

**FAR WESTERN UNIVERSITY**  
**Faculty of Science and Technology**  
**Department of Computer Science and Information Technology**  
**Second Entrance Examination B. Sc. CSIT 2082**  
**Time: 2Hrs**

Attempt all the questions.

1×100=100

**Mathematics**

1. The statement  $p \vee \sim p$  is always  
a. tautology      b. contradiction      c. a false statement      d. none of the above
2. The number of improper subsets of a nonempty set A is  
a. 0      b. 1      c. 2      d. 4
3. Which of the followings is a true statement?  
a.  $0 \in \{ \}$       b.  $0 \in \{0\}$       c.  $0 \in \{\{0\}\}$       d.  $0 \in \emptyset$
4. The value of  $\omega^{23}$  is  
a. 1      b.  $\omega$       c.  $\omega^2$       d.  $\omega^3$
5. If I is imaginary roots of unity then  $I^4$  is  
a. I      b. -I      c. 1      d. -1
6. The value of  $1^3 + 2^3 + 3^3 + \dots + n^3$  is  
a.  $n^2$       b.  $n(n+1)/2$       c.  $n(n+1)(2n+1)/6$       d.  $\left(\frac{n(n+1)}{2}\right)^2$
7. The sum of the geometric series  $1 + \frac{1}{2} + \frac{1}{4} + \dots + \infty$  is  
a. 1      b.  $\frac{1}{2}$       c. 2      d.  $\infty$
8. The inverse of the function will be exist if it is  
a. Onto      b. one to one      c. into      d. both onto and one to one
9. Which of the following function is even  
a.  $\sin x$       b.  $\cos x$       c.  $\tan x$       d.  $\log x$
10. Which of the following number is an irrational number  
a. e      b.  $\pi$       c. 1.5      d. both b and c
11. The lines  $2x+3y = 5$  and  $-3x+2y = 7$  are  
a. parallel lines      b. perpendicular lines      c. coincidental lines      d. skew lines
12. The slope of the line  $15x+ 3y = 2$  is  
a. 1      b.  $1/3$       c. -3      d. 3
13. The equation of the line passing through the point (1,0) and having slope 2 is  
a.  $2x - y = 2$       b.  $2x - y = -2$       c.  $2x + y = 2$       d.  $2x - 2y = 2$
14. The focus of the parabola  $y^2 = 4ax$  is  
a. (0 , a)      b. (0 , - a)      c. (a , o)      d. (-a , o)
15. The center of the circle  $x^2 + y^2 + 4x - 6y + 7 = 0$  is  
a. (2 , 3)      b. (2 , -3)      c. (-2 , 3)      d. (-2 , -3)
16. The derivative  $\log(\cos x)$  is

