FORENSIC SCIENCE

(PHYSICS)

1. The dimensional formula of stress is ……………

|  |  |
| --- | --- |
| (A) | [M0L1T2] |
| (B) | [M1L0T−2] |
| (C) | [M1L−1T−2] |
| (D) | [M1L−1T−1] |

2. The work done per unit volume in stretching the wire is equal to ……………

|  |  |
| --- | --- |
| (A) | stress × strain |
| (B) | (1/2) stress × strain |
| (C) | stress / strain |
| (D) | strain / stress |

3. The twisting couple per unit twist of a cylinder depends on

|  |  |
| --- | --- |
| (A) | Young’s modulus |
| (B) | Bulk modulus |
| (C) | Modulus of rigidity |
| (D) | Poisson’s ratio |

4. The bending moment of a beam depends on only

|  |  |
| --- | --- |
| (A) | Young’s modulus |
| (B) | Bulk modulus |
| (C) | Modulus of rigidity |
| (D) | Poisson’s ratio |

5. Let *y* is depression produced in the free end of cantilever when weight *W* is loaded at other end of the beam. If the length of the beam is doubled, the depression *y* will be

|  |  |
| --- | --- |
| (A) | *y*/8 |
| (B) | 2*y* |
| (C) | 8*y* |
| (D) | None of the above |

6. The upper end of a wire of radius 4 mm and length 100 cm is clamped and its other end is twisted through an angle of 30°. Then angle of shear is:

|  |  |
| --- | --- |
| (A) | 12° |
| (B) | 0.12° |
| (C) | 1.2° |
| (D) | 0.012° |

7. At constant pressure velocity of sound is ……………

|  |  |
| --- | --- |
| (A) | independent of temperature |
| (B) | inversely proportional to absolute temperature |
| (C) | directly proportional to temperature in degree centigrade |
| (D) | directly proportional to square root of absolute temperature |

8. If the directions of wind and sound are the same then velocity of sound ……………

|  |  |
| --- | --- |
| (A) | decreases |
| (B) | increases |
| (C) | remains unaffected |
| (D) | becomes minimum |

9. In Doppler’s effect there is a change in …………… due to relative motion between observer and source of sound.

|  |  |
| --- | --- |
| (A) | amplitude of sound |
| (B) | type of sound wave |
| (C) | loudness of sound |
| (D) | pitch of a note |

10. The same notes being played on the sitar and veena differ in ……………

|  |  |
| --- | --- |
| (A) | pitch |
| (B) | quality |
| (C) | loudness |
| (D) | frequency |

11. …………… is a scalar quantity.

|  |  |
| --- | --- |
| (A) | Velocity |
| (B) | Weight |
| (C) | Temperature |
| (D) | Acceleration |

12. If  then  is ……………

|  |  |
| --- | --- |
| (A) | perpendicular to |
| (B) | perpendicular to |
| (C) | perpendicular  and |
| (D) | parallel to and |

13. If G is an operator corresponds to a physical quantity and H is its Hamiltonian, then the commutator relation [G, H] =0 tells us that

|  |  |
| --- | --- |
| (A) | G is not a physical entity |
| (B) | G is a constant of motion |
| (C) | G is varies with time |
| (D) | H is not a constant of motion |

14. For a vector  ……………

|  |  |
| --- | --- |
| (A) | 0 |
| (B) | –1 |
| (C) | +1 |
| (D) | ∞ |

15. The relation between line integral and surface integral is given by …………… theorem.

|  |  |
| --- | --- |
| (A) | Stokes |
| (B) | Gauss |
| (C) | Green’s |
| (D) | Poisson |

16. The maximum line integral per unit area enclosed by the path of integration is called ……………

|  |  |
| --- | --- |
| (A) | Gradient |
| (B) | Divergence |
| (C) | Curl |
| (D) | Flux |

17. …………… product is governed by the Right-Hand Screw Rule.

|  |  |
| --- | --- |
| (A) | Vector |
| (B) | Scalar |
| (C) | Simple mathematical |
| (D) | None of the above |

18. The time period of a compound pendulum is directly proportional to the square root of

……………

|  |  |
| --- | --- |
| (A) | *I* |
| (B) | *m* |
| (C) | *g* |
| (D) | *ℓ* |

19. The value of ‘g’ on the Earth is the greatest at …………… and the least at the

……………

|  |  |
| --- | --- |
| (A) | poles, equator |
| (B) | equator, poles |
| (C) | north pole, south pole |
| (D) | south pole, north pole |

20. If no external torque is acting on a particle, its …………… remain constant.

|  |  |
| --- | --- |
| (A) | angular momentum |
| (B) | angular acceleration |
| (C) | linear momentum |
| (D) | angular velocity |

