1. In a Phylogenetic tree leaves of the tree represent :->**Genes**
2. A Phylogeny tells sequences :->**relation ships between the sequences**
3. The purpose of CODEHOP is in helping :->**Design of degenerate primers**
4. In Phylogenetic analysis Root represents :->**common ancestra of all**
5. A phylogenic tree is composed of nodes a point where branches bifurcate represents :->**Taxon**
6. Following is a 2-D graph shows evolutionary relation ships among organisms :->**Tree**
7. Which program can be used to design PCR primers for each family in the database :->**BLAST**
8. Which of the following is adistance clustering method :->**Neighbout Joining method**
9. In Phylogenetic analysis the scoring method which involves possible nucleotide substitutions are of equal value :->**Jukes Cantor model**
10. The most common clustering Algorithm is :->**WPGMA**
11. Following method is away of evaluating the quality of Multiple sequence Alignment :->**Circular sum method**
12. Which of following alignment method work by first aligning the most alike sequences and then add less related sequences :->**Progressive alignment**
13. The most commonly used approach to Multiple sequence alignment which work by constructing a sucession of pair wise alignment is :->**Progressive alignment**
14. Which of the following is a system for finding ungapped local multiple alignments (blocks) in protein sequences :->**WPGMA**
15. Which of the following creats Multiple sequence alignment from a group of related sequences using progressive, Pair-wise alignment method of Feng and Doolittle :->**pile up**
16. Following are the progressive alignement programms which are based on Dynamic program method :->**Clustal W**
17. One of the following is a Genetic Algorithm based multiple alignment tool :->**SAGA**
18. Expand WPGMA :->**Un weighted pair-Group method using Arithmetic Average**
19. They are genes or proteins with the same function in different species :->**Homologs**
20. All of the following are the applications of Multiple sequence Alignment except one :->**Identifying RNA & proteins**
21. The following are the various multiple sequence. Alignment methods except one of the them :->**Circural sum method**
22. The first step in multiple sequence alignment is :->**Pair wise alignment of all the sequences**
23. In the following method instead of aligning two sequences at a time with dynamic programming, three or more sequence are aligned :->**Sum-of-pair method**
24. Expand BRENDA :->**B Raunschweig Enzyme Data base**
25. 2D Gel Analysis software package includes :->**Delta 2D**
26. Which alignment tool determines levels of homology and hence relatedness between members of a series of globally related sequences :->**Multiple sequence alignment**
27. Following database which covers 40, 000 different enzymes from more than 6900 different organisms :->**BRENDA**
28. Which alignement is helpful for doing phylogenetic analysis :->**Multiple sequence alignement**
29. The Swiss institute of Bioinformatics maintains following databases except one of them :->KEGG
30. the study of proteins their structure and function is known as :->**Proteomics**
31. EXPASY proteomics server maintains following database except one of them :->BRENDA
32. One of the following is a software for 2-D PAGE analysis :->MELANIE
33. Two-dimensional gel electrophoresis abbrevated as 2-DE commonly used to analyse :->**Proteins**

34. The resolution of the microprocessor increased by :->**micro stepping**
35. Maximum torque occurs in a steppen motor when :->**poles are aligned**
36. Control of stepper motor depends up on :->**switching of windings at right moment**
37. Resolution for a 200 rotor teeth stepper motor is :->$\frac{200}{360^0}$
38. In absolute encoders the binary numbers are proportional to :->**shaft angle**
39. Stepper motor is actuated by :->**discrete electrical pulses**
40. Output of a stepper motor is in the form of :->**discreate angular motion increments**
41. Stepper motors are typically used in _____ for robot applications :->**open loop system**
42. The resolution of stepper motor is determined by :->**the number of poles in stator and rotor**
