Wood Manufacturing & Finishing

Phase 6

Sample Test Questions & Model Answers

Question 1. List **four** safety precautions to be observed when using a slot morticer.

Answer 1. a) Clamps should be set to 3mm max above timber.
b) Clamps should never be in line with mortice / drill bit
c) Be aware of cycle and keep both tables free and clear
d) Adjust the feed speed as necessary for length of mortice and timber type

Question 2. What is the minimum width of tenon which can be produced on a round-end tenoner & what determines this?

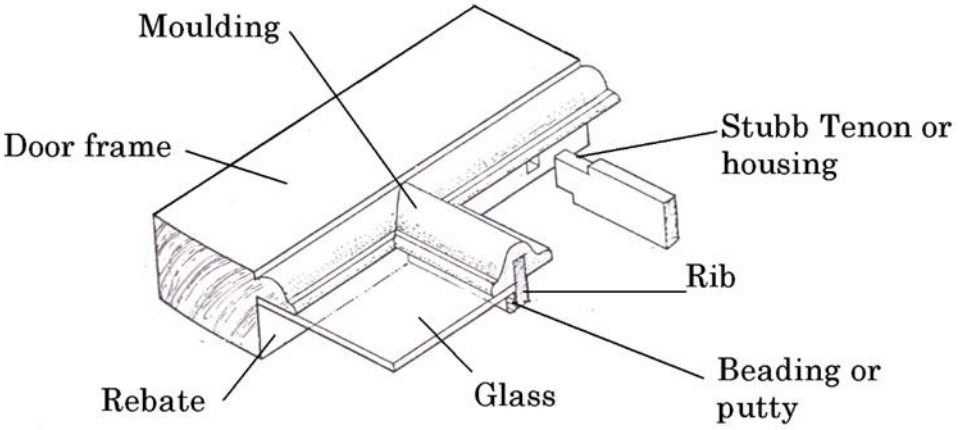
Answer 2. The minimum width of the tenon will be the tenon thickness as if you set the width from centre to centre as zero, the cylindrical cycle of the cutting head will leave the width of the tenon the same as the thickness, similar looking to a dowel.

Question 3. Explain how blisters could occur in the veneered top surface of an antique chest of drawers **and** describe how you would repair the veneered top.

Answer 3. Blisters can also occur if animal glue becomes damp or wet and veneer lifts. Blisters in antique work can usually be cut with a knife along the grain & re-laid using animal glue and a veneer hammer.

Question 4. Correctly name **five** of the **seven** labels below.

Answer 4. Five of the 7 labels correctly labelled other answers possible.



Question 5. Describe how you would repair a turned leg on an antique dining chair that has a lower section of the leg missing.

Answer 5. Cut the leg at a section like a bobbin, bead or block. Turn a replacement section and leave a long dowel at the top so that this can be inserted into the existing leg. Drill a hole and glue the dowel into the leg. Colour match to the rest of the leg.

Question 6. Give **three** general Health & Safety precautions that should be observed when spraying lacquer.

Answer 6. Wear proper respiratory mask to protect your eyes, nose and mouth.

Spray in a well ventilated room.

No naked flame.

Always check pressure valves and clocks when you first turn on the compressor.

Question 7. Draw any **two** of the following fittings and give an example of where they are used:

(a) Cut Cupboard Lock (b) Quadrant Stay (c) Soss Hinge

Answer 7.

(a) On a door or drawer Material is removed to fit lock flush.

(b) Bureau Flap to support the fall flap.

(c) Anywhere you don't want the hinge to be seen, card table.

Question 8. Briefly describe any **three** of the following stair terms:

Newel Post	The post at the junction of a flight of stairs with a landing or at the lower end of a string. Typically used to support the handrails.
Balustrade	The guarding to the side of a stairs – this is a combination of the balusters/spindles, together with handrail and newels.
Pitch	The angle formed by the stairs from the horizontal.
Tread	The horizontal member of the step. (Where the foot is placed)

Question 9. State **five** of the Building Regulations as they apply to a private stairs.

Answer 9. Any **five** correct

Regulation	**Private**
Pitch (degrees)	42 degrees max
Headroom	2 metres min.
Rise	220 mm max
Going	220 mm min.
Twice rise plus going (2R + G)	550 – 700 mm
Width (unobstructed)	800 mm min.
Handrail height(wall)	900 – 1000 mm
Handrail height(flight)	900 – 1000 mm
Handrail height(landing)	900 – 1100 mm

The rises and goings should all be the same in any one flight.
There should be no more than 16 risers in any one flight.
A sphere of 100mm diameter should not be able to pass through any point of the stairs.
If the width of the stairs exceeds 1m a second handrail is required.
Landing should be at least as great as the width of the stairs.
Top and bottom of stairs should be at least 400mm clear of door openings.

