Q 5 a) Find the module of the bevel gear and check it for wear load for the following specification; **10**

Power transmitted: 30KW
Input speed: 360 rpm
Reduction ratio: 3
Angle between shaft: 90^0

b) A full journal bearing is use for supporting a load of 7KN runs at 500 rpm for machine tool application. Select fit H9e9 and Take L/D = 1. Find, **10**

1) Bearing dimensions
2) Sommerfeld Number
3) Minimum oil film thickness
4) Coefficient of friction
5) Rise in temp. of oil.

Q 6 A centrifugal pump is required to pump the water for the following specification;

Static suction head	: 3 m
Length of suction pipe	: 6 m
Static delivery head	: 10 m
Length of delivery pipe	: 15 m
Discharge	: 1200 LPM

Design;

i) Pipe diameters **3**
ii) Impeller and impeller shaft **8**
iii) Casing **4**

Select the suitable motor **3**
Draw the layout. **2**

Q 7 The following specifications refers to an EOT crane;

Application	: Class-II
Load to be lifted	:120 KN
Hoisting speed	: 6 m/min

i) Select suitable wire rope and find its life. **6**
ii) Select standard hook and check the induced stress at the most critical section. Design a nut for the hook and select suitable bearing. **6**
iii) Design the pulley axle and select suitable bearings. **5**
iv) Design the cross piece and shackle plates. **3**
