



Review Paper 1 on System Reliability

1. Anti-friction bearing failure is classified as:
 - a) Wear Out failure
 - b) Early Failure
 - c) Random Failure
 - d) All of the above

2. Condition Monitoring techniques are best suited for:
 - a) Age related failures
 - b) Random failures
 - c) Failures that are more frequent
 - d) Failures that cause costly breakdowns

3. Of all the failures that take place in a plant:
 - a) 70 to 90% of them are age related and are best treated by Preventive Maintenance
 - b) 70 to 90% of them are random in nature
 - c) 70 to 90% of them are frequent in nature
 - d) Don't know

4. If the average age of failure of a component is around 10 months, the frequency of monitoring would be around:
 - a) 15 days
 - b) 30 days
 - c) 45 days
 - d) 60 days

5. By visual monitoring we would be able to cover around
 - a) 20% of all failure modes
 - b) 40 % of all failure modes
 - c) 60 % of all failure modes
 - d) 80 % of all failure modes

6. Availability of a system might be defined as:
 - a) MTBF/ Total working hours
 - b) MTBF/MTTR
 - c) MTBF/(MTBF + MTTR)
 - d) Downtime/Uptime



7. We observe two events: 1) extensive and erratic power cuts across the country 2) number of pending cases in the country are rising. We may now say that these two events are:

- a) Have no bearing on each other or independent of each other
- b) Are connected to each other
- c) One is the cause of the other
- d) All of the above

8. Every day in the plant a certain operation takes place during a certain time. And on each occasion the operation is delayed due to some problem or the other in a particular system. We may now improve the situation by:

- a) Carefully carrying out Preventive Maintenance on the particular unit/system
- b) Carefully plan for implementing Condition Based Maintenance
- c) Carefully study the system and the problems and then implement appropriate design modifications
- d) Carefully study the maintenance activities and improve the efficiency of the maintenance crew so that the jobs might be completed in a shorter period of time.

9. When a dramatic change happens in the output, we should:

- a) Closely study the phenomenon at the output end
- b) Study the changes that have taken place in the process
- c) Study the changes that have taken place in the inputs
- d) Check if it happens again before we decide to take action

10. It is observed that there are a lot of leakages in the hydraulic system all over the place. The most probable reason would be:

- a) The cylinders got worn out
- b) The seals got damaged or inferior quality has been supplied
- c) The viscosity of the hydraulic oil has increased
- d) The viscosity of the hydraulic oil has decreased

11. While tightening a nut and bolt:

- a) 70 to 80% of the effort goes in overcoming friction
- b) 20 to 30% of the effort goes in overcoming friction
- c) 70 to 80% of the effort goes in providing the right torque for tightening
- d) 90% of the effort goes in overcoming the friction and only 10% is utilized for the real tightening mechanism

12. It is observed that electrical and electronic components in a plant are failing in considerable number after they have been in operation for certain years. The most possible reason is:

- a) Aging has taken place and the components are to be replaced.
- b) Quality of overall maintenance of the electrical department is poor
- c) The events are random in nature
- d) The selection of the components might have been wrong in places.