



PCB Design and Technology, Surface Mount Technology, Solders & Soldering, Materials
Max Marks: 25
Time: 1 hour

Answer **ALL** questions.
Answer in the space provided below each question.
Each question carries 1 mark.

1. Some SMD *capacitors have a case form of 01005*. What are the dimensions of this capacitor?

2. A HDI *substrate has a 1-4-3 construction*. What does 1-4-3 mean?

3. Name three *etchants commonly used in the PWB industry*.

4. a. The black colored area in an Ag-halide photo tool *blocks UV light*.

True or False? _____

b. YAG laser *cannot drill copper* but can drill through a dielectric.

True or False? _____

5. FR-4 is a standard laminate material used in PCBs. What does ‘FR’ stand for?
Name the *key ingredient/element for the unique property*.



6. What do the following terms stand for?

a. B^2IT >>

b. *HASL* >>

7. a. A positive photo resist when exposed to UV light *becomes harder and insoluble in developer.*

True or False? _____

b. *Ni-SS metal foils* are normally used to make *stencils for solder paste printing.* *True or False?* _____

8. Mention *two points favoring aqueous developing* as compared to organic developing for photo resists.

9. List the *major steps in SMD assembly* process that employs wave soldering?
(*A simple single-sided TH assembly*)

1.

2.

3.

4.

5.

10. Name *two etch resists* for TH boards.



11. What is the *purpose of ‘flying probe test’* in finished PCBs?

12. There is a need to coat a *liquid dielectric on a copper plate to about 18 microns*. Which coating method or methods would you employ? Which gives more yields?

13. Platinum is used as the *catalyst for electroless process* in TH-PCBs?

True or False? _____

14. Copper needs to be protected from atmospheric oxidation after PCB fabrication. *Other than Sn-Pb what other surface protection* can you provide? Indicate thickness.

15. Why is *HSS drill bit not used in high-speed drilling* of copper-clad laminates-glass/epoxy based? What is your choice?

16. Itemize *four electrical properties* you would look for in a copper-clad laminate.



17. As a *manufacturer of PCBs*, is *etch factor* important? Why?

18. What is a *B-stage resin*?

19. What are the reasons for formation of epoxy '*smear*' in a through-hole?

20. What are the *standard thicknesses of copper-clad laminates* available in the market?

21. Name *two possible defects* expected in microvias of a HDI-PWB.

22. What do you mean by ROHS? Name one element under ROHS.



23. Name *two advantages of ‘mitring’* in your CAD.

24. Name *two substrate materials under the organic substrate category*: (other than epoxy)

a) _____

b) _____

25. Mention *two MERITS of a Diazo photo tool*.