21. These particles obey the Bose-Einstein statistics

|  |  |
| --- | --- |
| (A) | Neutrinos |
| (B) | Pions |
| (C) | Protons |
| (D) | Quarks |

22. The work done by a conservative force along a closed path is

|  |  |
| --- | --- |
| (A) | zero |
| (B) | positive |
| (C) | infinite |
| (D) | negative |

23. The force acting on a particle of charge ‘*e*’ in an electromagnetic field is ……………

|  |  |
| --- | --- |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

24. The surface energy term in the nuclear binding energy is related to its mass number as

|  |  |
| --- | --- |
| (A) | A1/3 |
| (B) | A2/3 |
| (C) | A3/4 |
| (D) | A2 |

25. The cyclotron frequency of charged particle depends on ……………

|  |  |
| --- | --- |
| (A) | mass of the particle |
| (B) | applied magnetic field |
| (C) | both (A) and (B) |
| (D) | electric field |

26. A car moving with a constant velocity represents …………… frame of reference.

|  |  |
| --- | --- |
| (A) | Einstein’s |
| (B) | inertial |
| (C) | non-inertial |
| (D) | Newton’s |

27. The Michelson-Morley experiment established the fact that the velocity of light is

|  |  |
| --- | --- |
| (A) | constant and dependent of the frame of reference |
| (B) | constant and independent of the frame of reference |
| (C) | variable and independent of the frame of reference |
| (D) | variable and dependent of the frame of reference |

28. In Lorentz transformation, time is …………… quantity.

|  |  |
| --- | --- |
| (A) | constant |
| (B) | absolute |
| (C) | relative |
| (D) | conserved |

29. A NaCl crystal is irradiated with a beam of X-ray of wavelength 0.3 nm and the first Bragg reflection is observed at an angle of 30°. Then the atomic spacing of NaCl is

|  |  |
| --- | --- |
| (A) | 0.5 nm |
| (B) | 0.4 nm |
| (C) | 1.2 nm |
| (D) | 0.3 nm |

30. According to the law of Dulong and Petit, the molar hear capacity is related to the universal gas constant (R) as

|  |  |
| --- | --- |
| (A) | R |
| (B) | 2 R |
| (C) | 3/2 R |
| (D) | 3 R |

CHEMISTRY

31. Half-life of Ra226 is 1580 years. The amount left undisintegrated from 1.0 g of the isotope after 6320 years is

|  |  |
| --- | --- |
| (A) | 0.125 g |
| (B) | 0.0625 g |
| (C) | 0.0125 g |
| (D) | 0.350 g |

32. The wavelength associated with an electron (me = 9.1 × 10–31 kg) moving with a velocity of 103 m/sec is

|  |  |
| --- | --- |
| (A) | 7253 A° |
| (B) | 7253 m |
| (C) | 725.3 A° |
| (D) | 8000 m |

33. The oxidation numbers of chromium in K2Cr2O7, K2CrO4 and CrO2Cl2 respectively are

|  |  |
| --- | --- |
| (A) | 6, 4 and 4 |
| (B) | 4, 6 and 6 |
| (C) | 6, 4 and 6 |
| (D) | 6, 6 and 6 |

34. The concentration of the solution of tryptophan that has an absorbance of 0.54 at 280 nm in a 0.5 cm length cuvette (the absorbance coefficient of tryptophan is 6.01 × 103 Lmol–1cm–1) is

|  |  |
| --- | --- |
| (A) | 0.000166 M |
| (B) | 0.166 M |
| (C) | 0.006 M |
| (D) | None of the above |

35. The emf of the cell Cu/Cu2+ (0.02 M) // Cu2+ (0,04)/Cu at 25°C

|  |  |
| --- | --- |
| (A) | 0.89 v |
| (B) | –0.0089 v |
| (C) | –0.0069 v |
| (D) | 0.0089 v |

36. The rotational energy of H2O molecule is

|  |  |
| --- | --- |
| (A) | 3/2 KT |
| (B) | ½ KT |
| (C) | KT |
| (D) | 2 KT |

37. The t½ of the zero order reaction is 250 s. The t½ of the reaction if the initial concentration increases twice is

|  |  |
| --- | --- |
| (A) | 250 s |
| (B) | 500 s |
| (C) | 125 s |
| (D) | 400 s |

38. The rotational constant of 14N2 is 2 cm–1. The wave number of incident radiation in a Raman spectrometer is 20,487 cm–1. The wave number of first scattered Stoke line (in cm–1) of 14N2 is

|  |  |
| --- | --- |
| (A) | 20,479 cm–1 |
| (B) | 20,475 cm–1 |
| (C) | 20,499 cm–1 |
| (D) | 20,495 cm–1 |

