

- Q.28 Describe single crab winch.
- Q.29 Draw stress strain curve for mild steel specimen subjected to compressive force.
- Q.30 Explain the different types of loading.
- Q.31 Explain the concept of moment of inertia and its importance.
- Q.32 Differentiate between buckling load & crushing load.
- Q.33 Give the classification of column and strut.
- Q.34 What are the limitations of Euler's formula?
- Q.35 Define principle of leaf spring. Give formula for calculating deflection and energy stored in leaf spring.

### **SECTION-D**

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 What is parallelogram law of forces? Explain.
- Q.37 What is the Varignon's Principle? Explain in detail.
- Q.38 A brass rod 2 cm diameter and 1.5 m long is subjected to an axial pull of 4 tonnes. Find the stress, strain and elongation of the bar, if modulus of elasticity for the brass is  $1.0 \times 10^6 \text{ kg/cm}^2$ .

No. of Printed Pages : 4

Roll No. ....

202021

**2nd Year / Advance Diploma in Tool and Die Making**  
**Subject:- Applied Mechanics and Strength of Materials**

Time : 3Hrs.

M.M. : 100

### **SECTION-A**

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 A polar vector is one which?
- Gives the position of an object
  - Tells how much and in which direction an object has changed its position
  - Represents rotational effect
  - Has a starting point of application
- Q.2 A person is standing in a bus. When the bus starts moving forward suddenly \_\_\_\_\_
- The person moves forward
  - The person remains stationary
  - The person is unaffected
  - The person moves backward
- Q.3 A body is consisted of \_\_\_\_\_ number of particles.
- Infinite
  - Finite
  - Hundreds
  - Thousands
- Q.4 Which of the following is the property of Newton's third Law?
- A body moving with a uniform speed in a

- straight line cannot change the direction of motion by itself
- b) It is applicable only to a point particle  
 c) It is a local relation  
 d) The action and reaction cannot cancel each other
- Q.5 The maximum value of static friction when the body is at the verge of starting motion is known as \_\_\_\_\_  
 a) Static friction      b) Limiting friction  
 c) Impending motion    d) Angle of repose
- Q.6 Which of the following types of motion cannot describe the motion of a clock's hands?  
 a) Rectilinear      b) Circular  
 c) Periodic      d) Harmonic
- Q.7 Which point on the stress strain curve occurs after the ultimate point?  
 a) Last point      b) Breaking point  
 c) Elastic limit      d) Material limit
- Q.8 The material in which large deformation is possible before absolute failure by rupture is called \_\_\_\_\_  
 a) Plastic      b) Elastic  
 c) Brittle      d) Ductile
- Q.9 Maximum Shearing stress in a beam is at \_\_\_\_\_  
 a) Neutral axis      b) Extreme fibres  
 c) Mid span      d) Action of loading
- Q.10 Torsional sectional modulus is also known as \_\_\_\_\_  
 a) Polar modulus      b) Sectional modulus  
 c) Torsion modulus    d) Torsional rigidity

(2)

202021

**SECTION-B**

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 Define derived quantity?  
 Q.12 What are unlike parallel forces?  
 Q.13 What is principle of stability?  
 Q.14 What is momentum?  
 Q.15 Define modulus of rigidity.  
 Q.16 Define mechanical advantage for a simple machine.  
 Q.17 Define moment of inertia.  
 Q.18 What is slenderness ratio?  
 Q.19 Define torque.  
 Q.20 Give principle of leaf spring.

**SECTION-C**

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 Differentiate between CGS system of units and SI system of units.  
 Q.22 What is free body diagram? Explain its importance.  
 Q.23 Define moment. Give law of moments.  
 Q.24 Locate the centroid of a T-section 10 cm x 10 cm x 2cm.  
 Q.25 Explain methods of reducing the friction.  
 Q.26 State laws of dynamic friction.  
 Q.27 Explain laws of motion and give its application.

(3)

202021