and no of particles.
(c) Same temperature, volume and chemical potential.
(d) None of these.
65. If the mass of a particle is zero its speed must be :
- (a) c . (b) Infinite.
(c) 0. (d) Any speed less than c .
66. According to relativity theory a particle of mass m with a momentum of $2mc$ has a speed of :
- (a) $2c$. (b) $4c$.
(c) c . (d) $0.89c$.
67. The motion of a wave packet is similar to :
- (a) Photons. (b) Waves.
(c) Classical particle. (d) Quantum particle.
68. If kinetic energy of electron doubles, its de-Broglie wavelength changes by a factor :
- (a) 0.5. (b) 3.
(c) 2. (d) 0.707.
69. If a glass prism is dipped in water, what happens to its dispersive power ?
- (a) Increases. (b) Decreases.
(c) Does not change. (d) No effect.

70. A convex lens is dipped in a liquid whose refractive index is equal to the refractive index of the lens. Then what is its focal length ?
- (a) Focal Length will become zero.
 - (b) Focal Length will become infinite.
 - (c) Focal length will reduce, but not become zero.
 - (d) Remains unchanged.

(c) *Mathematics*

71. The Newton Raphson method is also called as ———.
- (a) Tangent method.
 - (b) Secant method.
 - (c) Chord method.
 - (d) Diameter method.
72. The equation $f(x)$ is given as $x^3 + 4x + 1 = 0$. Considering the initial approximation at $x = 1$ then the value of x_1 is given as ———.
- (a) 1.6712.
 - (b) 0.1856.
 - (c) 0.1429.
 - (d) 1.8523.
73. If each element of a line consists of m terms, the determinant can be expressed as the sum of ——— determinants.
- (a) $m - 1$.
 - (b) m .
 - (c) $m + 1$.
 - (d) m^2 .
74. Find the positive root of the equation $3x + \sin x - e^x$ using Regula Falsi method and correct upto 4 decimal places.
- (a) 0.4604.
 - (b) 0.4306.
 - (c) 0.3604.
 - (d) 0.4304.

75. Which of the following option is correct when addition of two matrices A and B is possible ?
- (a) both are rectangular
 - (b) both have same order
 - (c) no of columns of A is equal to columns of B
 - (d) no of rows of A is equal to no of columns of B
76. What do we call the matrices obtained by changing rows and columns ?
- (a) Rectangular matrix.
 - (b) Transpose.
 - (c) Symmetric.
 - (d) Scalar
77. Objective function of an LP problem is :
- (a) A constant.
 - (b) A function to be optimized.
 - (c) A quadratic equation.
 - (d) An inequality.
78. Corner points of the bounded feasible region for an LP problem are (0, 4), (6, 0), (12, 0), (12, 16) and (0, 10). Let $z = 8x + 12y$ be the objective function. Match the following : (i) Minimum value of z occurs at _____ (ii) Maximum value of z occurs at _____ (iii) Maximum of z is ; (iv) Minimum of z is _____.
- (a) (i) (6, 0) (ii) (12, 0) (iii) 288 (iv) 48.
 - (b) (i) (0, 4) (ii) (12, 16) (iii) 288 (iv) 48.
 - (c) (i) (0, 4) (ii) (12, 16) (iii) 288 (iv) 96.
 - (d) (i) (6, 0) (ii) (12, 0) (iii) 288 (iv) 96.
79. If $f(z)$ is an analytic function whose real part is constant then $f(z)$ is :
- (a) Function of z .
 - (b) Function of x only.
 - (c) Function of y only.
 - (d) Fonstant.
80. A function which is analytic everywhere in a complex plane is known as :
- (a) Harmonic function.
 - (b) Differentiable function.
 - (c) Regular function.
 - (d) Entire function.