- a. Secx                      b. tanx                      c. -tanx                      d. cotx
17. If  $x^2 + y^2 = a^2$  then  $\frac{dy}{dx}$  is  
a.  $\frac{x}{2}$                       b.  $\frac{x}{y}$                       c.  $-\frac{x}{y}$                       d.  $\frac{y}{x}$
18. The differential coefficient of  $\sin 3x$  is  
a. 3                      b.  $\cos 3x$                       c.  $3\cos 3x$                       d.  $\sin 3x$
19. If  $y = x^2 - 4x - 9$  then it is increasing at the point  
a. 1                      b. 0                      c. 2                      d. 3
20. The point of inflection of the function  $f(x) = x^3 - 3x^2 + 6x + 7$  is  
a. 0                      b. 1                      c. 2                      d. -2
21. If the particle moves the distance  $S = t^2 + 3t - 5$  meters then its velocity at  $t = 2$  second is  
a. 7m/sec                      b. 2m/sec                      c. 5m/sec                      d. 4m/sec
22. The value of  $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2}$  is  
a. 0                      b. 2                      c. 4                      d. -2
23. If  $\lim_{x \rightarrow 0} \frac{\sin px}{\tan 3x} = 4$  then p equals to  
a. 6                      b. 9                      c. 12                      d. 4
24. The value of  $\int \frac{dx}{\sqrt{a^2 - x^2}}$  is  
a.  $\sin^{-1}x$                       b.  $\tan^{-1}x$                       c.  $\sin^{-1}x/a$                       d.  $\tan^{-1}x/a$
25. What is the area of the curve bounded by the curve  $y = e^x$ ,  $x = 1$ ,  $x = 2$ ?  
a. E                      b.  $e - 1$                       c.  $e + 1$                       d.  $e(e - 1)$
26. If  $I = \int_1^e \ln x \, dx$  then I =  
a. 1                      b. 2                      c. 3                      d. e
27. Which of the following is not the measure of dispersion?  
a. Mean                      b. median                      c. variance                      d. mode
28. The first measure of skewness is given by  
a.  $3(\text{mean} - \text{median})$                       b.  $3(\text{median} - \text{mean})$                       c.  $3(\text{mean} - \text{mode})$                       d.  $3(\text{mode} - \text{median})$
29. A person has 4 children's, the probability of all four are girls is  
a.  $1/2$                       b.  $1/4$                       c.  $1/8$                       d.  $1/16$
30. A card is drawn from the card numbered from 1 to 100, the probability of drawing a number which is square is  
a.  $1/10$                       b.  $1/5$                       c.  $2/5$                       d.  $9/100$

### **Physics**

31. The rotational kinetic energy of a body is E and its moment of inertia is I, the angular momentum is  
a. EI                      b.  $2\sqrt{EI}$                       c.  $E/I$                       d.  $\sqrt{2EI}$
32. What is the radius of gyration of the solid cylinder when the axis of rotation passes from the central axis?  
a.  $\frac{1}{5}R^2$                       b.  $\frac{1}{4}R^2$                       c.  $\frac{1}{3}R^2$                       d.  $\frac{1}{2}R^2$

33. A particle executing simple harmonic motion of amplitude 5cm has maximum speed of  $3.14 \text{ cm s}^{-1}$ . Frequency of its oscillation is:  
 a. 4 Hz                      b. 3 Hz                      c. 2 Hz                      d. 1 Hz
34. An oscillating pendulum stops on earth after a certain time. What is the reason behind it?  
 a. hanging from fixed support                      b. lack of energy  
 c. air friction                      d. its mass
35. The surface tension of a liquid with increase of temperature generally  
 a. increases                      b. decreases  
 c. remains constant                      d. decreases upto  $160^{\circ}\text{C}$  and then decreases
36. What will be the height of liquid column in the capillary on the surface of moon if it is  $h$  on the surface of the earth?  
 a.  $h$                       b.  $h/6$                       c.  $6h$                       d. information is not sufficient
37. When a gas undergoes adiabatic expansion, its internal energy  
 a. increases                      b. decreases                      c. remains same                      d. none
38. When water is heated from  $0^{\circ}\text{C}$  to  $4^{\circ}\text{C}$ , what would be the condition in molar heat capacity?  
 a.  $C_p < C_v$                       b.  $C_p > C_v$                       c.  $C_p = C_v$                       d.  $C_p = C_v = 0$
39. The maximum efficiency of an engine operating between  $30^{\circ}\text{C}$  and  $300^{\circ}\text{C}$  is  
 a. 4.71%                      b. 47.1%                      c. 90%                      d. 9%
40. Change in entropy depends on  
 a. transfer of mass                      b. only the transfer of heat  
 c. only change in temperature                      d. on thermodynamic state
41. The distance between two particles in a wave motion in the same phase is  
 a.  $\pi/4$                       b.  $\pi/2$                       c.  $3\pi/4$                       d.  $\pi$
42. The reciprocal of wavelength is called  
 a. velocity                      b. wave frequency                      c. amplitude                      d. wave number
43. The intensity of sound at night increases because of  
 a. low temperature                      b. increase in density                      c. decrease in density                      d. calmness
44. When the prongs of the tuning fork are cut, its frequency  
 a. decreases                      b. increases                      c. remains unchanged                      d. may increase or decrease
45. The phase difference between the displacement wave and the pressure wave in sound is  
 a.  $\pi$                       b.  $\pi/2$                       c.  $\pi/3$                       d.  $\pi/4$
46. Two sources of light are said to be coherent if they emit waves  
 a. of the same velocity                      b. of the same intensity  
 c. of the same wavelength                      d. of the same wavelength having a constant phase difference
47. Which is the major character that distinguishes the light wave and sound wave?  
 a. polarization                      b. diffraction                      c. interference                      d. refraction
48. Wheat stone bridge is a  
 a. A.C. bridge                      b. D.C. bridge                      c. high voltage bridge                      d. power dissipation bridge
49. Thermocouple temperature is based on the principle of  
 a. seebeck effect                      b. joule's effect                      c. thomson's effect                      d. faraday's effect
50. Area of hysteresis curve indicates

