

# ALL AE / JE Exams



## शुरुआत selection की

### MECHANICAL ENGINEERING

### GEAR CLASSIFICATION (TOM)

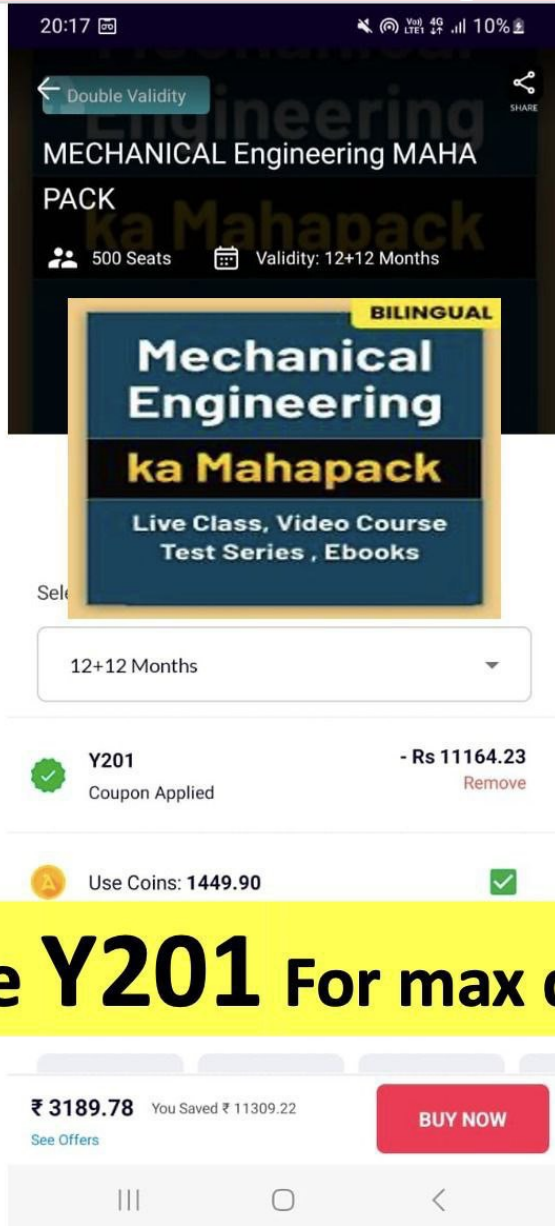
## ZERO TO HERO SERIES



By Rk sir

LIVE! 6:30 PM

4



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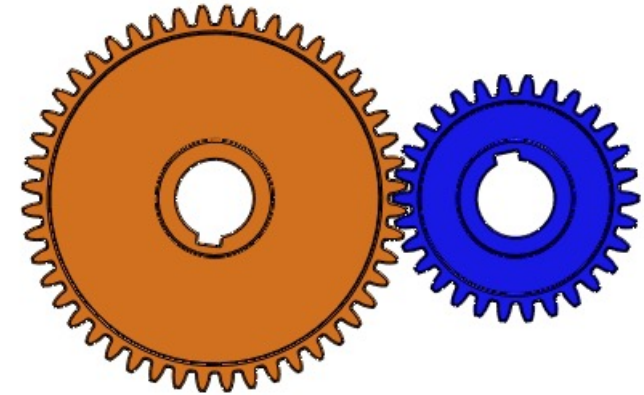
**Notes & Articles**



