DMS Question SET (BE A & B)

1) Optimum design is the process of selecting the best possible design satisfying certain criteria like

A. Feasible design.
B. Geometrical tolerance.
C. Dimensional tolerance.
D. concurrent engineering

2. Design methodology which deals with rough sketches of possible mechanism is to identify

A. the sequence of operation.
B. one best suited mechanism after comparing with the options.
C. the manufacturing ability.
D. the shape of the system

3. Design methodology which deals with preparing specification list is to identify

A. Manufacturing sequence.
B. Output capacity of product.
C. Geometrical tolerance.
D. Dimensional tolerance

4. Exploring design problem with constraints

A. Feasibility Study involves.
B. Preliminary design involve.
C. Detailed Design involves.
D. Planning for Manufacturing involves.

5. Following is not the step in optimization

A. Identifying the system parameters and their effects.
B. To create a statement that describes what allneeds to be accomplished to meet the needs of the customers.
C. Provide constraints by analyzing parameters and their effects.
D. Solution of objective function for either maximization or minimization of certain effects.

Cross type of lay wire rop has…… relation for twist of strand and twist of wire in the strand

A. Inclined
B. Similar
C. Perpendicular
D. opposite.

Sheave Assembly consist of

A. hook, Nut, Thrust bearing, Cross piece.
B. rope drum, Drum shaft, Bearing.
C. trolley, trolley wheel, Bearing.

D. pulley, Axle, Bearing.

For a steel wire rope if load per fall is F=3000kgf, ultimate tensile strength of rope material σ_u=18000kgf/cm^2, service factor n=6, Ratio of drum diameter to rope diameter(Dmin/d)=23, then the breaking strength of wire rope(P) in kgf is:

A. 37636
B. 28654
C. 32564
D. 46636

The required hoisting power for an EOT crane in kW would be if the design lifting load [W]=120kN, hoisting speed is 8 m/min and overall efficiency of mechanism η=85%

A. 22.34kW
B. 11.56kW
C. 1.12kW
D. 18.82kW

The Rope drum is not subjected to

A. Bending failure
B. Tensile failure
C. Twisting failure
D. Crushing failure

Any portion of the the crane hook is not subjected to

A. Tensile failure
B. Bending failure
C. Compressive failure
D. Shear failure

The process of filling the liquid into the suction pipe and pump casing upto the level of deliveryvalve is called as

A. filling
B. pumping
C. priming
D. leveling

Following not a type of positive displacement pump

A. Gear Pump
B. Centrifugal pump
C. Reciprocating Pump
D. Lobe pump

The loss of head due to friction in suction pipe is___ if friction factor f= 0.005, length of suction pipe =5m, diameter of suction pipe=120mm, velocity of fluid in suction pipe=2m/s

A. 0.169m
B. 0.227m
C. 0.54m
D. 1.3m

At the inlet of impeller blade of a centrifugal pump ---- velocity component is zero

A. Flow velocity(Vf1)
B. Inlet velocity of water(V1)
C. Whirl velocity(Vw1)
D. Tangential Velocity(u1)

The function of piston skirt is

A. To Support Gudgeon Pin
B. To Support Gas Load
C. To Provide Bearing Surface For Side Thrust
D. To Seal The Cylinder And Prevent Leakage Of Oil Past Piston.

The gear pump is

A. Low discharge and low pressure pump
B. High discharge and high pressure pump
C. High discharge and low pressure pump
D. Low discharge and high pressure pump

Arithmetic progression basedupon the idea that the.....between the adjacent RPM values is constant.

A. Reciprocal difference
B. Difference
C. Multiplication
D. Dividend

a gear pump for working pressure of 30 bar & discharge of 60 LPM required power will be

a) 2 KW
b) 3 KW
c) 1.5 KW
d) 1 KW

Assuming minimum number of teeth on gear = 17 & addendum &dedendum each equal to one module. Outer Diameter = _____

a) 19m
b) 17m
c) 15m
d) 12m

Hydrostatic force acting on shaft is given by formulaFh= -1.635 Pmax *Ra * b

Where Pmax= 36 bar, b= 35 mm, module=5mm & no of teeth=17

The value of Hydrostatic force is

a) -9785N
b) -9175N
c) 8759N
d) 8579N

Q4) For a given gear pump bending strength of gear tooth is 9646 N, dynamic force acting on gear tooth is given by barth equation Fd= Ft * Cv where Cv= 1.3835 & torque required for each gear is 35.33Nm & radius is 42.5 mm. comment on safety of design

a) Fs >Fd& design is not safe
b) Fs <Fd& design is safe
c) Fs>Fd& design is safe
d) Fs <Fd& Design is not safe

Q5) Resultant force acting on shaft of gear pump is=____

Where Ft=Tangential Force = 415.7N

Fh= Hydrostatic force =9785N

Fr=Radial Force= 151.3N

a) 20202 N
b) 10202 N
c) 10502 N
d) 10702 N

The Disadvantage of Conveyor Belt system is
a) Can transport material in any direction.
b) Reduction in numbers of labors required
c) Non Adaptability to different types of goods.
d) Continuous or periodic monitoring of belt.

Speed of conveyor system depends on
a)Motor attached to the system
b) angle of inclination c) angle of surge.
d)Nature of the material to be conveyed.

Minimum width (B) for ungraded material in a belt Conveyor is given by maximum lump size (amax) is……..
B = 2 x (amax) + 200 mm
B = 1.5 x (amax) + 200 mm
B = 2.5 x (amax) + 200 mm
B = 3.5 x (amax) + 200 mm

A conveyor system has the following given data: Capacity (Q) is 300TPH; Factor for type of idler(c) = 460; velocity (v) = 1.5 m/s; density = 1.5 tonnes/m3 .What is the belt width (Bmin)
a) 1.23 meters
b) 0.923 meters
c) 0.608 meters
d) 1.43 meters