



# GOVERNMENT COLLEGE OF ENGINEERING, JALGAON

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Name of Examination : **Winter 2020** - (Preview)

Course Code & Course Name : **ME302U - Theory of Machines-II**

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Maximum Marks : **60**

Duration : **3 Hrs**

[Edit](#) [Print](#) [View Answer Key](#) [Close](#) **Answer Key Submission Type:** Marking scheme with model answers and solutions of numerical

Instructions:

1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.

- 1) A) Derive a relation for minimum of teeth on the gear wheel and the pinion to avoid interference. [06]  
B) Draw and Explain the Force analysis of Helical Gear [04]
- 2) Gear wheel A having 14 teeth is rigidly mounted on the driving shaft. It gears with compound wheel B-D. B gears with fixed annular wheel C and D gears with annular wheel E. The compound wheel B-D, revolve freely on a pin. The annular wheel E is rigidly mounted on the driven shaft. Module of all the gears is same. The driving and driven shafts and the annular wheels are coaxial. Number of teeth on gear C, E and D are 100, 98, 41. Driving shaft rotates at 1200 rpm and transmits 25 kw power [10]  
i) Sketch the Arrangement  
ii) Find the speed of driven shaft  
iii) Find the Torque transmitted by the driven shaft.
- 3) A) What is meant by Static and Dynamic Unbalance in Machinery? how can the balancing be done? [06]  
B) Define the Terms [04]  
i) Logarithmic Decrement  
ii) Magnification Factor  
iii) Vibration Isolation  
iv) Vibration Transmissibility
- 4) A) what is mean by effort and Power of governor? [06]  
B) What is the Function of governor? How does it differ from flywheel? [04]
- 5) Draw the profile of a cam operating a roller reciprocating follower and with the following data: [10]  
Minimum radius of cam= 25 mm, Lift= 30 mm, Roller Diameter= 15 mm .  
The cam lifts the follower for 120 degree with SHM followed by a dwell period of 30 degree. Then the follower lowers down during 150 degree of the cam rotation with uniform acceleration and deceleration followed by a dwell period. If the cam rotates at a uniform speed of 150 rpm, Calculate the maximum velocity and acceleration of the follower during descent period.
- 6) Derive the expression for velocity and acceleration of Piston in slider crank Mechanism [10]

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