**Videos**

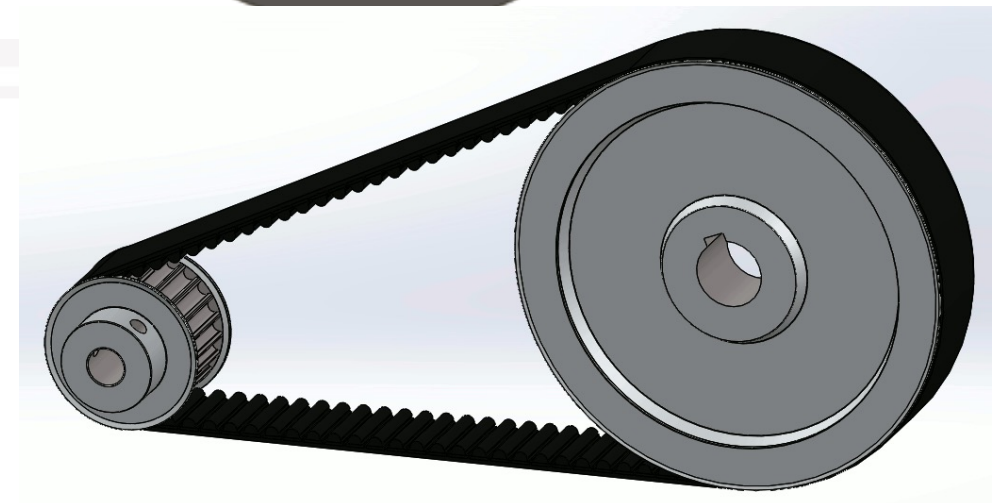
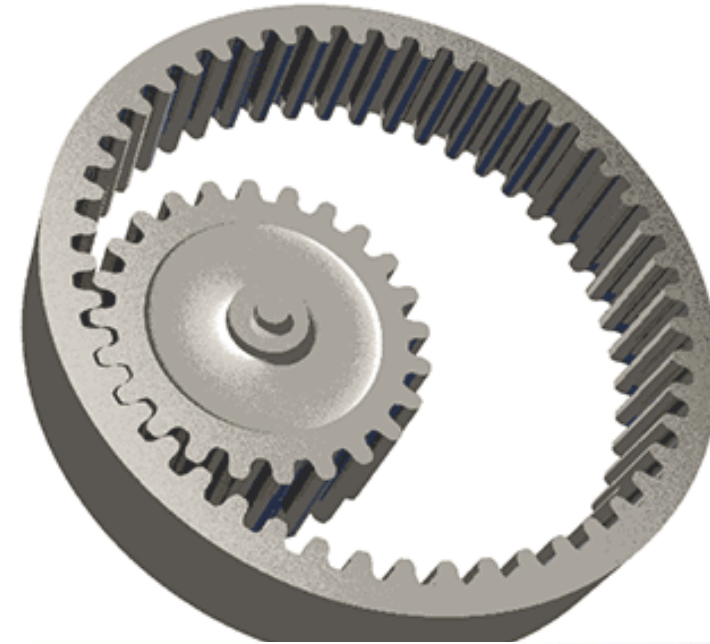
**Gear** is mechanical device used to transfer the power from one shaft to another shaft without slipping

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## ADVANTAGES OF GEAR DRIVES

- 1- Compact as compared to belt and chain drives.
- 2- Positive drives.
- 3- wide range of speed ratios.(6:1 to 4900:1)
- 4- High speed ratio than belt drives
- 5- Used for shafts parallel, intersecting, non-parallel, non-intersecting.
- 6- Large power transmission
- 7- Transmits power at higher speed.



