PAPER: TATA MOTORS PLACEMENT PAPER (THERMAL MECHANICAL)

TML conducts test for thermal mechanical. And electrical people. some of the mechanical questions I am writing here .there will be no Aptitude test. with 25% -ve marking. its a 50 questions test for 1 hour. i won't list the options. some of the questions are:

1. What is the poison's ratio?

2. When boiler bursts, whom u would inform?

3. Modular ratio?

4. Envelope of damped free vibration?

5. A ball with a mass M is falling on to the ground with some velocity V1 and raising with velocity V2 . find the impulse?

6. Contd.. for 5th problem. When time of contact is given then force exerted on the ground.

7. two masses are connecting with string on to pulley coefficient of friction of mass m1 is given and also m1 and m2 are given. Find the relation b/n m1 and m2 , to make m2 move downwards

8. In a damped free excitation system maximum amplitude occurs

1. before resonance b. after resonance

9. Questions on set screws?

10. A four bar link mechanism is given with moment m acting on crank and also a force given at crank end. Find the reaction at hinged end of crank.

11. Deflection due to self weight of a uniform rod of diameter D and unit density and length is given .

12. The type of key used in wrist watch?

13. Bending stress is proportional to….? Ans). Section modulus

14. The hypoid gears are …. Ans). Non intersecting non parallel gears.

15. Hollow cylinder of outer D0 is given find the diameter of solid cylinder for the same material and same torsion strength. ?

16. principle plane is ?

17. Two masses are resting on a inclined plane with 30 degree angle and the two masses are welded with weightless rod and coefficients of friction is given. Find the common acceleration of a two masses.

18. two masses are of different weights smaller one is placed on the bigger mass. If the force is force is acting on bigger mass given find the acceleration of smaller mass.

19. Stress on minor diameter of bolt when bolt is subjected to longitudinal force.

20. no of independent elastic constants required for isotropic material?

21. pitch of the bolt of 30 mm metric thread diameter is?

22. the ratio of natural frequency on earth to moon?

23. upper portion of set screw is given fig shown and asked which type of set screw is ?

24. Efficiency of screw jack formula?

25. which of the parts given is harder one?
                                   Ansa). inner case b) outer case like that?

26. Max efficiency of screw jack formula?

27. Given some c/s of diffirent types which is having more torsional strength ?

28. Max principle stress theory is valid for which material?

29. efficiency of reveted joints of different types has given which is having max efficiency ?

30. if the roots are real then which type of vibrations will occur in damped systems ?

31. problem on transmissibility ?

32. when the disc is rotating on which on man is standing at the edge then what is the possibility of increase in speed of the disc?   **A)**man moves towards center b) out ward?

33. what is the principle behind the collisions of ball ?which is related to Q.7 ? ans constant linear momentum.

34. Find the elongation of the bar due to self weight

35. Problem on the cantilever deflection

36. Problem on the two blocks connected by string one is on table and on is hanging from the pulley…mechanics' problem

37. Ratio of the tension of the band block breaks

38. max and normal efficiency of the power skew

39. what is monel metal

40. for which material max normal stress theory is used

41. efficiency of the riveted joints

42. coefficient of friction for the greased ball bearing

43. which key is used in wrist watch

44. bending stress is proportional to 1. directly/inversely proportional to section modulus

45. find the width of the strongest beam that can be cut of cylindrical log of wood whose diametre is 'd'

46. If the phi is friction angle then which of the following can not be the value of the tan(phi)   **a)** 0 **b)** 1 .5 mu etc.   **Ans is 0**

47. problem on the transmissibility …to calculate dynamic amplitude