39. The equivalent conductivity at infinite dilution (λ∞) for sodium acetate, hydrochloric acid and sodium chloride is 78, 384 and 109 respectively. The λ∞ of acetic acid would be

|  |  |
| --- | --- |
| (A) | 187 |
| (B) | 493 |
| (C) | 353 |
| (D) | 571 |

40. Number of nodes in 1s, 2s and 2p respectively are

|  |  |
| --- | --- |
| (A) | 0, 1, 0 |
| (B) | 1, 0, 1 |
| (C) | 1, 0, 0 |
| (D) | 0, 0, 1 |

41. An organic compound of molecular formula, C3H8O (A) reacts violently with sodium evolving hydrogen. Oxidation of this compound with PCC gives a compound that gives a positive test with Tollens’ reagent. The characteristic spectral data of A are (UV: 210 nm; IR 3350, 2800-3000, 1480, 1075 cm–1). A would be

|  |  |
| --- | --- |
| (A) | CH3CH2CH2OH |
| (B) | CH3CH(OH)CH3 |
| (C) | CH3OCH2CH3 |
| (D) | All the above |

42. The product formed by treating benzene with CH3Cl/AlCl3, followed by Cl2 in the presence of sunlight and then with aqueous KOH is

|  |  |
| --- | --- |
| (A) | *m*-chlorotoluene |
| (B) | *o*-methylphenol |
| (C) | *o*-chlorotoluene |
| (D) | benzyl alcohol |

43. Treatment of ethylamine with CHCl3 in the presence of ethanolic KOH yields

|  |  |
| --- | --- |
| (A) | Propanal + KCl+ H2O |
| (B) | Formic acid + KCl + CO2 |
| (C) | Propyl isocyanide + KCl + H2O |
| (D) | None of the above |

44. The order of carbonyl stretching frequency in IR spectra of acetone, acetamide and acetic anhydride follows

|  |  |
| --- | --- |
| (A) | anhydride > amide > ketone |
| (B) | ketone > amide > anhydride |
| (C) | amide > anhydride > ketone |
| (D) | anhydride > ketone > amide |

45. The order of the rate of SN2 reactivity of the following compounds would be

|  |  |  |
| --- | --- | --- |
|  |  |  |
| I | II | III |

|  |  |
| --- | --- |
| (A) | I > II > III |
| (B) | III > II > I |
| (C) | I > III > II |
| (D) | II > III > I |

46. Which statement is **incorrect** about ascorbic acid?

|  |  |
| --- | --- |
| (A) | enolic OH group is present and is not reduced by LiAlH4 |
| (B) | estimation of ascorbic acid is carried out by titration with 2,6-dichlorophenol-indophenol |
| (C) | deficiency in the diet causes scurvy |
| (D) | ascorbic acid contains two –COOH groups and the molecular formula is C6H8O6 |

47. The relative order of stability of the conformers of 1,2-dimethylcyclohexane is

|  |  |
| --- | --- |
| (A) | trans(aa) > cis > trans(ee) |
| (B) | trans(aa) > trans(ee) > cis |
| (C) | cis > trans (aa) > trans (ee) |
| (D) | trans (ee) > cis > trans(aa) |

48. In a reaction of aniline that is given below, a coloured product, C was obtained. Predict the structure of C.



|  |  |
| --- | --- |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

49. Primary amides may be converted into amines by the reaction that is named as

|  |  |
| --- | --- |
| (A) | Perkin reaction |
| (B) | Claisen reaction |
| (C) | Hoffmann reaction |
| (D) | Kolbe reaction |

50. The number of optical isomers of CH3CH(OH)CH(OH)CHO is

|  |  |
| --- | --- |
| (A) | zero |
| (B) | 2 |
| (C) | 3 |
| (D) | 4 |

51. The molarity of Na2CO3 solution which is obtained by dissolving 8 g of Na2CO3 in 100 ml water and the density of the solution is 1.08 g per ml is (Atomic weight of Na = 23, C = 12, O =16)

|  |  |
| --- | --- |
| (A) | 0.8 M |
| (B) | 0.75 M |
| (C) | 0.075 M |
| (D) | 0.008 M |

52. The hybridization and geometry of [NiCl4]2–and [NiF6]2–respectively are

|  |  |
| --- | --- |
| (A) | sp3, tetrahedral and d2sp3, octahedral |
| (B) | dsp2, square planar and d2sp3, octahedral |
| (C) | sp3, tetrahedral and sp3d2, octahedral |
| (D) | dsp2, square planar and sp3d2, octahedral |

