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**COURSE: MECHANICS OF MACHINE II (MEE 312)**

**MATRIC NO: 17/ENG06/001**

**ASSIGNMENT**

**SAQ 1**

1a) Compare Flywheel and governor

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| **FLYWHEEL** | **GOVERNOR** |
| **Flywheel does not regulate speed i.e. it does not control the variation in speed during different variation of loads. It helps in reducing the fluctuations only.** | **Governor regulates the mean speed of the running machine during the various loading conditions. It has no control on the cyclic fluctuations.** |
| **It is a heavy mass rotating wheel attached to the crank shaft which is used to control the fluctuations of speed during different cyclic operations.** | **It is kind of mechanism which is used to maintain the constant speed during various loading conditions.** |
| **The flywheel is always mechanically operated and attached to the crank shaft. The flywheel and crank shaft rotate simultaneously.** | **Governor is also a mechanical device but sometimes it may be electronically operated.** |
| **Flywheel reduces fluctuation in engines.****It is used in IC engines of automobiles, punching press and rolling mills etc.** | **Governor is required where constant speed should be maintained for example turbines and generators etc.** |
| **The flywheel is always under operation when the engine is in running condition as it is attached with the crank shaft.** | **The operation of governor comes into play when the engine is not running at its mean speed.** |

1b) Which type of control the governor system is?

 **i) Gravity controlled centrifugal governors**

 **ii) Spring controlled centrifugal governors**

1c) Compare centrifugal governors with inertia governors

|  |  |
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| **CENTRIFUGAL GOVERNORS** | **INERTIA GOVERNORS** |
| **Operation depends on change in speed and centrifugal force on governor balls** | **Operation of this governor is controlled by force of angular acceleration and retardation of spindle.** |
| **Only centrifugal force is controlling action** | **Both centrifugal force and inertia force are in action** |
| **Less sensitivity when compared to inertia governors** | **Highly sensitive to varying load** |
| **Slower response than that of inertia governors** | **Reaction of inertia governor is faster than that of centrifugal governors** |
| **This type is more frequently used** | **They aren’t popular.** |

**SAQ 2**

2) Why watt governor is very rarely used? Give reasons

 **i) Watt governors are limited to vertical position applications.**

 **ii) It’s used in very slow engine speed at higher speeds, sensitivity decreases.**

**SAQ 3**

3) In which respect is Porter governor better than Watt governor?

 **Porter Governor is a type of the Centrifugal Governor with an additional central load on the sleeve to increase the speed of the balls required to lift the sleeve on the spindle. This enables the governor to operate the mechanism to give necessary change in the fuel supply. So that we can use this Porter Governor for much higher engine speeds than the watt Governor.**

**SAQ 4**

4) For IC engines, which type of governor will you prefer, whether the dead weight type or spring controlled type? Give reasons.

**i) Spring controlled centrifugal governors because, they work with an inclined axis of rotation,**

**ii) Their speed range can be changed from the initial setting of the spring.**

**iii) They are designed to operate at high speeds and they are comparatively smaller in size to the dead weight type**