1. The composition of chromel alloy used in thermocouple is .............
   a. 30% nickel and 70% chromium.
   b. 50% nickel and 50% chromium.
   c. 60% nickel and 40% chromium.
   d. 90% nickel and 10% chromium.
   e. None of these.

2. During age-hardening of duralumin alloys .......... Compound is formed
   a. Cu₂Al
   b. CuAl₂
   c. Cu₃Al₂
   d. Cu₂Al₃
   e. None of these.

3. The common high speed steel is sometimes also called ............ Steel.
   a. 14 :3:2
   b. 18 :4:1
   c. 18:4:2
   d. 16:4:2

4. The teeth of spur gear are hardened by ..............
   a. Cold working
   b. quenching
   c. Dispersion hardening
   d. induction hardening
   e. None of these.
5. (50-70) % copper and (30-40) % lead alloy is used in the manufacture of ........
   a. Electrical insulator
   b. bearings
   c. Cartridge cases
   d. conveyor roller
   e. None of these.

6. The steel, which contains, more than 0.8 per cent carbon is called ........ Steel.
   a. hypo-eutectoid
   b. hyper-eutectoid
   c. Eutectoid
   d. none of these.

7. If a 0.6 percent carbon steel is slowly cooled from 900 C to room temperature, the microstructure will contain ............... Phase.
   a. Pearlite
   b. austenite
   c. Ferrite and austenite
   d. ferrite and cementite
   e. None of these.

8. In iron-carbon equilibrium diagram ............. represent peritectic point.
   a. 4.3% carbon and 1130°C
   b. 6.67% carbon and 1130°C
   c. 0.18% carbon and 1492°C
   d. 0.8% carbon and 723°C
   e. None of these.

9. At room temperature, cast iron containing 4.3% carbon contains only ............ Phase.
   a. Ferrite
   b. pearlite
   c. Ledeburite
   d. bainite
   e. None of these.

10. The carburizing of steel ............. Is not done.
    a. Gears.
    b. Cam.
    c. Piston gears.
    d. Ingot.
11. The suitable case hardening process for alloy steels containing chromium, molybdenum is ...........
   a. Induction hardening.
   b. Resistance hardening.
   c. carburizing
   d. Nit riding
   e. cyaniding
12. Electro- deposition of base metal, from its aqueous solution of salt is impossible, because base metal is ......
   a. Chemically inert
   b. more reactive
   c. Readily oxidized
   d. of low melting point.
13. In electro-polishing, the specimen behaves as ........
    a. Anode.
    b. Cathode.
    c. Neither anode nor cathode.
14. In pack carburizing, we use ........ To impart carbon.
    a. Methane gas
    b. Fused bath of sodium cyanide and barium chloride
    c. Hardwood charcoal
    d. Carbon mono – oxide gas.
15. Carburization in steel takes place, most rapidly above ..... Temperature, because above it, the solubility of carbon in steel is maximum.
    a. Ac₀
    b. Ac₁
    c. Ac₂
    d. Ac₃
16. ........ Steels are more corrosion resistant and have high endurance limit.
    a. Carburized
    b. cyanided
    c. Nitride.
17. The following is the example of uniform corrosion:
    a. Cracking of a pipe in the soil
    b. Perforation of a water pipe
    c. Rusting of a steel tank in air
    d. Leakage of water pipe by corrosion
18. The following reaction occurs in the pit cavity:
   a. \(2\text{H}_2\text{O} + \text{O}_2 + 4e^- \rightarrow 4\text{OH}^-\)
   b. \(\text{Fe}^{2+} + 2e^- \rightarrow \text{Fe}\)
   c. \(\text{Fe} \rightarrow \text{Fe}^{2+} + 2e\)
   d. \(2\text{H}^+ + 2e^- \rightarrow \text{H}_2\)

19. As the time elapses, corrosion velocity in an object ..... 
   a. Increases
   b. decreases
   c. remains constant.

20. Corrosion takes place because ..........
   a. it a natural phenomenon
   b. Increase in free energy of the reaction takes place
   c. corrosion products are more stable than the metal themselves
   d. We don’t take proper care during metal extraction
   e. None of these.

