Answer the following questions:

(5 Marks)

Q#1:

(a). What are the purposes of lubrication?

(b). Design the lubrication plan for lathe machine:

Part name	Method of lubrication	Lubricant	Interval of lubrication
Electric motor			
Carriage			
Tailstock			
Power screw			
Main gear box			
Feed gear box			
Slideways			

(15 Marks)

Q#2:

(a). What is the troubleshooting and what the troubleshooting aids?

(b). What is the maintenance and what are the factors estimate the performance of the maintenance function?

(C). Compare in details between the following maintenance strategies:

	Basic	Activities	Advantages	Disadvantages	Application
Repair maintenance					
Predictive maintenance					
Preventive maintenance					
Reliability centered maintenance					

(10 Marks)

Q#3:

NDT as predictive maintenance activities plays an important part in plant maintenance use the following form to compare between these activities:

NDT	Basic	Uses	Advantages	Dis-advantages	Examples
Infra-Red					
Magnetic particles					
X-ray					
Vibration analysis					
Liquid penetrate					
Ultrasonic					

Allowed Table (None)

This exam measures ILOS no:($a_1,a_5,a_6,a_{19}b_2,b_6,b_9,c_5,c_6,c_{18},d_1$)

Answer all the following Questions

Question(4)   (10marks)

1) Explain with sketch and examples:-
2)   Vibration monitoring
3)   Vibration analysis
4) 1-Misalignment and bent shaft detection
5) Factor affecting Isolation
6) Overall level.
7) -Detection a bearing defect in high frequency range.

Question (5)   (10marks)

Vibration or noise carry dynamic information relating to exciting forces
and   condition of them according to this expression explain why
vibration are useful in early fault detection in mechanical system.

Question (6)   (10marks)

a)-How do determine system characteristics of tractor from resonance
curve when a transducer records a vertical r.m.s acceleration of ($3m/sec^2$)
at 8 Hz, would this Level be desirable for operator? Why? calculate the
amplitude in dB.

b) Give short account on:

- Balancing quality chart.

- Vector diagram for balancing experiment.