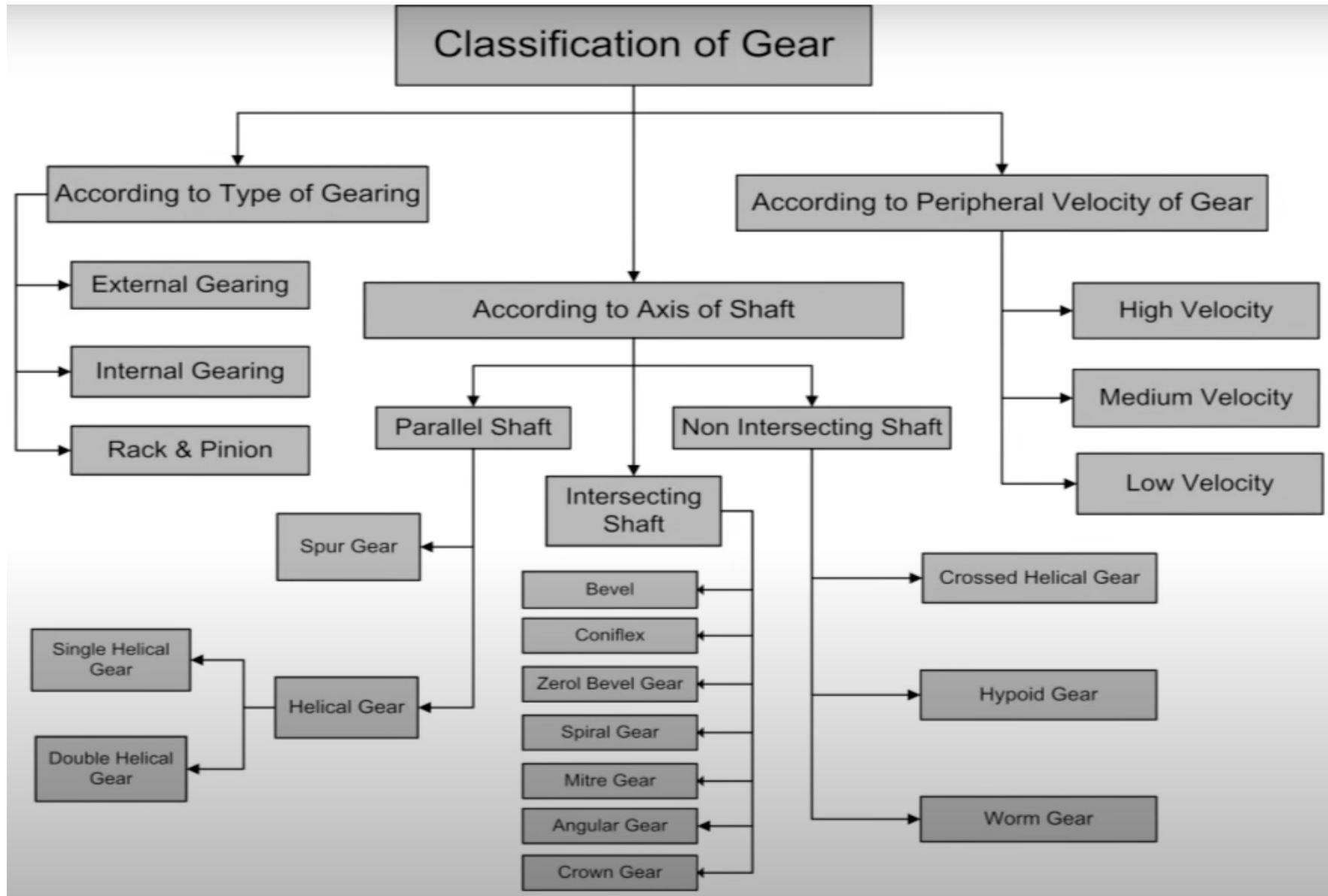
## Law of gearing

$$N_2/N_1 = T_1/T_2$$

$$\text{Centre distance} = m(T_1 + T_2)/2$$

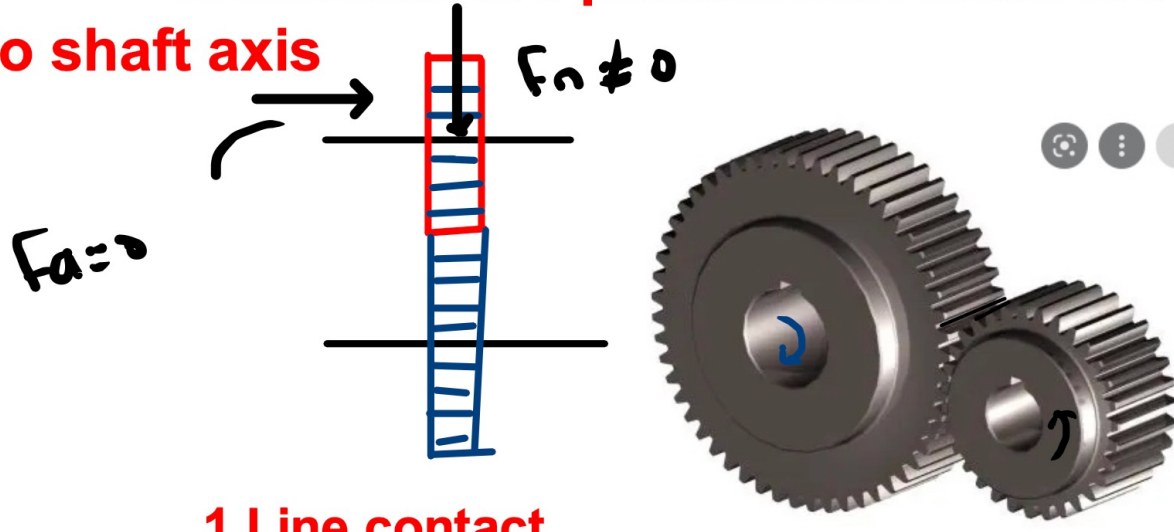
**Note** -For two meshing gear module must be same Mechanical by

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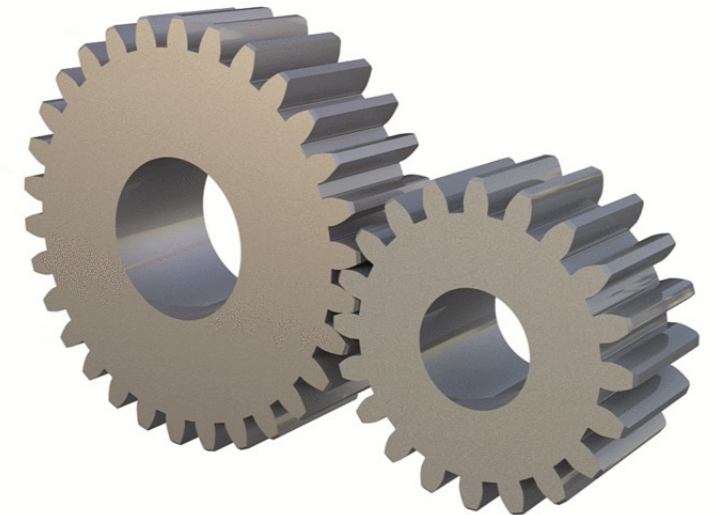


