

HAL Sample Paper 2

Aeronautical Engineering

1. Air Fuel ratio in a jet engine will be of the order of:

- (a) 10:1 (b) 15:1
(c) 20:1 (d) 60:1

2. Fighter bombers use following type of engine:

- (a) Turbo-jet (b) Turbo-propeller
(c) Rocket (d) Ram-jet

1. Least shrinkage allowance is provided in the case of following:

- (a) Brass (b) Aluminium
(c) Cast Iron (d) Steel

2. If V is the volume of metal in a casting and A its surface area, the time of solidification will be proportional to:

- (a) $V, 1/A$ (b) $V, 1/A^2$
(c) $V^2, 1/A$ (d) $V^2, 1/A^2$

3. Fire tube boilers are limited to a maximum design working pressure of :

- (a) 1 kg/cm² (b) 6 kg/cm²
(c) 17 kg/cm² (d) 100 kg/cm²

Metallurgy

1. A dislocation represented by T is called:

- (a) Positive edge dislocation
(b) Negative edge dislocation
(c) Positive screw dislocation
(d) Negative screw dislocation

2. The recrystallisation temperature of a cold worked material decreases with:

- (a) Increase in the degree of deformation
(b) Increase in the initial grain size
(c) Increase in the temperature of cold working
(d) The presence of impurity

Electrical Engineering

1. In a thyristor full converter feeding a continuous load current, what is the duration each thyristor conducts in a cycle?

- (a) 60° (b) 90°
(c) 120° (d) 180°

2. In a three-phase induction motor, the rotor field runs at the following speed with Respect to the stator structure:

- (a) At synchronous speed in the direction of stator field

- (b) At a slip speed in the direction of stator speed
- (c) At synchronous speed in a direction opposite to that of stator field
- (d) At zero speed

Electronics

1. In the hybrid parameter model of a transistor reverse transfer voltage ratio and forward transfer current ratio are respectively given by:

- (a) h_{11} and h_{21} (b) h_{12} and h_{11}
- (c) h_{21} and h_{11} (d) None of these

2. A Signal $x(t)$ has the Fourier transform

$X(\omega) = \begin{cases} 1 & \text{for } |\omega| < W \\ 0 & \text{otherwise} \end{cases}$. Its first zero-crossing in time domain occurs at:

0 otherwise

- (a) $1/pW$ (b) W
- (c) p/W (d) None of these

Computer Science

1. Magnetic tapes are suitable to applications:

- (a) When only a few records are to be accessed
- (b) When most of the records are to be accessed
- (c) Only when all the records are to be processed
- (d) None of the above

2. A system in which 2 or more cpu's are interconnected and share a common

Main memory is called:

- (a) Pipeline machine
- (b) Multifunctional system
- (c) Multiprocess
- (d) None of these