Question 10. Select a suitable going to comply with the 2R + G formula of a private stairs with a total rise of 2450mm. An optimum rise of 175mm is supplied.

Answer 10. Model Answer, correct method should prove whatever figures used.

2450 divided by 175 = 14 (14 risers needed 13 threads formula 2R + G = 550 – 700mm)

175 + 175 = 350mm Mid point 625

625 – 350 = 275 going

(Recheck formula 175 + 175 +275 = 625mm within regulations)

(Also check the pitch is less than 42°)

Tan A = $\frac{\text{Rise}}{\text{Going}}$ Tan A = $\frac{175}{275}$ Tan A = 0.6363 A = Tan^{-1} 0.6363
A = 32.47°

Question 11. €12,500 was invested at compound interest for 3 years. The first year rate was 4.5% The second year rate was 4% The third year rate was 3.5%. • Calculate the final amount and the interest earned.

Answer 11. Model Answer, correct method.

	€	
Invest	12500.00	
+4.5%	562.50	
Yr1	13062.50	
+4%	522.50	€14,060.48 - €12500.00 = €1560.48
Yr2	13585.00	Interest = €1560.48
+3.5%	475.48	
Yr3	14,060.48	Final amount= €14,060.48

Question 12. A builder estimates that for every € 2.25 he spends on materials he needs €3.75 for labour and € 0.75 for overheads. On a job costing a total of € 36,405 what is the amount of (a) overheads (b) labour (c) materials

Answer 12. Model Answer, correct method.

$\frac{3.75 : 2.25 : 0.75}{0.75}$ = 5 : 3 : 1 = 9 parts

€36,400 ÷ 9 = 4045

Overheads = 1 part 4045 x 1 = €4,045
Labour = 5 parts 4045 x 5 = €20,225
Materials = 3 parts 4045 x 3 = €12,135

Question 13. Calculate the percentage waste when 21 circular stool seats, 325mm in diameter, are cut from a sheet of MDF measuring 1.220m x 2.440m.

Formula for the area of a circle = πr^2

Formula for percentage waste = $\frac{\text{Waste} \times 100}{\text{Material}}$

Answer 13. Model Answer correct method.

Area of MDF sheet = 1.220 x 2.440 = 2.9768m²

Area of stool seat = 3.14 x 0.1625 x 0.1625 = 0.0829m²

Area of 21 stool seats = 0.0829 x 21 = 1.7409m²

Sheet Area - 21 stool seats = Waste

2.9768 - 1.7409 = 1.2359m²

Waste ÷ Sheet Area = Percentage waste

1.2359 ÷ 2.9768 = 0.415, 0.415 x 100 = 41.5%

Percentage waste = 41.5%

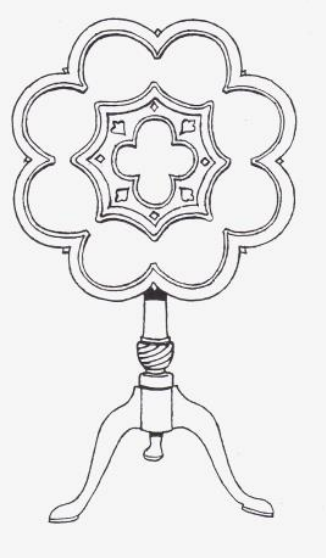
Question 14. Sketch one of the following items of furniture

a) Tilt Top Tripod Table

or

b) Writing Bureau Desk

Answer 14. Model Answer Sketch similar to either



Tilt Top Tripod Table

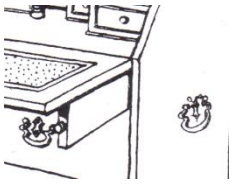
Writing Bureau Desk

Question 15. Explain what is the meant by the following Furniture Terms; Use sketches to support your answer.

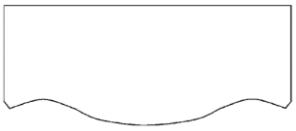
An overhung rail	Overhanging top rail on a chair.
A loper:	Support rail for a bureau flap.
A serpentine shaped top:	A snake shaped top.
A tambour door:	Door made up of timber slats glued to a canvas backing.

Answer 15. **3 out of 4 correct.**

An overhung rail



loper



Serpentine top

Tambour door

Question 16. Provide the Standard Sizes for the following in relation to Kitchens:

Answer 16. **3 out of 4 correct**

Maximum wall unit depth:	300mm
Height of worktop:	900mm
Depth of worktop:	600mm
Safe passing distance:	900mm

Question 17. Give **four** examples of edge-banding or lipping material that can be used on an edge banding machine.

Answer 17. Any 4 correct.

Veneer
Solid strips
Melamine or Paintable Melamine
Polypropylene edging (PP edging)
Acrylonitrile Butadiene Styrene (ABS edging)
Polymethyl methacrylate (PMMA)
Aluminium Edging

Question 18. Outline why baseboards are used when operating the CNC.