## According to shaft axis

**Spur Gear - Shaft axis are parallel and teeth are parallel to shaft axis**



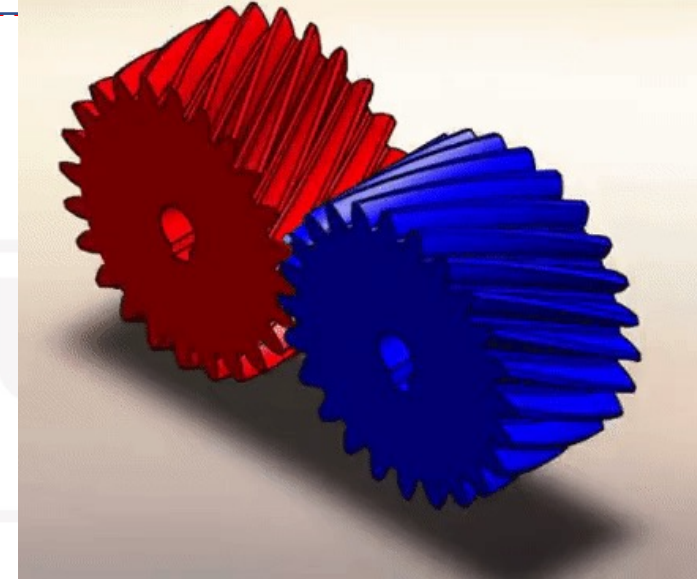
- 1 Line contact
- 2 and sudden type ,
- 3 so that impact stresses more
- 4- Low speed gear basically First and reverse gear of automobile
- 5- High power transfer
- 6- No axial thrust

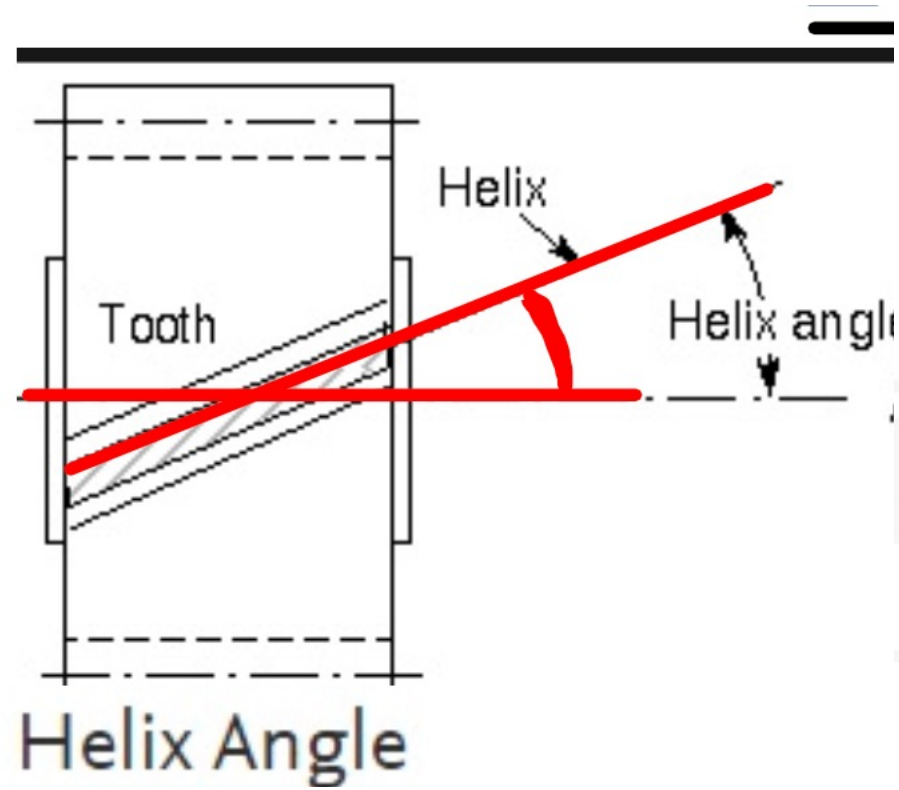




## Helical Gear - Shaft axis are parallel and teeth are inclined to shaft axis

- 1-Helix angle range from 5 to 45 degree
- 2-For double helical gear 20 to 45 degree
- 3 Contact Point to line
- 4 Gradual type
- 5 no impact stress
- 6 Used for medium power
- 7 Axial thrust present





