

Here is the L&T ECC Placement Paper:

## **SECTION-1**

Mechanical aptitude

### **SET 1:**

1. Stroboscope is used for measuring?
  - A. rpm of the spur gear.
  - B. temprature calibration.
  - C. velocity of the reciprocating engine.
  - d. All the above.
  - e. None of the above.
2. Pneumatic pressure for industrial application?
3. Lathe bed is made of CI because?
4. Carbon is added to steel-to increase hardness
5. Guideways are hardened by which hardening method?
6. Carbon is added to engine parts to enhance——— property.
7. A metal has K temp gradient and 2K for another metal. If a hot fluid is passed through a pipe the pipe should be made up of
  - a. K inside, 2K outside.
  - b. 2K inside, K outside.
  - c. Any of the above.
  - d. None of the above.
8. Crowning of pulley is done for?
9. If temp increases viscosity of gas & liquid
10. Shear angle in press tool -to avoid burr, easy shear.
11. Hardening of shear face in press tool is to
12. Blank size is equal to size of punch in presswork.
13. Bending moment diagram for a UDL in cantilever beam.
  - a. Parabola.
  - b. Triangle.
  - c. Rectangle.
14. for uniform strength of beam condition req.
  - a) Depth constant, width increases.
  - b) Depth increases, width decreases.

- c) Both should be increases.
- d) All the above.
- e) None of the above.

15. M33\*2 bolt size refers

16. For this bolt and nut arrangement what type is suitable  
a.M6-6nos b.M8-4nos c.M10-2nos d.M12-1 .

17. Rupture stress is

18. If two springs of stiffness  $K_1$  &  $K_2$  is in series the equivalent stiffness is

19. Find out odd

- a. Oxy-acety
- b. Plasma arc
- c. Electron beam
- d. USM

20. butt welding

21. Welding employed for plastics

22. core prints

23. if carbon is added to petrol what happen

24. While machining does not require lubricant.

25. Dirty filter is changed in to cleaner filter What will happen to the air fuel ratio –in the case of carburetor.

26. internal keyway is machined by

27. Aircraft blades are produced by

- a. Casting
- b. Stretch forming
- c. Forging
- d. Bending.

28. when water hammer occurs in the case of welding? why?

29. No of cranks used in 6 cylinder engine

30. Which grade of CI has most shock absorbing and damping capacity

31. damper is a vibration (dissipater).

32. Piezometer is used to measure

- a) static pressure
- b) total pressure
- c) discharge]

33. which of the following is not a fusion welding

- a) spot welding.
- b) arc welding.
- c) Electron beam welding

34. besides any thickness 2 metals of different materials can be butt welded by

- a) by adjusting the initial gap.
- b) By adjusting the current, voltage.
- c) By adjusting the time of welding.

35. when pulley dia is doubled , width is kept constant , tension is kept constant key size should be

- a) Doubled in length.
- b) Doubled in depth.
- c) Both twice.

36. thermoplastics can be molded by

- a) Vacuum molding
- b) Compression molding
- c) Injection molding

37. A ..... WEIGHT AT SLOPE

B—— WEIGHT THAT IS HANGING  
FOR EQUILIBRIUM

- a) A comes down
- b) B comes down
- c) A&B oscillates.
- d) Remains at same.

38) Which load is safe for beam—————

- a) Point load.
- b) UDL locally.
- c) UDL fully.
- d) UVL.

39) For diesel engine which ratio is high?

- a) Compression ratio.
- b) Expansion ratio.

40) Washers are used for providing (bearing area).

- 41) Which has no differential(train).
- 42) Constituents of brass (alloy of copper and zinc).
- 43) Worm And worm wheels are used for— higher reduction.
- 44) Why in a condenser the pressure drops below vaccum turbine is tripped off(choice:c)
- 45) Fits will be based on—clerance between mating surface.
- 46)path traced by water particle flowing from an opening on the bottom of the container is ——  
Parabolic.

**SET 2:**

- 1) The path of jet discharging from bottom opening in a tank of water (parabola with its vertex at opening)
- 2)water hammer in pipes occur due to(heavy pressurisation of pipe)
- 3)specific speed of a pump(delivers unit discharge at unit head)
- 4)for small discharge at high pressure(reciprocating pump is preferred)
- 5)ultimate tensile stress of mild steel compared to ultimate compressive stress is(more)
- 6)rupture stress(load at breaking point/neck area)
- 7)moment diagram for cantilever beam carrying uniformly distributed load will be(parabolic)
- 8)moment of inertia of an area is always least with respect to(centroidal axis)
- 9)crowning on pulleys help(for automatic adjustment of belt position so that belt runs centrally)
- 10)mitre gears are same as (right angled bevel gears having same no.of teeth)
- 11)stress concentration is caused due to((d)all of above)
- 12)function of washer is(provide bearing area)
- 13)M33×2(metric threads of33mm O.D and 2mm pitch)
- 14)key used between shaft and pulley is made from(cold rolled mild steel bars)
- 15)hardness of steel depends on(shape7distribution of carbides in iron)