- a. retentivity      b. coercivity      c. loss of energy per cycle      d. gain of energy per cycle
51. Self inductance of a coil is independent of  
a. length      b. diameter      c. number of turns      d. resistance
52. Which of the following circuit element stores energy in the electromagnetic field?  
a. inductor      b. condenser      c. variable resistor      d. resistance
53. The  $\cos \phi$  in the alternating current is called  
a. energy factor      b. phase      c. resonance      d. power factor
54. At what angle of incidence of a charge particle in magnetic field, the force on electron is maximum?  
a.  $0^\circ$       b.  $45^\circ$       c.  $90^\circ$       d.  $180^\circ$
55. Emission of electrons from the surface of metal by action of light on it is  
a. thermionic emission      b. photo electric emission  
c. electronic emission      d. cold emission
56. The time taken by a photoelectron to come out after the photon strike is approximately  
a.  $10^{-16}$  s      b.  $10^{-1}$  s      c.  $10^{-4}$  s      d.  $10^{-9}$  s
57. During forward biasing, thickness of depletion layer  
a. decreases      b. increase      c. no change      d. all of above
58. The impurity atom used to make p – type semiconductor is  
a. trivalent      b. pentavalent      c. tetravalent      d. divalent
59. The series of visible spectral lines of hydrogen atom is known as  
a. balmer series      b. hyman series      c. p fund series      d. pachen series
60. Which of the following wave travels in solid rocks and liquids?  
a. p – wave      b. s – wave      c. gravitational wave      d. all of above

### English

61. They \_\_\_\_\_ the project by tomorrow.  
a) will finish      b) finished      c) finish      d) are finishing
62. He said, "I am tired." → He said that he \_\_\_\_\_ tired.  
a) was      b) is      c) has been      d) will be
63. They printed the letter in red. (Passive)  
a) The letter is printed in red by them.      b) The letter was printed in red by them.  
c) The letter has been printed in red by them.      d) The letter will be printed in red by them.
64. I went to the market \_\_\_\_\_ it was raining.  
a) and      b) but      c) or      d) because
65. I saw \_\_\_\_\_ stars in the sky.  
a) a      b) an      c) the      d) no article
66. He is interested \_\_\_\_\_ music.  
a) on      b) in      c) at      d) with
67. They don't like coffee, \_\_\_\_\_?  
a) do they      b) don't they      c) did they      d) aren't they
68. If you heat ice, it \_\_\_\_\_.