**Double Helical Gear Vs Herringbone Gear**



**No axial thrust present**



**Bevel gear –**

Used for transfer power at 90degree

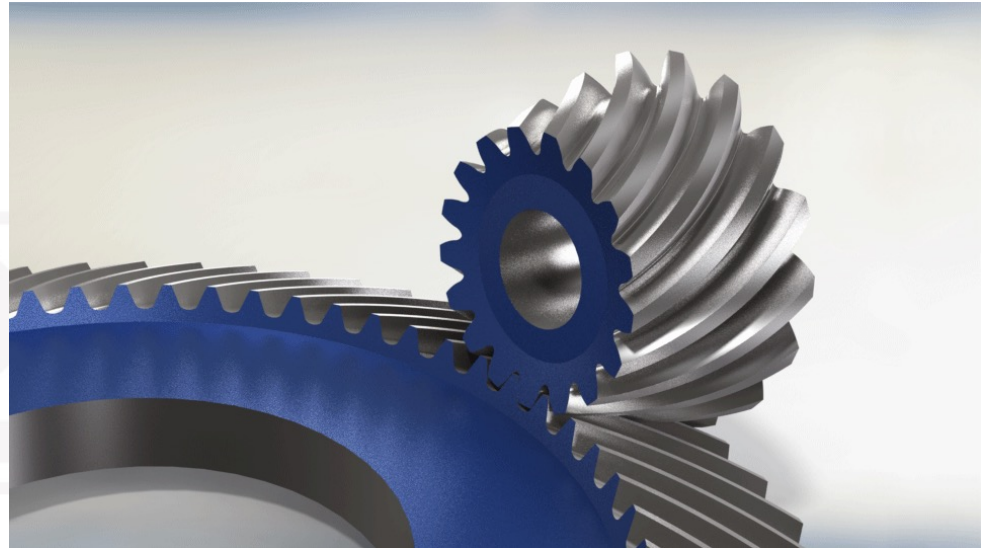
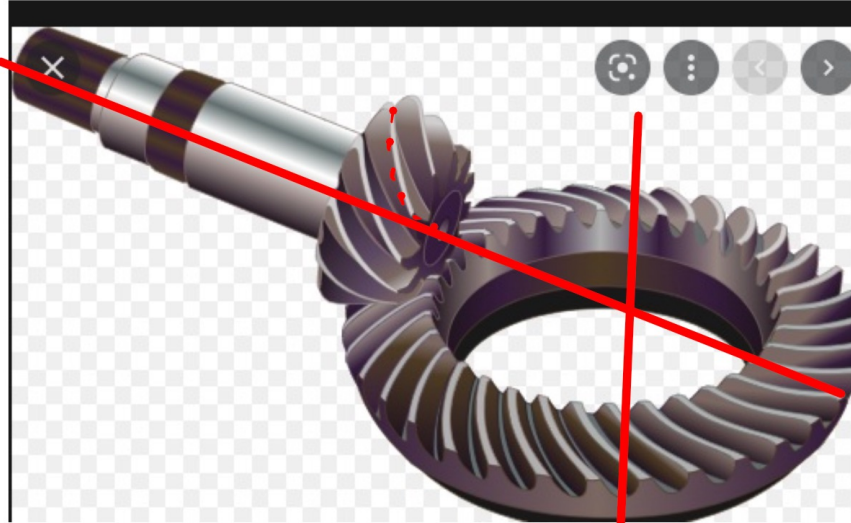