- 16)carbon steel is(an alloy of iron and carbon with varying quantities of Phosphorous& sulphur)
- 17)hardening of Machine tool guideways by(flame hardening)
- 18)carriage and tailstock are placed in(different guideways)
- 19)In welding,arc is too long due to(formation of globules in irregular pattern becoz of wandering of arc)
- 20)acetylene is stored in(liquid form)
- 21)purpose of riser is to(help feed casting until all solidification takes place)
- 22)core prints are used to(form set to support&hold core in place)
- 23)unlike materials as well as materials of different thickness can be butt welded by(control of presure&current)
- 24)galvanising is(process of coating of zn by hot dipping)
- 25)size of shaper is specified by(length of stroke)
- 26)hardness of wheel(or)grade of wheel refers to(strength of bond of wheel)
- 27)for grinding harder materials(softer grade is used)
- 28)dielectric medium in EDM is(kerosene)
- 29)electroplating requires(1)ac,2)dc,3)high frequency ac)
- 30)no cutting fluid is used in machining (C.I)
- 31)use of gap(snap)gauge
- 32)9.81 kgf=?newton
- 33)general gas eqn is( $pV=mRT$ )
- 34)carnot cycle has max. efficiency for(reversible engine)
- 35)fuel-air ratio in a petrol engine fitted with suction carburettor,operating with dirty air filter as compared to clean filter will be(higher)
- 36)In S.I engines ,air fuel ratio for idling speed is(1)lean,2)rich...)
- 37)use of piezometer

- 38) specific heat values for solid & liquid (one)
- 39) most ductile metal is (1) gold 2) steel 3) C.I 4) Al
- 40) aeroplane wings are made of
- 41) adv. of projection welding over spot welding
- 42) electrodes of resistance welding are made of (high strength & high conductivity)
- 43) AIRCRAFT GASTURBINE is made of (timken, haste & inconel alloys)
- 44) when a spring is cut into two, stiffness becomes
- 45) shear angle given in punch during piercing or punching operation is due to
- 46) worm gears used for (1) low redn speed 2) high rednspeed...)
- 47) helical gears are used (for noise redn)
- 48) mirror (image) is due to
- 49) hardest cutting tool material is (tungsten carbide)
- 50) fit is reqd due to (clearance between two mating parts)
- 51) damper is used for
- 52) Thickness ( $t=0.5\text{cm}$ ) shear dis= $7\text{cm}$  & tensiles tress= $400\text{kg/sq.cm}$  find force reqd in punch?

**SET 3:**

1. Why CI is used for most m/c tools (dampening).
2. Which of the following does not require cooling medium (CI).
3. Among the following which is most used for vibration and dampening (GCI).
4. Which gear has no axial thrust (herring borne)?
5. Which has no differential (train).
6. When C is deposited on engine piston, what happens?
7. Constituents of brass (alloy of copper and zinc).

8. In a sheet metal blanking process the dia of the blank is equal to —(dia of punch).
9. Fits will be based on (clearance bet mating parts).
10. C is added to a material why (to increase hardness).
11. Why in a condenser the pressure drops below vacuum turbine is tripped off (choice c).
12. Washers are used for providing (bearing area).
13. Constant enthalpy process (throttling).
14. Hardness of steel depends on (carbon).
15. If two springs of stiffness  $k_1$  and  $K_2$  is in series the equivalent stiffness is  $(k_1+k_2/k_1k_2)$ .
16. Which one will have uniform strength (choice a) width same depth varying. b) Depth same width varying. c) Width and depth vary proportionally. D) Any of the above. E) None of the above.
17. In a simple row 6 cylinder radial engine how many cranks will be there (1).
18. In which of the following work done is zero (all the above).
19. How internal keyway is made (broaching).
20. Screw threads are made (rolling).
21. In which instrument more measure is taken (outside micrometer).
22. Most common pressure range used for industrial applications (5 to 10 bar).
23. Worm gears are used for (high reduction ratios).
24. Ni is added to CI to increase ... (toughness).

## **SECTION 2**

Mechanical comprehension

Basically 4 types

- 1) asked to find the gear direction of rotation given the driver rotation
- 2) Minimum effort to lift the load given different types of mechanisms
- 3) Speed of the gear rotation

4) Water flowing from a channel  
All were diagrammatic.  
8-10 questions from pulleys, gears, and shafts.

### **SECTION 3**

Non-verbal reasoning

These were for picture puzzles:

This part is the easiest of all. You can easily solve it in less than 30 minutes. Certain sequence of

8 pictures will be given and u will be asked to find the 9th one, u will have 8 choices.  
You can easily solve the first 20-25 questions and others are little difficult.

### **GD topics:**

1. Should Managers Be Good Technical Personnel?
2. Indian Technical Professionals Wish To Merely Set Up A Career Abroad.
3. Are Indians Less Quality Conscious?
4. Brain drain.