21. ........ Has the highest corrosion resistance in the atmospheric air, among the following:
   a. Iron
   b. Mild steel
   c. Aluminium
   d. Copper.

22. Polymers with a large elastic strain are
   a. thermosets
   b. thermoplasts
   c. elastomer
   d. trans polymer

23. Several common rubbers have the composition of \(\text{C}_4\text{H}_5\text{R}\). The \text{R} of butadiene is
   a. \(\text{CH}_3\)
   b. \(\text{H}\)
   c. \(\text{Cl}\)
   d. \(\text{OH}\)

24. The elastic modulus of an oriented polymer is __________ elastic modulus of an amorphous polymer.
   a. Lesser than
   b. equal to
   c. higher than
25. High-density polyethylene (HDPE) has higher values of ______ than LDPE.
   a. Transparency
   a. impact toughness
   b. crystallinity
   c. permeability

26. Phenol and Formaldehyde are polymerized to a resultant product known as
   a. PVC.
   b. Bakelite.
   c. Polyester.
   d. Teflon.

27. The dielectric constant of air is practically taken as
   a. more than unity.
   b. Unity.
   c. less than unity.
   d. Zero.

28. n-type semiconductor is an example of
   a. Extrinsic semiconductor.
   b. Intrinsic semiconductor.
   c. Super conductor.
   d. Insulators...

29. What is the type of bonding in silicon?
   a. Ionic.
   b. Covalent.
   c. Metallic.
   d. Ionic + Metallic

30. Mica is a
   a. Dielectric material.
   b. Insulating material.
   c. Magnetic material.
   d. Both insulating and dielectric material.

31. The main constituents of glass is
   a. SiO₂
   b. B₂O₃
   c. Al₂O₃
   d. Cr₂O₃
32. Micanite is a form of
   a. Built up mica.
   b. Hydrated potassium aluminium silicate.
   c. Magnesium mica.
   d. Calcium mica.

33. The fatigue strength of a specimen having smooth surface is ........... That having rough surface.
   a. higher than
   b. lower than
   c. equal to

34. The tertiary stage of creep generally occurs ............
   a. At low stresses and low temperatures.
   b. At low stresses and high temperatures.
   c. At high stresses and low temperatures.
   d. At high stresses and high temperatures.
   e. At any stress and temperature.

35. Intergranular fracture occurs mostly ............
   a. At equi-cohesive temperature.
   b. Below equi-cohesive temperature.
   c. Above equi-cohesive temperature.
   d. At absolute zero.

36. Magnetic particle method is employed to detect ............
   a. Surface and sub-surface defects for objects of non-magnetic materials.
   b. Surface and sub-surface defects for objects of both non-magnetic and magnetic materials.
   c. Surface and sub-surface defects for objects of magnetic materials.
   d. Surface and interior defects of magnetic material objects.
   e. None of these.

37. The resolution of a microscope is ............
   a. The smallest distance that can be separately resolved.
   b. Expressed as number of lines per foot that can be resolved separately.
   c. Equal to half of numerical aperture of objective lens.
   d. Mean of the magnification of objective and eye-piece.
   e. None of these.
38. The hardness of metal sheet and strip material has been recommended to determine by .......... Test/tests.
   a. Only Rockwell hardness.
   b. Only Brinell hardness.
   c. Only Vickers pyramid hardness.
   d. Both Brinell and Vickers pyramid hardness.
   e. None of these.

39. In the jominy test, for the determination of ideal critical diameter, the Rockwell hardness number corresponding to 50 per cent martensite is ............
   a. 42
   b. 44
   c. 50
   d. 54

40. In a penetrant method, fluorescent penetrant is ........
   a. Applied to specimen at room temperature.
   b. Heated to about (50-60)°C and then applied to specimen.
   c. Heated to about 150°C and then applied to specimen.
   d. Applied to specimen, kept in a chamber, which is maintained at a temperature of 100°C.
   e. None of these.