University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering
Curriculum Scheme: Rev2012
Examination: Final Year Semester VIII
Course Code: MEC801 and Course Name: DESIGN OF MECHANICAL SYSTEMS
Time: 1 hour Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	Multispeed drive with geometric progression is / are poor in------spindle speed range.
Option A:	High
Option B:	Low
Option C:	Constant
Option D:	Insufficient data
Q2.	The process of removing air from the Pump and suction line is called
Option A:	Filling
Option B:	Pumping
Option C:	Priming
Option D:	Leveling
Q3.	The design of piston head is based on
Option A:	strength and rigidity considerations
Option B:	bending and torsional moments
Option C:	buckling consideration
Option D:	strength and heat transfer considerations
Q4.	Small end of the connecting rod is connected to the ____
Option A:	crank pin
Option B:	gudgeon pin
Option C:	knuckle pin
Option D:	split pin
Q5.	Volume carrying capacity is more in:
Option A:	Flat belt conveyor
Option B:	Screw conveyor
Option C:	Chain conveyor
Option D:	Troughed belt conveyor
Q6.	A trunion in cross piece provides:
Option A:	Swinging effect
Option B:	Vibration
Option C:	Pendulum effect
Option D:	No effect
Q7.	For an I.C. engine, maximum gas pressure is 38 bar, cylinder bore diameter is 130 mm, Find maximum gas force
Option A:	20.5 KN
Option B:	50.4 KN

Option C:	30.7 KN
Option D:	40.6 KN
Q8.	The basic function of the _____ in an I.C. engine is to transmit the push and pull forces from the piston pin to the crank pin
Option A:	Piston
Option B:	cylinder liner
Option C:	connecting rod
Option D:	Crankshaft
Q9.	Which types of conveyor is suitable for the transmitting material at slope from 40 degree to 60 degree without slipping?
Option A:	Blanket belt conveyor
Option B:	roller conveyor belt
Option C:	Flat belt conveyor
Option D:	Woven wire belt conveyor
Q10.	Compact and better gear box designed obtained in _____
Option A:	Harmonic progression
Option B:	Logarithmic progression
Option C:	Geometric progression
Option D:	Arithmetic progression
Q11.	in 6*7 designation of wire rope,
Option A:	7 are number of strands and 6 are number of wires in each strand
Option B:	6 are number of strands and 7 are number of wires in each strand
Option C:	6 are number of strands and 42 number of wires in each strand
Option D:	7 are number of strands and 42 number of wires in each strand
Q12.	In centrifugal pump having circular casing, the kinetic energy is converted into pressure energy is by:
Option A:	The shape of casing
Option B:	Guide vane
Option C:	Impeller Casing
Option D:	Housing
Q13.	Exploring design problem with constraints involves
Option A:	Feasibility Study
Option B:	Preliminary design
Option C:	Detailed Design
Option D:	Planning for Manufacturing
Q14.	Warrington type strand pattern has
Option A:	Alternative wires in the outer most layers are of different diameter.
Option B:	Alternative wires in the outer most layers are of same diameter.
Option C:	Two consecutive wires in the outer most layers are of different diameter.
Option D:	Two consecutive wires in the outer most layers are of same diameter.

Q15.	System design makes systematic approach to _____ error or _____ accidents.
Option A:	increase, reduce
Option B:	reduce, increase
Option C:	avoid, reduce
Option D:	reduce, avoid
Q16.	Increase in number of falls,
Option A:	Deceases the tension in each rope
Option B:	Decreases the compression in each rope
Option C:	Decreases the shear in each rope
Option D:	Decreases the bearing in each rope
Q17.	The constant loss of economic cutting speed over the total spindle speed range, the spindle speed must be in----
Option A:	Arithmetic progression
Option B:	Geometric progression
Option C:	Harmonic progression
Option D:	Logarithmic progression
Q18.	It can be observed in case of gear pump if relief valve is closed, ...
Option A:	the bearings get heated.
Option B:	churning effect takes place.
Option C:	bursting effect takes place.
Option D:	the motor does not consume electricity.
Q19.	Find the number of compensating pulleys for 8 fall system.
Option A:	Three
Option B:	Two
Option C:	One
Option D:	Four
Q20.	Which of the following bearing type suitable for pulleys used in snatch block of a hoisting mechanism?
Option A:	journal bearing
Option B:	Thrust ball bearing
Option C:	Radial ball bearing
Option D:	Thrust roller bearing
Q21.	Multispeed drive with harmonic progression is / are good in------spindle speed range.
Option A:	High
Option B:	Low
Option C:	Moderate
Option D:	Insufficient data
Q22.	A gear pump consist of following Specifications. The Pressure is 50 bar. The net force on bolt (F_b) = 44172.5 N. If the bolt diameter is M16 the cross section area = 84.3 mm^2.The bolt material as C20; [σ_t] = 65.5 N/mm2;.Determine the number of bolts with respect to tensile stress

Option A:	6
Option B:	7
Option C:	8
Option D:	5
Q23.	The compression rings in piston have _____ cross-section
Option A:	Hexagonal
Option B:	Rectangular
Option C:	Square
Option D:	Elliptical
Q24.	Pump transfers the mechanical energy of a motor or of an engine into _____ of a fluid.
Option A:	Kinetic energy
Option B:	pressure energy
Option C:	either pressure energy or kinetic energy
Option D:	pressure energy, kinetic energy or both
Q25.	In geometric progression the ------of any two successive spindle speed is constant.
Option A:	Addition
Option B:	Difference
Option C:	Ratio
Option D:	Multiplication

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Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	B
Q2.	C
Q3.	D
Q4	B
Q5	D
Q6	A
Q7	B
Q8.	C
Q9.	A
Q10.	C
Q11.	B
Q12.	B
Q13.	A
Q14.	A
Q15.	D
Q16.	A
Q17.	B
Q18.	C
Q19.	A
Q20.	C
Q21.	B
Q22.	C
Q23.	B
Q24.	D
Q25.	C