Answer 18. They allow you to machine through a workpiece without damaging the bed.

Question 19. You are faced with a Symantec error when running a CNC programme, explain what will happen next.

Answer 19. Similar model answer.

Usually, the post processor will not recognise the programme and will refuse to run. If it does run it will not be successfully, in that the computer will not generate any error messages, but it will not do the right thing. It will do something else. Specifically, it will do what you told it to do. For example, Positioning: The component is placed in a different position on the table than required.

Question 20. Outline what could occur if the correct speed is not selected when operating a CNC?

Answer 20. Similar model answer.

Too slow will cause burning as the cutter rubs against the material surface

Too fast will cause poor finish due to splintering and/or large pitch marks

Question 21. Briefly outline the advantages of using progressive jigs.

Answer 21. They allow for rapid machining due to accurate relocation from one stage to the next during the machining process, effectively running two machining operations, one directly after another each time.

Question 22. In relation to cutters provide the full name of the abbreviations below:

Answer 22. **2 out of 3 correct**

TCT	Tungsten Carbide Tip
HSS	High Speed Steel
PCD	Polycrystalline Diamond

Question 23 List **four** safety precautions that should be observed when setting up and operating a lathe.

Answer 23. Wear PPE, no loose clothing, long hair to be tied back.
Check timber for cracks and loose bark.
Ensure correct speed is selected.
Ensure tool rest is positioned close to workpiece.
Do not adjust the tool rest while the lathe is running.
Remove the tool rest while sanding and sand from underneath.

Question 24. In relation to surface finishes:

a) What finish consists of a mixture of shellac in methylated spirits?

b) What type of finish should be used on a salad bowl ?

c) What does the term “de nib” mean ?

d) When spraying lacquer, you sometimes get blooming, what is blooming?

Answer 24. **3 out of 4 correct**.

a) French polish.

b) A non-toxic finish like bee’s wax, olive oil etc.

c) The term ‘de nib’ is the fine sanding between coats of polish or lacquer.

d) If conditions are too damp and cold the lacquer gets a white clouded film on its surface that has to be sanded off before applying the next coat.

Question 25. Explain why blade tension is released after the band re-saw is shut down?

Answer 25.

When a saw has been running for a while, friction at the cutting edge causes heat generation, which in turn causes the saw to expand. At every shutdown however short, the blade tension should be completely released. This is important so the blade won’t be overloaded when cooling.

Question 26. Describe the **four** stages of the life cycle of the Common Furniture Beetle.

Answer 26. Similar answer or sketches correctly showing the lifecycle.

Stage 1: The Egg. The female beetle lays its eggs in cracks & crevices or old exit holes in the wood. After a few weeks the eggs hatch into worms or grubs.

Stage 2: The Larvae. The lava eats its way through the wood causing great damage. The grub can live in the wood for 2 to 3 years.

Stage 3: The Pupa. The lava bores its way to just under the surface and changes into a pupa or chrysalis. During this month it changes into a beetle.

Stage 4: The Beetle. The adult beetle bores its way out of the wood. It flies off to mate and lays eggs then dies. The cycle begins again.

Question 27. Describe Wet Rot and give an example of where you might find it.

Answer 27. Similar answer

It is a wood destroying fungus that attacks wet or very damp timber (usually above 40% moisture content). The affected wood becomes very moist and slimy. A white residue is sometimes present. Timber becomes darkened and can be soft and spongy. Paint or varnish flakes off.

Wet rot usually occurs outdoors, and it rots fence posts, logs, facias and soffits, window frames, doors etc. Internally it occurs around showers, sinks, floor joists etc. as a result of leaking water pipes, radiators, drains or gutters.

Question 28. Give **four** requirements of a good timber preservative?

Answer 28. **Any 4 correct**

It must be toxic to the fungi and insects, but safe to animals and humans.
It should be permanent & not liable to be bleached out by sunshine or leached out by rain.
It should be economical and easy to obtain.
It should not corrode or affect metal in any way.
It should be easy to handle and apply.
It should, as far as possible, be odourless.
It should not affect the subsequent finishing of the timber, for example, painting or polishing.
It should be non-flammable.

Question 29. Name **four** types of guarding that can be used on straight work on a spindle moulder.

Answer 29. **Any 3 correct**

1. False fence to enclose as much of the cutter as possible.
2. Shaw guards to create a tunnel where timber is fed through the tunnel.
3. Feather board to keep material tight against the fence and prevent kick back of material.
4. Automatic guards where material is feed through automatically.

Question 30. Explain why coolant must be directed on the tooling and not on the stone.

Answer 30. This is to keep the tooling cool / prevent overheating. If the tooling overheats it will become brittle and won't hold its edge very long.