- a) melts                      b) melted                      c) will melt                      d) would melt
69. Each of the boys \_\_\_\_\_ present in the lab today.  
a) are                      b) were                      c) is                      d) be
70. I had my car \_\_\_\_\_ yesterday.  
a) wash                      b) washed                      c) washing                      d) to wash
71. By the time the train arrives, we \_\_\_\_\_ for over an hour.  
a) will wait                      b) will have been waiting                      c) have waited                      d) had been waiting
72. Change to indirect speech: He said, "Do you understand the problem?"  
a) He asked if I understand the problem.                      b) He asked whether I understood the problem.  
c) He asked did I understand the problem.                      d) He asked that I understand the problem.
73. Passive of: "Someone has stolen my bag."  
a) My bag is stolen.                      b) My bag has been stolen.  
c) My bag was stolen.                      d) My bag had been stolen.
74. He worked hard \_\_\_\_\_ he could secure a scholarship.  
a) so that                      b) because                      c) although                      d) unless
75. She is studying to become \_\_\_\_\_ engineer.  
a) a                      b) an                      c) the                      d) no article
76. His success was the result of years of dedication and commitment \_\_\_\_\_ his craft.  
a) to                      b) for                      c) at                      d) in
77. Everyone has submitted the assignment, \_\_\_\_\_?  
a) hasn't everyone                      b) haven't they                      c) didn't they                      d) isn't it
78. Neither of the solutions \_\_\_\_\_ suitable for the project.  
a) are                      b) were                      c) is                      d) have been
79. If he had worked harder, he \_\_\_\_\_ the scholarship.  
a) will get                      b) would get                      c) would have got                      d) got
80. The manager \_\_\_\_\_ the staff redo the entire presentation.  
a) let                      b) got                      c) made                      d) had

### **Computer Science**

81. Which of the following is logical operator?  
a. &                      b. =                      c. &&                      d. =
82. Who is the father of Computers?  
a. James Gosling                      b. Charles Babbage                      c. Dennis Ritchie                      d. Bjarne Stroustrup
83. Which of the following computer language is written in binary codes only?  
a. pascal                      b. machine language                      c. C                      d. C#
84. Which of the following is the brain of the computer?  
a. Central Processing Unit                      b. Memory                      c. Arithmetic and Logic unit                      d. Control unit
85. RAM is also called as  
a. Virtual memory                      b. Volatile memory                      c. Non volatile memory                      d. Cache memory
86. CPU stands for

- a. Central Planning Unit  
c. Computer Processing Unit
- b. Computer Planning Union  
d. Central Processing Unit
87. If you want to copy a portion of the text then you need to use  
a. Control & C    b. Command & C    c. Control & V    d. Command and V
88. Which one is not an operating system?  
a. Windows    b. Linux    c. Unix    d. LaTeX
89. Which device is used to input data into a computer?  
a. Printer    b. Monitor    c. Keyboard    d. Speaker
90. What is the main function of an operating system?  
a. Perform calculations    b. Manage hardware and software resources  
c. Browse the internet    d. Create documents
91. Which file format is used for images?  
a. .docx    b. .xlsx    c. .jpg    d. .pptx
92. Which key is used to delete the character to the left of the cursor?  
a. Enter    b. Backspace    c. Delete    d. Shift
93. What does LAN stand for?  
a. Local Area Network    b. Large Area Network  
c. Local Access Network    d. Long Area Network
94. Which software allows users to create text documents?  
a. Microsoft PowerPoint    b. Microsoft Access    c. Microsoft Excel    d. Microsoft Word
95. VDU stands for \_\_\_\_\_  
a. Virtual Display Unit    b. Visual Display Unit  
c. Virtual Detection Unit    d. Visual Detection Unit
96. The ALU gives the output of the operations and the output is stored in the \_\_\_\_\_  
a. Memory Devices    b. Registers    c. Flags    d. Output Unit
97. Which of the following is not a point-and-draw device?  
a. Keypad    b. Trackball    c. Touch screen    d. Mouse
98. The physical devices of a computer:  
a. Software    b. Package    c. Hardware    d. System Software
99. In a spreadsheet, letters are used to represent \_\_\_\_\_  
a. Cells    b. Rows    c. Blocks    d. Columns
100. Any system that uses the HTTP protocol is called \_\_\_\_\_  
a. Web Browser    b. Web Server    c. WWW    d. TCP/IP

**GOOD LUCK**