Higher Secondary (Vocational)
CLASS XI
Semester - 1
Fundamentals of Mechanics

Time Allowed: 45 Mins   **Full Marks: 20**

A. Choose the correct alternative from the following

1) The body that does not deform under the action of applied forces is known as
   (a) Solid body
   (b) Non-plastic body
   (c) Rigid body
   (d) Hard body
2) Which of the following quantity is not a vector quantity?
   (a) Energy
   (b) Momentum
   (c) Acceleration
   (d) Force
3) What is Kinematics?
   (a) Branch of dynamics which deals with the study of bodies under motion without considering forces
   (b) Branch of dynamics which deals with the study of bodies at rest
   (c) Branch of dynamics which deals with the study of bodies under motion by considering forces
   (d) Branch of dynamics which deals with the study of bodies under the motion
4) The line of action of concurrent forces meets at _____.
   (a) a plane
   (b) perpendicular plane
   (c) two points
   (d) a single point
5) Resultant of equal forces is equal to either of them. The angle between the forces is
   (a) 0^0
   (b) 60^0
   (c) 90^0
   (d) 120^0
6) If two forces P and Q (P>Q) act on the same straight line but in opposite direction, their resultant is
   (a) P + Q
   (b) P - Q
   (c) Q - P
   (d) PQ

7) The law of parallelogram of forces gives the resultant of
   (a) non coplanar concurrent forces
   (b) parallel forces
   (c) two coplanar concurrent forces
   (d) like parallel forces
8) The angle between two forces when resultant is maximum and minimum respectively is:
   (a) 0° & 180°
   (b) 180° & 0°
   (c) 90° & 180°
   (d) 90° & 0°
9) The moment of a force about any point is geometrically equal to _____ area of the triangle whose base is the line representing the force and vertex is the point about which the moment is taken.
   (a) half
   (b) same
   (c) twice
   (d) thrice
10) A couple is formed by
   (a) two equal and like parallel forces
   (b) two equal and unlike parallel forces
   (c) two unequal and unlike parallel forces
   (d) two coplanar and concurrent forces
11) Two unlike parallel forces, each of magnitude 50 kN are 200 mm apart from each other. What will be the magnitude of the moment of the couple formed by these two forces?
   (a) 5 kN-m
   (b) 10 kN-m
   (c) 20 kN-m
   (d) 0
12) The resultant force acting in the couple is
   (a) Half the magnitude of the single force
   (b) Infinite
   (c) Twice the magnitude of the single force
   (d) Zero
13) A body is said to be in equilibrium when
   (a) The net force acting on it is zero
   (b) It is at rest
   (c) The net moment acting on it is zero
   (d) Both b and c
14) Which of the following is a necessary condition for Lami's theorem to hold true?
   (a) The forces must be concurrent and coplanar
   (b) The forces must be collinear

(c) The forces must be equal in magnitude

(d) The forces must be parallel

15) A particle is in equilibrium under the action of three forces. The directions of the three forces

(a) Must be parallel

(b) Must lie in the same plane

(c) Must be perpendicular to each other

(d) Must be along the same line

16) In a coplanar non-concurrent force system, if a body is in equilibrium, the sum of the moments about any point in the plane is

(a) Zero

(b) Maximum

(c) Minimum

(d) Constant

17) Varignon's theorem is primarily used to

(a) Calculate the moment of a force about a point

(b) Add vectors in different directions

(c) Determine the resultant of two parallel forces

(d) Find the center of mass of a system

18) If a body is in equilibrium under the action of two forces, these two forces must be

(a) Equal in magnitude and opposite in direction

(b) Perpendicular to each other

(c) Collinear and of unequal magnitude

(d) Parallel but not equal in magnitude

19) The purpose of drawing a Free Body Diagram is to

(a) Determine the speed of an object

(b) Calculate the mass of an object

(c) Visualize and analyze the forces acting on a body

(d) Find the velocity of a body

20) In a Free Body Diagram, the weight of an object is represented as

(a) A force acting vertically downward

(b) A force acting at an angle

(c) A force acting vertically upward

(d) A force acting horizontally

ANSWER KEY

1	c	2	a	3	a	4	d	5	d
6	b	7	c	8	a	9	c	10	b
11	b	12	d	13	d	14	a	15	b
16	a	17	a	18	a	19	c	20	a