53. Number of alpha(α) and beta(β) particles emitted in the conversion of 90Th232 to 84Po216  are

|  |  |
| --- | --- |
| (A) | α = 3, β = 3 |
| (B) | α = 2, β = 4 |
| (C) | α = 4, β = 2 |
| (D) | α = 4, β = 6 |

54. The atomic weight of metal in the oxide with the formula, M2O3 that contains 30% oxygen is

|  |  |
| --- | --- |
| (A) | 50 |
| (B) | 84 |
| (C) | 124 |
| (D) | 56 |

55. The compound that undergoes oxidative addition in presence of H2 is

|  |  |
| --- | --- |
| (A) | [Mn(CO)5] |
| (B) | [(ƞ5-C5H5Mo(CO)3] |
| (C) | [IrCl(CO)(PPh3)2] |
| (D) | [(ƞ5-C5H5)ReH] |

56. The spin only magnetic moment and ground state term symbol of manganese in [MnF6]3– ion respectively are

|  |  |
| --- | --- |
| (A) | 4.9 BM and 5D |
| (B) | 4.9 BM and 5F |
| (C) | 3.9 BM and 3D |
| (D) | 4.9 BM and 4F |

57. The biological functions of carbonic anhydrase and peptidase A respectively are

|  |  |
| --- | --- |
| (A) | gene regulation and hydrolysis of peptide |
| (B) | interconversion of CO2 and carbonates, and hydrolysis of peptide |
| (C) | gene regulation and interconvert of CO2 and carbonates |
| (D) | None of the above |

58. The reaction of [PtCl4]2– with two equivalents of NH3 produces

|  |  |
| --- | --- |
| (A) | cis-[Pt(NH3)2Cl2] |
| (B) | trans-[Pt(NH3)2Cl2] |
| (C) | both cis and trans-[Pt(NH3)2Cl2] |
| (D) | trans-[Pt(NH3)2Cl4] |

59. The metal present in chlorophyll

|  |  |
| --- | --- |
| (A) | Mg |
| (B) | Fe |
| (C) | Zn |
| (D) | Cu |

60. The oxide which has normal spinel structure is

|  |  |
| --- | --- |
| (A) | Fe3O4 |
| (B) | NiFe2O4 |
| (C) | CoFe2O4 |
| (D) | ZnAl2O4 |

BIOLOGY

61. Which one of the following is **NOT** a property of active transport?

|  |  |
| --- | --- |
| (A) | Requires specific proteins |
| (B) | Solute transported against its gradient |
| (C) | Coupled to ATP hydrolysis |
| (D) | Driven by movement of a cotransported ion down its gradient |

62. The phylum in which animals are bilaterally symmetrical in the larval stage and radially symmetrical in the adult stage.

|  |  |
| --- | --- |
| (A) | Coelenterata |
| (B) | Mollusca |
| (C) | Nematoda |
| (D) | Echinodermata |

63. Which of the following is a protooncogene?

|  |  |
| --- | --- |
| (A) | HER2 |
| (B) | APC |
| (C) | RB |
| (D) | BRCA-1 |

64. The FG-nucleoporins contain multiple repeats of short hydrophobic sequences rich in

|  |  |
| --- | --- |
| (A) | Phenylalanine and glycine |
| (B) | Tryptophan and histidine |
| (C) | Phenylalanine and glutamine |
| (D) | Proline and serine |

65. The parasite *Onchocerca volvulus* causes

|  |  |
| --- | --- |
| (A) | Scarlet fever |
| (B) | Filarasis |
| (C) | Schistosomiasis |
| (D) | River blindness |

66. Which of the following microbial recognition receptor mediate cytokine production and induce adaptive immune response?

|  |  |
| --- | --- |
| (A) | Toll-like receptor |
| (B) | CD14 |
| (C) | Mannose receptor |
| (D) | Scavenger receptor |

67. The first gymnosperms most likely originated in the

|  |  |
| --- | --- |
| (A) | Palaeozoic era |
| (B) | Mesozoic |
| (C) | Cenozoic |
| (D) | Neoarchean |

68. The pathway which is extremely important in the differentiation of blood cells, the growth of limbs, and in the activation of casein gene during milk production

|  |  |
| --- | --- |
| (A) | JAK-STAT pathway |
| (B) | RTK pathway |
| (C) | Both (A) and (B) |
| (D) | SYS pathway |

69. The transport of water and the inorganic minerals in the plant in the upward direction from the roots to the leaves

|  |  |
| --- | --- |
| (A) | Translocation |
| (B) | Ascent of sap |
| (C) | Suction |
| (D) | Siphoning |

70. The cleavage point of trypsin (bovine pancreas)

|  |  |
| --- | --- |
| (A) | Lys Arg(c) |
| (B) | Asp glu(c) |
| (C) | Met (c) |
| (D) | Lys (c) |

