

BE-Mech-(VII-Rev)
Machine Design II

66+
09/12/2014

QP Code :15481

(REVISED COURSE)

(4 hours)

[Total marks: 100]

N.B.: 1) Q. No. 1 is compulsory.

2) Attempt any four questions out of remaining six questions.

3) Design data book such as PSG, Mahadevan are allowed.

4) Assume suitable data if required.

- Q 1 a) Explain the different types of gear tooth failure. 5
b) Explain static and dynamic seals. 5
c) Explain the concepts of the bends in case of the wire ropes. What is its significance? 5
d) Explain Churning effect and Cavitation in Centrifugal pump. 5

- Q 2 A two stage gear box is used to transmit 10 KW power from an electric motor running at 1440 rpm to a machine with overall reduction ratio of 20. For the second stage spur gear pair,
i) Determine the module using bending failure. 8
ii) Check the gears for dynamic load by using Buckingham's method. 4
iii) Check the gears for wear strength. 4
iv) Work out constructional details of gears. 4

- Q 3 a) A DGBB having SKF No.6208 subjected to load cycle as below. Find expected life of the bearing in hours with probability for of survival 90 %. Take Service factor = 1.2. 14

Sr. No.	Radial Load (N)	Thrust Load (N)	Speed (rpm)	%
1	3000	1000	600	15
2	3500	1000	800	20
3	5000	100	900	30
4	500	2000	1500	35

- b) What are the desirable properties of a good bearing material used in sliding contact bearings? 6

- Q 4 A rotary cam with central translatory roller follower has following motions;

Forward stroke of 20 mm in 100° of cam rotation with SHM motion, dwell for 40° , return stroke in 120° with SHM and remaining dwell to complete the cycle.

Mass of the follower is 1 kg, cam shaft speed is 500 rpm, external force during forward stroke is 500 N and during return stroke is 100 N.

Design;

- i) Cam 8
ii) Follower with pin and spring 8
iii) Cam shaft 4

[TURN OVER

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