**Intersecting shaft**



## Spiral bevel Gear

teeth are inclined to axis of shaft



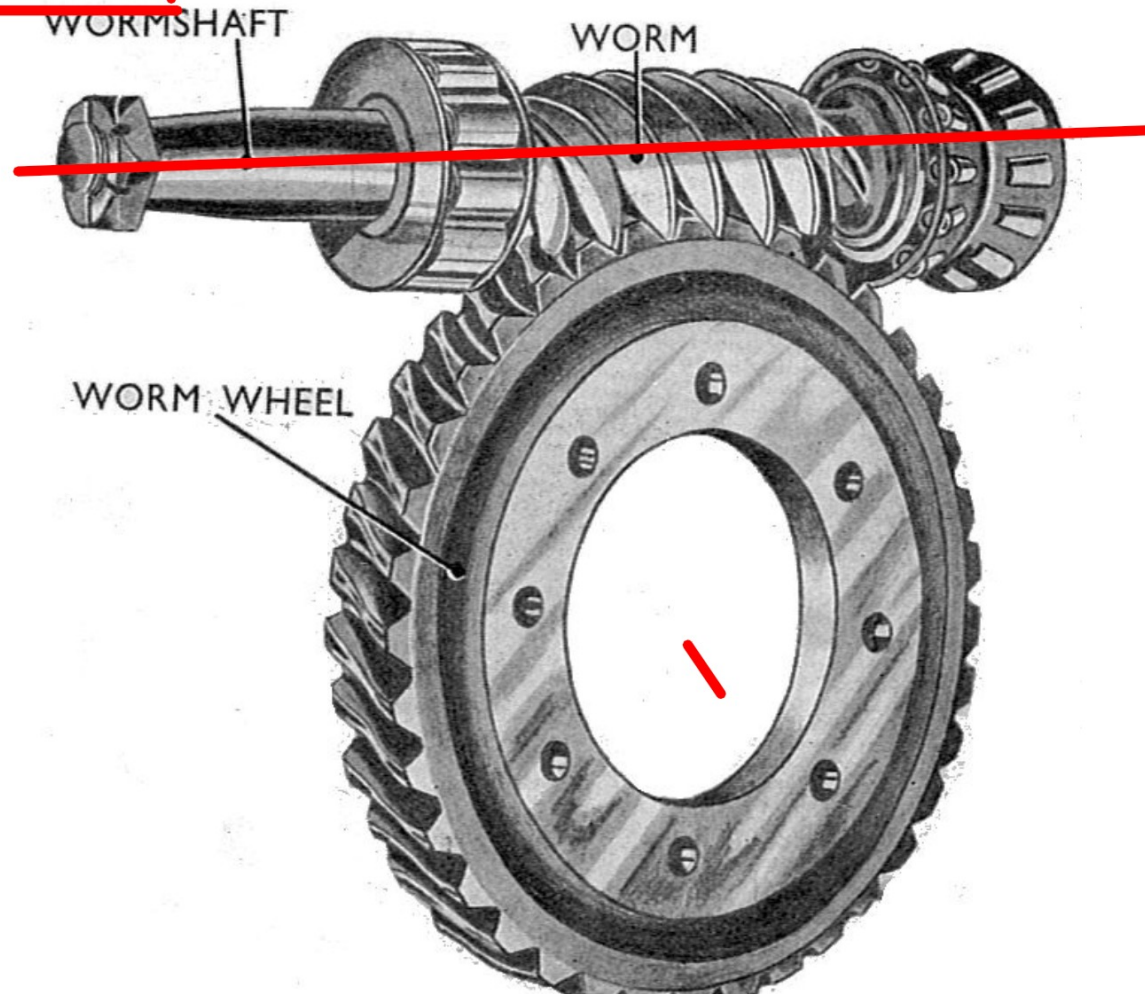
It is used at Higher speed  
contact Gradual so stresses lower

Most of automobile gear are used for high speed smooth power transfer

Niether parallel nor intersecting

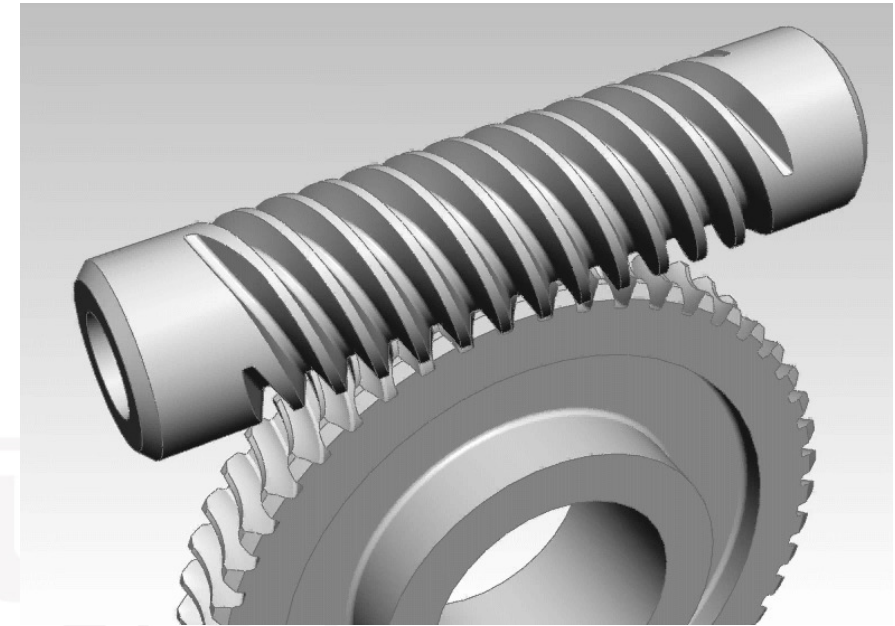
Worm & wormwheel

- Used for High speed reduction
- Range from 30:1 to 1000:1
- Used in indexing mechanism



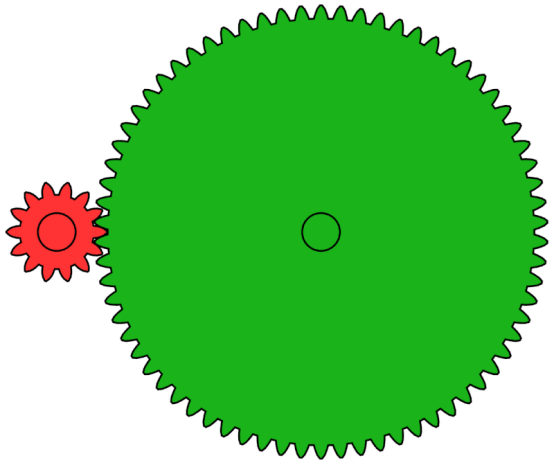
Mechanical by Rk sir | Use Y201 Code for max disc.