71. I-cell disease is caused by

|  |  |
| --- | --- |
| (A) | Lack of lysosomal enzymes |
| (B) | Imbalance in chloride and sodium |
| (C) | Mutation in LDL receptor |
| (D) | Uncontrolled autophagy |

72. Distributions of incomes or wages are often

|  |  |
| --- | --- |
| (A) | Negatively skewed |
| (B) | Positively skewed |
| (C) | Both (A) and (B) |
| (D) | Neutral in nature |

73. The shift in the relative timing of two developmental processes from one generation to the next

|  |  |
| --- | --- |
| (A) | Heterometry |
| (B) | Heterochrony |
| (C) | Heterotypy |
| (D) | Heterotopy |

74. Principal CAMs or adhesion receptors in hemidesmosomes

|  |  |
| --- | --- |
| (A) | Integrin |
| (B) | Cadherins |
| (C) | Occludin |
| (D) | Connexins |

75. RNA polymerases I synthesis

|  |  |
| --- | --- |
| (A) | SiRNA |
| (B) | tRNA |
| (C) | Only pre-rRNA |
| (D) | mRNAs and small nuclear RNAs |

76. The first mammalian apoptotic gene to be cloned

|  |  |
| --- | --- |
| (A) | Caspase 3 |
| (B) | Apaf-1 |
| (C) | Bcl2 |
| (D) | CED 4 |

77. Human papillomavirus (HPV) encodes three oncogenic proteins. The protein that activates the PDGF receptor

|  |  |
| --- | --- |
| (A) | E7 |
| (B) | E5 |
| (C) | E6 |
| (D) | E2 |

78. The dietary precursor of Coenzyme biocytin in mammals

|  |  |
| --- | --- |
| (A) | Riboflavin |
| (B) | Biotin |
| (C) | Pantothenic acid |
| (D) | Folate |

79. The hormone that break the dormancy of seeds and buds

|  |  |
| --- | --- |
| (A) | Cytokinins |
| (B) | Abscisic acid |
| (C) | Gibberellins |
| (D) | Auxin |

80. Powdery mildews in plants are caused by

|  |  |
| --- | --- |
| (A) | Bacteria |
| (B) | Nematode |
| (C) | Fungi |
| (D) | Virus |

81. Which one the following techniques enable us to observe the sample in its native hydrated state without fixing or heavy metal staining?

|  |  |
| --- | --- |
| (A) | Cryo-electron microscopy |
| (B) | Immunoelectron microscopy |
| (C) | REM |
| (D) | Both (A) and (B) |

82. Which of the following is an example of neutral stain?

|  |  |
| --- | --- |
| (A) | Giesma stain |
| (B) | Congo red |
| (C) | Malachite green |
| (D) | Basic fuschsin |

83. Identify the stage of mitosis where daughter cell returns to the interphase

|  |  |
| --- | --- |
| (A) | Anaphase |
| (B) | Telophase |
| (C) | Metaphase |
| (D) | Prophase |

84. Difference in beak shape of Galapagos finches is a classic example of

|  |  |
| --- | --- |
| (A) | Divergent evolution |
| (B) | Convergent evolution |
| (C) | Co evolution |
| (D) | Iterative evolution |

85. Give an example for a cartilaginous fish

|  |  |
| --- | --- |
| (A) | Sardine |
| (B) | Tuna |
| (C) | Herrings |
| (D) | Shark |

86. Tay - Sachs disease is due to the deficiency

|  |  |
| --- | --- |
| (A) | Hexosaminidase A |
| (B) | α Galactosidase A |
| (C) | Arylsulfatase A |
| (D) | Hexosaminidase B |

87. Which phylum is commonly known as sponges?

|  |  |
| --- | --- |
| (A) | Cnidaria |
| (B) | Porifera |
| (C) | Platyhelminthes |
| (D) | Echinoderms |

88. Author of the *Origin of Species*

|  |  |
| --- | --- |
| (A) | Charles Darwin |
| (B) | Dmitri Ivanovsky |
| (C) | Mikhail A Fedonkin |
| (D) | Ludmila Kuprianova |

89. Erosion of genetic variation when a new population is established by a small number of colonist

|  |  |
| --- | --- |
| (A) | Genetic drift |
| (B) | Non adaptive evolution |
| (C) | Iterative evolution |
| (D) | Founder effect |

90. Which one of the following is a symporter?

|  |  |
| --- | --- |
| (A) | Sodium calcium pump |
| (B) | Sodium potassium pump |
| (C) | Sodium hydrogen pump |
| (D) | GLUT 1 |