43. The condition at which dc servomotor maintains steady state velocity :->$e_b = V_{in}$
44. As dc servo motor velocity increases, torque :->**decreases**
45. A motor has a torque constant k_m=10 oz-in/A. A voltage constant of 12V/1000rev/min. The armature resistance is 2 Ω. If 24V is applied to the teminal, what would be torque at `0' rev/min :->**120 oz-in**
46. A motor has a torque constant k_m=10 oz-in/A. A voltage constant of 12v/1000 rev/min. Amature resistance is 2Ω. If 24V is applied to the terminals what would be speed at no load :->**2000 rpm**
47. What is the force generated by the piston if the fluid pressure is 1500 lb/in^2 inside the cylinder, the piston is 2.0 in diameter. :->**4712 lb**
48. What is the velocity of the Piston if fluid pressure is 1500 lb/in^2 inside the cylinder, the piston has 2.0 inch diameter and flow rate is 10in^3/min? :->**3.18 in/min**
49. To measure the angular velocity which of the following is used :->**rotary vane actuator**
50. For a dc servomotor as the velocity increases :->**the back emf increases**
51. Most commonly used device for velocity sensing in robotics is :->**d.c.tachometer**
52. What is the resolution in degrees of an encoder with 10 tracks :->**0.3515^0**
53. DC tachometers are _____ devices :->**analog**
54. The following actuators are powered by moving fluids :->**pneumatic & hydraulic**
55. The resolution of an absolute encoder is dependent on :->**number of tracks**
56. In absolute encoders stripes are arranged to provide :->**binary number**
57. What is the output value of an absolute encoder if the shaft angle, is 1 rad and encoder has 8 tracks :->**41**
58. At time 't' the excitation voltage to a resolver is 24 V and V_{s1}=17V and V_{s2}=-17v. What is the angle? :->**135^0**
59. The (supply) excitation to the resolver must be :->**ac only**
60. If an absolute encodes has ' n' tracks on the disk the resolution is given by :->**2 ^{n}**
61. A resolver is an :->**analog device**
62. Resolver is a :->**Rotating transformer**
63. At time 't' the excitation voltage to a resolver is 24 V. The shaft angle is 90^0. What s the output signal from resolver? :->V_{s1} = 24v V_{s2} = 0V
64. Power developed by actuator transmitted to the joint :->**either direct or through power transmission device**
65. Potentiometer is used in robotics as :->**position sensor**
66. Potentiometer is an :->**analog device**
67. Velocity sensors are used as power transmission devices :->**False**
68. The following devices are used as feed back devices :->**Sensors**
69. Which of the following devices cause the robot to muscle its arm :->**actuators**
70. The no. of additions to be required to compute a 2 DOF manipulator in LE formulation is :->> **3000**
71. The no.of maltiplications to be required to compute an 2-DOF manipulator in LE formulation is :->> **4000**
72. Inward iteration in NE formulation is carried out to compute :->**forces and moments on each link**
73. In NE formulation forward iteration is carried out to compute _____ recurtively :->**Velocities & acceleration of each link**

74. The rotational motion of link interm of moment balance about centre of man of link can be explained by :->**Euler's equation**
75. The number of additions to be carried for a 2 DOF manipulator in NE formulation is :->**185**
76. The number of additions to be carried out in NE formulation for n-DOF manipulation is :->**103n-21**
77. The no. of multiplications to be carried out in NE formulation for n-DOF manipulator is :->**117 n-24**
78. The inverse dynamics for a manipulator finds the :->**necessary inputs required**
79. The number maltiplications to be performed for a 2 DOF manipulator in NE formulation is :->**210**
80. Lagrange Function (L) is defined as the difference between :->**kinetic & potential energies**
81. D' Alemberto principle of analysis of manipulator model gives :->**dynamic analysis**
82. The analysis of manipulator dynamics by Newton-Euler method is based on :->**force-balance**
83. The dynamic analysis of manipulator according to LE(langrage Euler) analysis are :->**based on energy**
84. Set of equations of motion that describe the dynamic reshuse of the manipulator are called :->**manipulation dynamics**