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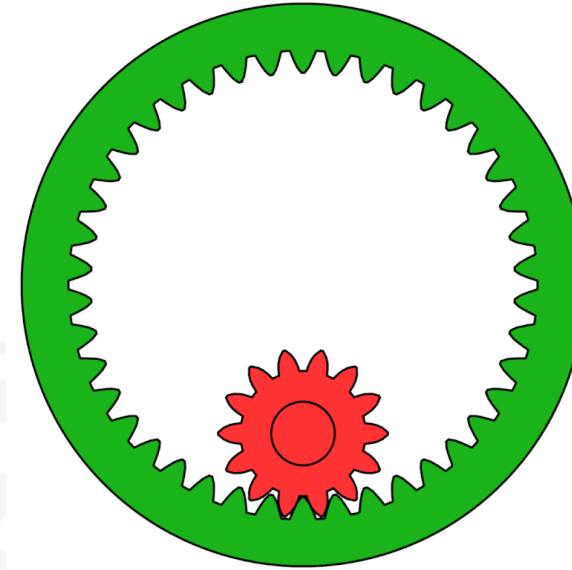


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## According to gearing



Input and output rotating in opposite direction

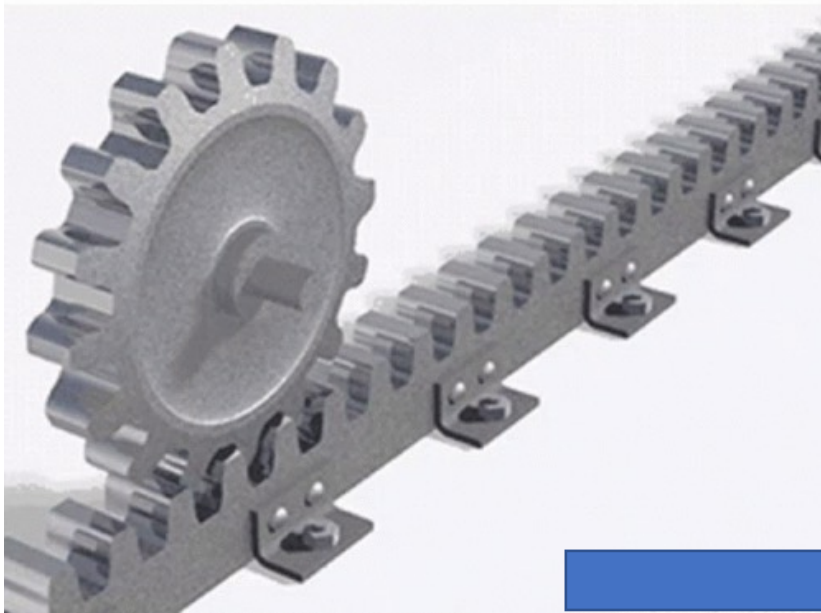


Input and output gear rotating in same direction

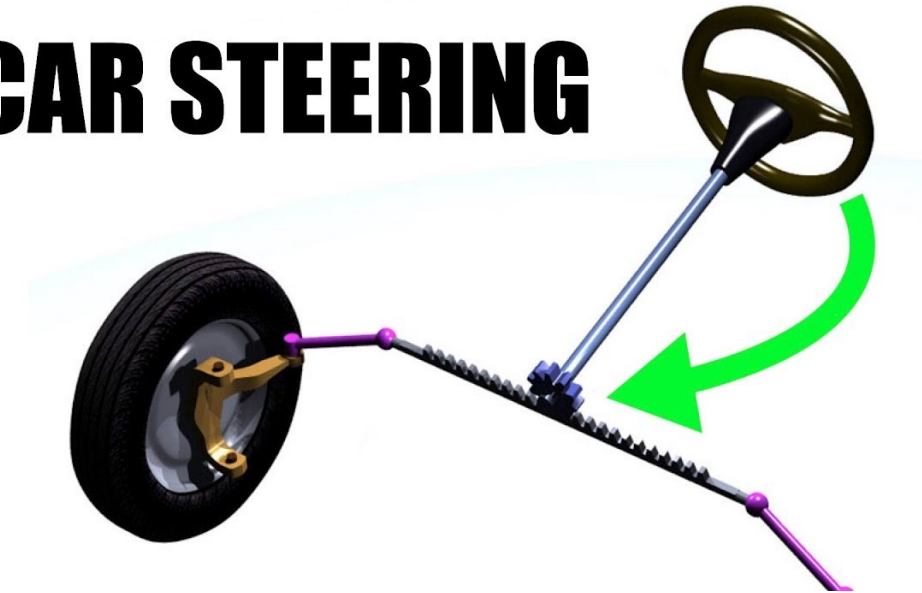


## According to gearing

you rack a valid pinion



## CAR STEERING

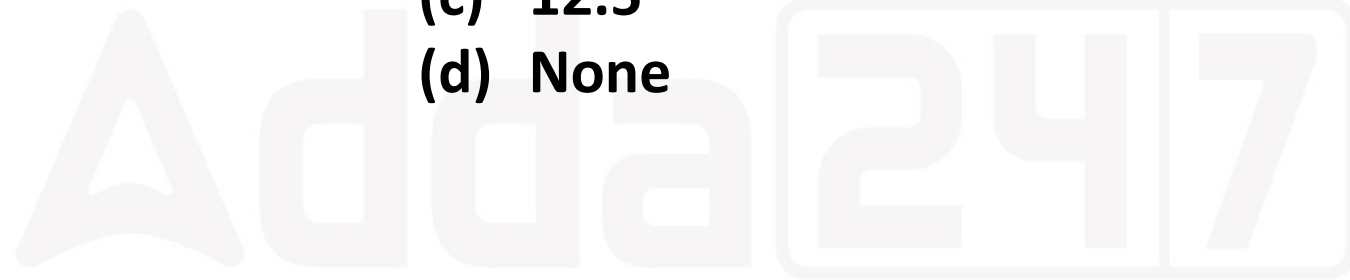


## According to speed

- a. **Low Velocity:** The gears having velocity less than 3 m/s are termed as low velocity gears.
- b. **Medium Velocity:** The gears having velocity between 3 m/s to 15 m/s are termed as medium velocity gears.
- c. **High Velocity:** The gears having velocity greater than 15 m/s are termed as high speed gears.

**Q A simple gear drive used to transfer the power from 1000rpm to 4000rpm then what is number of teeth required on pinion when number of teeth on gear is 50**

- (a) 200**
- (b) 100**
- (c) 12.5**
- (d) None**



**Q What is center distance required for power transfer if number on gear and pinion is 100 and 50 respectively Assume gear module is 10mm**

- (a) 700mm**