FORENSIC SCIENCE

91. The primary duty of the crime scene investigator is to

|  |  |
| --- | --- |
| (A) | barricade the crime scene |
| (B) | providing medical assistance to the injured at the crime scene |
| (C) | photographing viable evidence |
| (D) | collecting the evidence |

92. In DNA extraction, …………… is included for chelating the …………… ions needed for enzymes …………… to prevent degradation of DNA.

|  |  |
| --- | --- |
| (A) | chelating agent, Mg2+, ribonuclease |
| (B) | EDTA, Mg2+, deoxyribonuclease |
| (C) | enzyme, Mg2+, deoxyribonuclease |
| (D) | EDTA, Ca2+, deoxyribonuclease |

93. For the analysis of foetal drug exposure, which of the following matrix can be preferred?

|  |  |
| --- | --- |
| (A) | Meconium |
| (B) | Blood |
| (C) | Vomit |
| (D) | Colostrum |

94. Which among the following is the earliest putrefaction change?

|  |  |
| --- | --- |
| (A) | Marbling |
| (B) | Rigor mortis |
| (C) | Greenish discoloration of right iliac fossa |
| (D) | Nystagmus |

95. In rifled firearms, the following types of grooves are seen

|  |  |
| --- | --- |
| (A) | Circular |
| (B) | Straight |
| (C) | Spiral |
| (D) | Both (B) and (C) |

96. X knows Y is suffering from a particular disease in which he can die if given a simple blow. X causes a simple blow to Y with an intention to cause bodily injury. Y dies. X is guilty of

|  |  |
| --- | --- |
| (A) | culpable homicide not amounting to murder |
| (B) | grievous hurt |
| (C) | murder |
| (D) | simple hurt |

97. THC is a constituent of which of the following?

|  |  |
| --- | --- |
| (A) | Dhatura |
| (B) | Nux Vomica |
| (C) | Cannabis sativa |
| (D) | Oleander |

98. Arrange the test methods of blood in the correct order

|  |  |
| --- | --- |
| 1. | Absorption elution |
| 2. | Benzidine |
| 3. | Takayama test |
| 4. | Visual examination |

|  |  |
| --- | --- |
| (A) | 2, 3, 4, 1 |
| (B) | 1, 2, 4, 3 |
| (C) | 4, 2, 3, 1 |
| (D) | 4, 2, 1, 3 |

99. Match the following.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | TLC | 1. | Bullet |
| b. | Gel electrophoresis | 2. | Petroleum products |
| c. | GLC | 3. | Ink analysis |
| d. | Comparison microscope | 4. | DNA |

|  |  |
| --- | --- |
| (A) | a-4, b-3, c-1, d-2 |
| (B) | a-3, b-4, c-1, d-2 |
| (C) | a-3, b-4, c-2, d-1 |
| (D) | a-2, b-3, c-4, d-1 |

100. Vitriolage is a term associated with criminal throwing of harmful substances to disfigure a person. Which of the following is most suitable with the term?

|  |  |
| --- | --- |
| (A) | Sulphuric Acid |
| (B) | Nitric Acid |
| (C) | Cashew nut Oil |
| (D) | Any corrosive chemical |

101. Which among the following CFSL is not under direct control of directorate of forensic science services?

|  |  |
| --- | --- |
| (A) | Chandigarh |
| (B) | Delhi |
| (C) | Kolkata |
| (D) | Hyderabad |

102. Cephalic index is used to estimate following parameter of identification

|  |  |
| --- | --- |
| (A) | age |
| (B) | race |
| (C) | sex |
| (D) | stature |

103. Interpolation is defined as

|  |  |
| --- | --- |
| (A) | extraction of something of different nature from something else |
| (B) | extraction of something of similar nature from something else |
| (C) | insertion of something of a different nature into something else |
| (D) | insertion of something of similar nature into something else |

104. Electrostatic development apparatus (EDSA) is used to study indented

|  |  |
| --- | --- |
| (A) | handwriting |
| (B) | fingerprints |
| (C) | foot prints |
| (D) | tyre marks |

105. To visualize invisible hand writing the property used is

|  |  |
| --- | --- |
| (A) | effervescence |
| (B) | florescence |
| (C) | luminescence |
| (D) | None of the above |

106. Gooping, Beaded appearance, Burr striations, skipping are terms used in relation to writing with

|  |  |
| --- | --- |
| (A) | ball pen |
| (B) | gel pen |
| (C) | hi tech point pen |
| (D) | ink pen |

107. DNA fingerprinting uses

|  |  |
| --- | --- |
| (A) | eastern blot |
| (B) | northern blot |
| (C) | southern blot |
| (D) | western blot |

