**FIDE- AKWUOBI ANTHONY CHIZALU**

**17/ENG06/037**

**MECHANICAL ENGINEERING**

**300 LVL MEE 312**

1. **(a) Comparison of Flywheel and Governors**

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| **Flywheel** | **Governor** |
| The flywheel is a device used to smoothen out fluctuations in the cyclic energy by storing excess energy and releasing when needed | The Governor is used to maintain a constant mean speed of the engine through linkages by adjusting energy input after engine speed changes due to load variation |
| It is a rotating component | It is a non-rotating component |
| It is a large part of the machine | It is much smaller than the flywheel |
| Its moment of inertia is very large | It has a small moment of inertia |
| It works with energy output from engine | It works with energy input to the engine |
| It doesn’t control fuel supply | It controls fuel supply |
| Has no control over engine’s mean speed | Has no control over engine’s cyclic speed |

**(b) Mechanical Feedback Control System**

**(c) Comparison of Centrifugal and Inertia governors**

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| --- | --- |
| **Centrifugal** | **Inertia** |
| Its response is slower than the inertia governors | Quicker response than the centrifugal governor |
| Easier to balance the revolving parts | Difficult to balance revolving parts |
| Only centrifugal force is in action here | Both centrifugal and inertial force are in action |
| Less sensitive compared to the inertia governor | More sensitive than the centrifugal governor |
| More common in use | Less common than the centrifugal governor |

1. **Why is the Watt Governor rarely used?**

* It cannot be used in horizontal positions.
* They lose sensitivity at high speeds therefore they cannot be used in high speed engines.
* It is not as accurate as the other governors.

1. **In what respect is the Porter governor better than the Watt governor?**

It possesses an additional downward force as the central load attached to the sleeve. This helps increase the speed of rotation of the fly balls therefore it can be used in engines of higher speed than the watt governors.

1. **For IC engines, which is preferable; Dead weight or Spring Controlled governors? Give reasons**

**The Spring Controlled Governors because:**

* **They are more accurate because the tension in the spring balances the centrifugal force finely. The stability can be adjusted by increasing the spring’s stiffness.**
* **Their speed ranges can be adjusted by calibrating the spring.**