(d) *Statistics.*

81. A _____ has rows / column having non- basic cells for holding compensating (+)or (-) sign.
- (a) Cycle. (b) Dead - end.
(c) Back track. (d) None of the above.
82. After determining every basic cell with in this cycle, adjustment is obtained as minimum value in basic cells . this is known as _____.
- (a) Adjustment amount. (b) aa.
(c) Both (a) and (b). (d) Alternatives.
83. If E denotes the expectation the variance of a random variable X is denoted as ?
- (a) $(E(X))^2$. (b) $E(X^2) - (E(X))^2$.
(c) $E(X^2)$. (d) $2E(X)$.
84. The random variables X and Y have variances 0.2 and 0.5 respectively. Let $Z = 5X - 2Y$. The variance of Z is ?
- (a) 3. (b) 4.
(c) 5. (d) 7.
85. The probability of rejecting the null hypothesis when it is true is called :
- (a) Level of confidence. (b) Power of the test.
(c) Level of significance. (d) Difficult to tell.
86. The number of independent values in a set of values is called _____.
- (a) Test statistic. (b) Level of freedom.
(c) Degree of freedom. (d) Level of confidence.
87. What is the probability of committing a type I error ?
- (a) Effect size. (b) Power
(c) Significance level. (d) Confidence level.

88. Which of the following statements is correct ?

- (a) The direct oral investigation is a method for the collection of secondary data.
- (b) The direct personal investigation is a method for the collection of secondary data.
- (c) The collection of information through a questionnaire is a method for the gathering of secondary data.
- (d) None of the above.

89. Which of the following statements about statistics is accurate ?

- (a) In a singular sense, statistics is a statistical law.
- (b) In a singular sense, statistics is a statistical science.
- (c) Both (a) and (b) are incorrect.
- (d) Both (a) and (b) are correct.

90. Stochastic processes are :

- (a) Strict sense stationary process.
- (b) Wide sense stationary process.
- (c) All of the mentioned.
- (d) None of the mentioned.

(e) *Chemistry*

91. Bio diesel is produced by the ————— of the vegetable oil.

- (a) Fermentation.
- (b) Distillation.
- (c) Transesterification.
- (d) Rectification.

92. The hydrogen-oxygen fuel cells have electrolyte solution of 2.5 % :

- (a) KOH.
- (b) NaOH.
- (c) Na(OH)_2 .
- (d) Mg(OH)_2 .

93. The state of freezing involves :
- (a) Loss of kinetic energy.
 - (b) Increased force of attraction.
 - (c) Liquid solidifies.
 - (d) All of above.
94. In the reaction $2A + B \rightarrow A_2B$, if the concentration of A is doubled and that of B is halved, then the rate of the reaction will :
- (a) Increase 2 times.
 - (b) Increase 4 times.
 - (c) Decrease 2 times.
 - (d) Remain the same.
95. What is the value of gamma for gas if the pressure of the gas is proportional to the T^3 for adiabatic process ?
- (a) 2.
 - (b) $3/2$.
 - (c) $4/3$.
 - (d) $5/3$.
96. Find the incorrect statement :
- (a) BOD value of clean water is less than 5 ppm.
 - (b) Drinking water pH should be between 5.5-9.5.
 - (c) carbon, sulphur and nitrogen oxides are the most widespread air pollutants.
 - (d) dissolved oxygen concentration below 5 ppm is ideal for the growth of fish.
97. In the air, N_2 and O_2 occur naturally but they do not react to form oxides of nitrogen because :
- (a) Oxides of nitrogen are unstable.
 - (b) Catalyst is required for the reaction.
 - (c) The reaction is endothermic.
 - (d) N_2 and O_2 do not react with each other.

98. What will be the work done by 3 moles of an ideal gas when it expands spontaneously in a vacuum ?
- (a) Zero. (b) Infinite.
(c) 3 joules. (d) 9 joules.
99. A gas X has C_p and C_v ratio as 1.4, at NTP 11.2 L of gas X will contain number of atoms _____.
- (a) 1.2×10^{23} . (b) 3.01×10^{23} .
(c) 2.01×10^{23} . (d) 6.02×10^{23} .
100. Find the pair with sp^2 hybridisation of the central molecule :
- (a) NH_3 and NO_2^- . (b) BF_3 and NH_2^- .
(c) BF_3 and NO_2^- . (d) NH_2^- and H_2O .