

Register No.:

Name :

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SIXTH SEMESTER B.TECH DEGREE EXAMINATION (R), MAY 2023**MECHANICAL ENGINEERING****(2020 SCHEME)****Course Code : 20MET308****Course Name : Comprehensive Course Work****Max. Marks : 50****Duration : 75 Minutes****PART A****(Answer all questions. Each question carries 1 mark)**

- 1 The region between the separation streamline and the boundary surface of the solid body is known as
A. Wake
B. Lift
C. Drag
D. Boundary Layer
- 2 The Darcy-Weisbach equation is commonly used to calculate
A. Pressure drop in a pipe
B. Volumetric flow rate in a pipe
C. Reynolds number in a pipe
D. Velocity distribution in a pipe
- 3 Bernoulli's equation in fluid dynamics describes the conservation of
A. Mass
B. Energy
C. Momentum
D. Viscosity
- 4 Newtonian fluids are characterized by
A. Constant viscosity regardless of shear rate
B. Increasing viscosity with increasing shear rate
C. Decreasing viscosity with increasing shear rate
D. No relation between viscosity and shear rate
- 5 Euler's dimensionless number relates the following
A. inertial force and gravity
B. viscous force and buoyancy force
C. viscous force and inertial force
D. pressure force and inertial force
- 6 Streamlines in fluid flow represent
A. The path followed by fluid particles over time
B. b) The instantaneous velocity of fluid particles
C. The local pressure distribution in the fluid
D. The energy transfer in the fluid
- 7 Fe-C alloy containing less than 0.8% carbon is called
A. High speed steel
B. Hyper- eutectoid steel
C. Hypo-eutectoid steel
D. Cast iron
- 8 Which mechanism of plastic deformation involves the movement of dislocations?
A. Slip
B. Twinning
C. Creep
D. Diffusion

- A. $(Q_1 - Q_2) = \Delta E - (W_2 + W_3 - W_1)$ B. $(Q_1 + Q_2) = \Delta E + (W_2 - W_3 + W_1)$
 C. $(Q_1 - Q_2) = \Delta E + (W_2 + W_3 - W_1)$ D. none of the above
- 18 Which law states that it is impossible to construct a device that operates in a cycle and extracts no heat while delivering work?
 A. Zeroth Law of Thermodynamics B. First Law of Thermodynamics
 C. Kelvin-Planck Statement D. Clausius Statement
- 19 In a four high rolling mill, out of the four rolls present
 A. one is working roll and three are backing up rolls B. Two are working rolls and two are backing up rolls
 C. three are working rolls and one is backing up roll D. All of the four are working rolls
- 20 The temperature of carburizing flame in gas welding is _____ that of oxidizing flame
 A. lower B. higher
 C. equal D. unrelated
- 21 Which one among the following welding processes uses non-consumable electrode?
 A. Gas metal arc welding B. Submerged arc welding
 C. Gas tungsten arc welding D. Flux coated arc welding
- 22 In fusion welding process, within heat affected zone (HAZ) the work material undergoes
 A. micro structural changes but does not melt B. neither melting nor micro structural changes
 C. both melting and micro structural after solidification D. melting and retains the original micro structure after solidification
- 23 Riser is designed so as to
 A. minimize the time of pouring B. freeze before the casting freezes
 C. freeze at the same time as the casting D. freeze after the casting freezes
- 24 The heat generated (H) in resistance welding is expressed by
 A. IRT^2 B. IR^2T
 C. I^2RT D. $2IRT$
- 25 Corioli's component of acceleration is considered in case of
 A. quick return motion mechanism B. Slider crank mechanism
 C. Four bar mechanism D. toggle mechanism
- 26 The type of quick return mechanism employed mostly in shaping machines is:
 A. DC reversible motor B. Fast and loose pulleys
 C. Whitworth motion D. Slotted link mechanism
- 27 A point 'B' on a rigid link AB moves with respect to A with an angular velocity ω . If a^r and a^t are the radial and tangential components of total acceleration of B with respect to A, then angular acceleration of link AB is
 A. ω/AB B. a^r/AB
 C. a^t/AB D. $\sqrt{(a^r)^2 + (a^t)^2}/AB$
- 28 Which among the following constitutes a higher pair?
 A. a ball and socket joint B. toothed gearing
 C. universal joint D. bicycle wheels turning on their axles