108. Denaturation, annealing and extension are integral steps of

|  |  |
| --- | --- |
| (A) | fingerprinting |
| (B) | polymerase chain reaction |
| (C) | superimposition |
| (D) | None of the above |

109. The diameter of a 12 bore gun is

|  |  |
| --- | --- |
| (A) | 0.723 |
| (B) | 0.727 |
| (C) | 0.729 |
| (D) | 0.731 |

110. Optical component of UV spectrometer is made up of

|  |  |
| --- | --- |
| (A) | glass |
| (B) | quartz |
| (C) | paper |
| (D) | plastic |

111. Which of the following survey method is used in investigation of air crash disaster?

|  |  |
| --- | --- |
| (A) | Strip method |
| (B) | Spiral method |
| (C) | Wheel method |
| (D) | Zonal method |

112. Confirmation of menstrual blood stain is done by

|  |  |
| --- | --- |
| (A) | Fibrin degradation product |
| (B) | Isoenzyme marker |
| (C) | Protein marker |
| (D) | Restriction enzymes |

113. Kerosene is analysed using standards as per

|  |  |
| --- | --- |
| (A) | IS 2796-2000 |
| (B) | IS 1459-1974 |
| (C) | IS 1460-2000 |
| (D) | IS 2796-1974 |

114. Tube test, press test, starch-iodine test, Phadebas reagents are used for testing stains due to

|  |  |
| --- | --- |
| (A) | blood |
| (B) | saliva |
| (C) | semen |
| (D) | urine |

115. ‘Sankhya’ poisoning is due to

|  |  |
| --- | --- |
| (A) | aconite |
| (B) | arsenic |
| (C) | mercury |
| (D) | strychnine |

116. Gustafson’s method include all except

|  |  |
| --- | --- |
| (A) | attrition |
| (B) | cementum apposition |
| (C) | dentition |
| (D) | root resorption |

117. Which of the following fibre shows scales?

|  |  |
| --- | --- |
| (A) | Wool |
| (B) | Cotton |
| (C) | Linen |
| (D) | Silk |

118. The sequence of post-mortem changes in a cadaver includes

|  |  |
| --- | --- |
| (A) | rigor mortis, primary flaccidity, secondary flaccidity, marbling |
| (B) | primary flaccidity, secondary flaccidity, rigor mortis, marbling |
| (C) | marbling, secondary flaccidity, primary flaccidity, rigor mortis |
| (D) | primary flaccidity, rigor mortis, secondary flaccidity, marbling |

119. Seminal stains are not detected using

|  |  |
| --- | --- |
| (A) | Barberio’s test |
| (B) | Florence Test |
| (C) | Hematin test |
| (D) | Acid Phosphatase test |

120. The technique, which requires antibodies that bind tightly to the drug of interest and only weakly or not at all to other substances

|  |  |
| --- | --- |
| (A) | Chromatography |
| (B) | Immunoassay |
| (C) | Micro diffusion test |
| (D) | Spectroscopy |

COMPUTER SCIENCE

121. The brain of any computer system is ……………

|  |  |
| --- | --- |
| (A) | Memory |
| (B) | ALU |
| (C) | CU |
| (D) | CPU |

122. Which one of the data structure in non-linear?

|  |  |
| --- | --- |
| (A) | List |
| (B) | Stack |
| (C) | Queue |
| (D) | Graph |

123. If *x* is an array of integer, then the value of &*x*[*i*] is same as

|  |  |
| --- | --- |
| (A) | &*x*[*i* – 1] + sizeof (int) |
| (B) | *x* + sizeof (int) \* *i* |
| (C) | *x* + *i* |
| (D) | None of the above |

124. A one dimensional array A has indices 1....75. Each element is a string and takes up three memory words. The array is stored starting at location 1120 decimal. The starting address of A[49] is

|  |  |
| --- | --- |
| (A) | 1167 |
| (B) | 1164 |
| (C) | 1264 |
| (D) | 1169 |

125. The communication mode that supports two-way traffic but only one direction at a time is

|  |  |
| --- | --- |
| (A) | simplex |
| (B) | duplex |
| (C) | half duplex |
| (D) | multiplex |

126. If digital data rate of 9600 bps is encoded using 8-level phase shift keying (PSK) method, the modulation rate is

|  |  |
| --- | --- |
| (A) | 1200 bands |
| (B) | 3200 bands |
| (C) | 4800 bands |
| (D) | 9600 bands |

127. When a host knows its physical address but not its IP address, it can use ……………

|  |  |
| --- | --- |
| (A) | RARP |
| (B) | ARP |
| (C) | IGMP |
| (D) | ICMP |

128. In SQL, which command is used to select only one copy of each set of duplicable rows

|  |  |
| --- | --- |
| (A) | SELECT DISTINCT |
| (B) | SELECT UNIQUE |
| (C) | SELECT DIFFERENT |
| (D) | All of the above |

