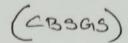
BE- Mech - Sem-VIII (CB3G3) 20 NOV





(Hours 3) [Total Marks: 80]

	:	Question No. 1 is compulsory. Attempt any three questions from the remaining. Assumption made should be clearly stated. Design Data Book by PSG, Mahadevan, Kale & Khandare are permitted to use.	5
Q.1		Answer any four	
	(a)	Draw flow chart for design methodology and explain with example.	5
	(b)	What is mean by 6 X 37 rope in hoisting mechanism, elaborate with neat sketch.	5
	(c)	List different types of piston rings and their functions.	5
	(d)	Draw a neat sketch of centrifugal pump and explain its principle of working.	5
	(e)	List the various laws of speed range distribution, explain arithmetic progression law with example.	5
Q.2	(a)	What is cavitation in centrifugal pump? How to avoid it.	5
	(b)	For the specification of an EOT Crane, Application - Class II Load to be Lifted - 100 KN Hoisting speed - 10 m/min Maximum Lift - 5 m	
		i. Design a 6 X 37 type of rope and find its life.	8
		ii. Design hook and check it at most critical cross section.	8
		iii. Select suitable motor for hoisting.	4
Q.3	(a)	State the advantages of multi fall pulley systems.	4
	(b)	system is to be designed for the following specifications:	8
		i. Design conveyor belt.	4
		ii. Select suitable motor for conveyor.	4
		the upper roller and bottom roller.	
	2 250	iii. Design the upper roller TURN OV	EK

Q.4		Design following components of single cylinder, two stroke, and water cooled Petrol Engine to develop 40 KW at a speed of 1000rpm by making suitable assumption and neat sketches. Assume Compression Ratio as 7.	
		i. Find the standard bore and length of a cylinder.	5
		ii. Calculate the design pressure considering explosion ratio as 3.25 and	5
		FOS as 13	10
		iii. Design connecting rod and check it for bending.	
		the following specification.	10
Q.5	(a)	It is required to design a 2 X 2 machine tool gear box with following specification. $N_{min} = 100 \text{rpm}$, $N_{motor} = 960 \text{ rpm}$, GP ratio = 1.26	
		i. Draw structural diagrams,	
		ii. Draw ray diagram and speed chart, iii. Find the number of teeth of each gear.	
		O i	
	(b)	A centrifugal pump is required to design for the total manometric head of 20 m and discharge of 900LPM of water at room temperature.	
		i) Find the inlet and outlet diameter of an Impeller of the centrifugal pump. (Draw neat sketch of impeller and assume D ₂ = 2D ₁)	6
		ii) Find the inlet and outlet diameter of pipes.	4
Q.6		A Gear Pump required to deliver 75LPM of SAE20 oil at a pressure of 120 bar.	
	3	By making suitable assumption, i. Select suitable standard Motor.	3
			3
33	1	iii. Design gear and check for bending failure.	1
\$ C. C. S.	3	iv. Design casing of the gear pump.	4
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