- (b) 1500mm**
- (c) 750mm**
- (d) None**

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**Q Which one is correct regarding simple spur gear**

- (a) Axial thrust is zero**
- (b) Used for high power transfer**
- (c) Mostly reverse gear is spur**
- (d) All the above**

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**Q Which one is correct regarding simple helical gear**

- (a) Axial thrust is zero**
- (b) Used for high power transfer**
- (c) Mostly high-speed gear are helical**
- (d) All the above**

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**Q worm gear is used in**

- (a) Heavy industrial machinery**
- (b) machine tool**
- (c) Transportation machinery**
- (d) All the above**

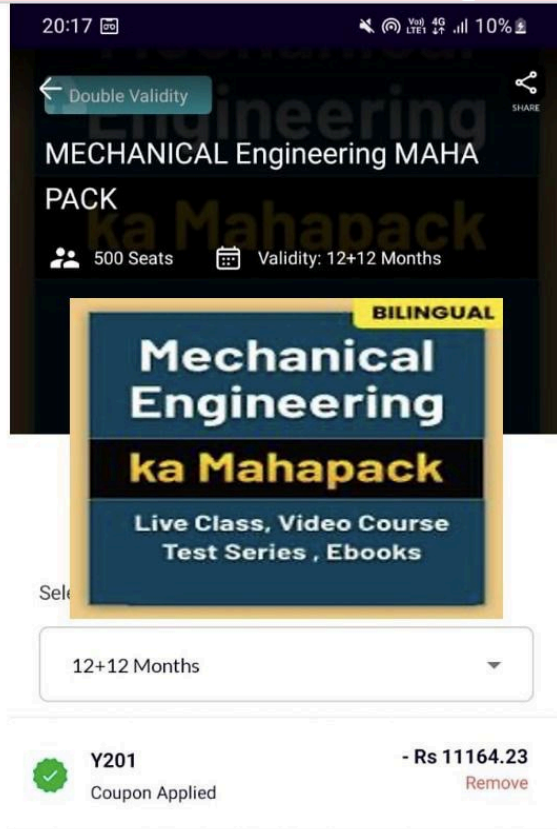
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**Which of the following can be used for power transmission in intersecting shafts.**

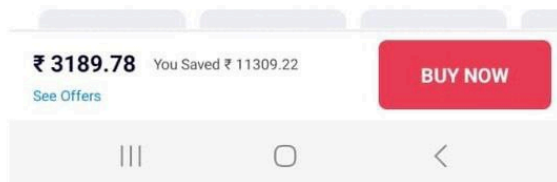
- a) Spur Gear**
- b) Helical Gear**
- c) Bevel Gear**
- d) None of the listed**

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