129. DBMS follows the concepts of Atomicity, Consistency, Isolation, and ……………

|  |  |
| --- | --- |
| (A) | Dependency |
| (B) | Durability |
| (C) | Integrity |
| (D) | Exchangeability |

130. A …………… DBMS distributes data processing tasks between the workstation and a network server.

|  |  |
| --- | --- |
| (A) | Network |
| (B) | Relational |
| (C) | Client Server |
| (D) | Hierarchical |

131. IPv6 provides …………… unique IP addresses

|  |  |
| --- | --- |
| (A) | 3.4 × 1038 |
| (B) | 2.4 × 1038 |
| (C) | 3.4 × 1036 |
| (D) | 2.4 × 1036 |

132. System implementation phase entails

|  |  |
| --- | --- |
| (A) | system checkouts |
| (B) | pilot run |
| (C) | parallel runs |
| (D) | All of the above |

133. The advantage of binary files over text files is that

|  |  |
| --- | --- |
| (A) | it is compact |
| (B) | it can be accessed faster |
| (C) | they are more reliable |
| (D) | All of the above |

134. If cat *x*. prints garbage. Then *x* is probably a

|  |  |
| --- | --- |
| (A) | data file |
| (B) | binary file |
| (C) | text file |
| (D) | source file |

135. The quality of an image depends on

|  |  |
| --- | --- |
| (A) | number of pixel used by image |
| (B) | number of line used by image |
| (C) | number of resolution used by image |
| (D) | None of the above |

136. In raster scan display, the frame buffer holds ……………

|  |  |
| --- | --- |
| (A) | line drawing commands |
| (B) | scanning instructions |
| (C) | image resolution |
| (D) | intensity information |

137. MYCIN is ……………

|  |  |
| --- | --- |
| (A) | a robot |
| (B) | a natural language processing system |
| (C) | an expert system |
| (D) | a computer game |

138. The initial value of the semaphore that allows only one of the many processes to enter their critical sections, is

|  |  |
| --- | --- |
| (A) | 8 |
| (B) | 1 |
| (C) | 16 |
| (D) | 0 |

139. Daisy chain is a device for

|  |  |
| --- | --- |
| (A) | connecting a number of devices to a controller |
| (B) | connecting a number of controllers to a device |
| (C) | interconnecting a number of devices to a number of controllers |
| (D) | All of the above |

140. Banker's algorithm for resource allocation deals with

|  |  |
| --- | --- |
| (A) | deadlock prevention |
| (B) | deadlock avoidance |
| (C) | deadlock recovery |
| (D) | mutual exclusion |

141. A compiler for a high-level language that runs on one machine and produces code for a different machine is called is

|  |  |
| --- | --- |
| (A) | optimizing compiler |
| (B) | one pass compiler |
| (C) | cross compiler |
| (D) | multi-pass compiler |

142. Which of the following tag is used to mark a beginning of paragraph?

|  |  |
| --- | --- |
| (A) | <TD> |
| (B) | <br> |
| (C) | <P> |
| (D) | <TR> |

143. A relation that is reflexive, symmetric and transitive is called …………… relation.

|  |  |
| --- | --- |
| (A) | closure |
| (B) | positive |
| (C) | equivalence |
| (D) | associatively |

144. …………… is utilized to transfer data between disks and memory.

|  |  |
| --- | --- |
| (A) | DMA |
| (B) | MDA |
| (C) | AMD |
| (D) | ADM |

145. …………… refers to inability of the operating systems to allocate portions of unused memory.

|  |  |
| --- | --- |
| (A) | Hole |
| (B) | Segment |
| (C) | Page |
| (D) | Block |

146. Meta-data does not provide data about

|  |  |
| --- | --- |
| (A) | the storage format of each data item |
| (B) | various constraints on the data |
| (C) | structure of each file |
| (D) | the size of the disk storage |

147. Insert operation on relations can violate which of the following type of constraint?

|  |  |
| --- | --- |
| (A) | Key constraints |
| (B) | Entity integrity |
| (C) | Referential integrity |
| (D) | All of the above |

148. RAM is

|  |  |
| --- | --- |
| (A) | read/write memory |
| (B) | non-volatile memory |
| (C) | fixed memory |
| (D) | only readable memory |

149. White box testing is to test

|  |  |
| --- | --- |
| (A) | functionality |
| (B) | structure |
| (C) | input and output |
| (D) | behavior |

150. Garbage collection is used to

|  |  |
| --- | --- |
| (A) | allocate space |
| (B) | keep track of space |
| (C) | collect wastage |
| (D) | reuse unwanted memory |