85. Which of the following dynamic models are computationally intensive :->**LE formulation**
86. The Langrange-Euler formulation of EOM are not analytical and compact :->**False**
87. The LE and NE formulation of dynamic models provide _ _ _ _ _ _ _ :->**closed form of solutions**
88. Transalational motion of the link interms of the balance of forces is known as :->**Newton's equation**
89. Which of the following dynamic models is highly recursive :->**NE formulation**
90. The singularities occur when the end effector is located inside the RWS are called :->**Interior singularities**
91. _ _ _ _ _ _ _ _ _ _ _ singularities can be avoided by ensuring the manipulator not driven to the limits of RWS :->**Boundary singularities**
92. The singularities that occur when the manipulator is fully streched or reacted is called :->**boundary singularities**
93. At singular points the manipulator loses one more degrees of freedom :->**true**
94. In the neighbourhood of a singularity, small velocities in carterian space require :->**very high velocities in joint space**
95. The relationship between joint torque and the moment exerted on the environment is carried by :->**Static analysis**
96. The relation between force for prismatic joint and force extend on the environment of end effector is carried :->**Static analysis**
97. Compulation of singularities can be carried out by analysing :->**rank of jacobian**
98. The relatioship between the joint torque and the end point force/torque vector is derived using the principle of :->**virtual work**
99. At a configuration, where the Jacobian inverse exists at is possible to move the end effector is an arbitrary with an arbitrary velocity :->**True**
100. $J:(\bar{q}) = \begin{bmatrix} \overline{J}_{vi} \\ \overline{J}_{wi} \end{bmatrix} = \begin{bmatrix} \overline{P}_{i-1} \times {}^{i-1}\overline{P}_n \\ \overline{P}_{i-1} \end{bmatrix}$ is a Jacobian for :->**revoulte joint**
101. $\overline{\overline{J}i}(\bar{q}) = \begin{bmatrix} \overline{Jvi} \\ \overline{Jwi} \end{bmatrix} = \begin{bmatrix} \overline{P}_{i-1} \\ \overline{O} \end{bmatrix}$ is a jacobian for :->**Prismatic joint**
102. $\overline{V}_e(t) = \begin{bmatrix} \overline{V} \\ \omega \end{bmatrix} = \begin{bmatrix} \dot{d} \\ \theta \end{bmatrix} = J(\dot{q})\dot{q}(t)$ is a representation of :->**differential kinematics**
103. To find the linear velocity of a link 'i' w.r.t the base {o} frame, the kinematic relationship between link'i' and link 'o' is given by :-> $O_{T_i} = o_{T_1}{}^1T_2{}^2T_3 - - - - - - - - - - - {}^{i-1}T_0$
104. If a manipulator has less 6-DOF (n<6), the number of controllable joint rates :->n
105. The inverse Jacobian of a SCARA manipulator is of the following order :->4x4
106. For a 4-DOF SCARA manipulator how many end effector angular velocities can be controlled :->1
107. The points at which the structural mobility of manipulator is reduced are called :->**singularities**

108. At singular configurations the Jacobian matrix is rank deficient :->**Time**
109. The relation between forces applied on the end effector and resulting torques at joints is called :->**statics**
110. The points where jacobian may lose its rank are called :->**singular configurations**
111. Jacobian matrix is a linear mapping from velocities in joint space to velocities in cartesian space :->**true**
112. Jacobian matrix is very important to be calculated for the reason that :->**it explains with what velocities effector approaches the target**
113. The transformation of joint velocities to end effector velocities is decribed by a matrix called :->**Jacobian**
114. Which of the following is the most important tool for characterization of differential motion :->**Jacobian matrix**
115. The transformation of joint velocities to end effector velocity is described by :->**Jacobian matrix**
116. For combined linear and angular motion of a point Q with reference to frames {1} and {2} is given by _____, where P is the new origin :->$^1v_Q = {}^1v_P + {}^1T_2\,{}^2v_Q$
117. Moment vector is an example of :->**free vector**
118. Which of the following belong to the class of free vector :->**velocity vectors**