

Advanced Construction Award (6313-13)

Sample Questions



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Core Questions

Sample Questions

- 1
 - a) Define what is meant by a hazard.
 - b) Identify from your own occupational area **one** activity on the risk assessment sheet provided (figure 1).
 - i) complete a risk assessment for the identified activity under the appropriate headings
 - ii) state the preventative measures recommended to reduce the risk to health and safety.
- 2
 - a) Identify **three** materials or components that may be delivered to site.
 - b) Describe briefly the factors which influence the type of storage needed for each.
- 3
 - a) Explain **two** main purposes of a method statement for planning construction work.
 - b) State **three** typical column headings found on a method statement and the information which would be needed to be included under **each** heading, when completing the method statement.
- 4
 - a) List **three** items of information that should always be included on a goods delivery note.
 - b) Describe the procedure for receiving goods when delivered to site.
 - c) Explain the procedure for recording damage when goods arrive at a site.
- 5
 - a) List **three** features of a critical path network for project planning.
 - b) Figure 2 below shows a critical path network. State by how much the work has overrun if the work was originally scheduled to take 91 days.

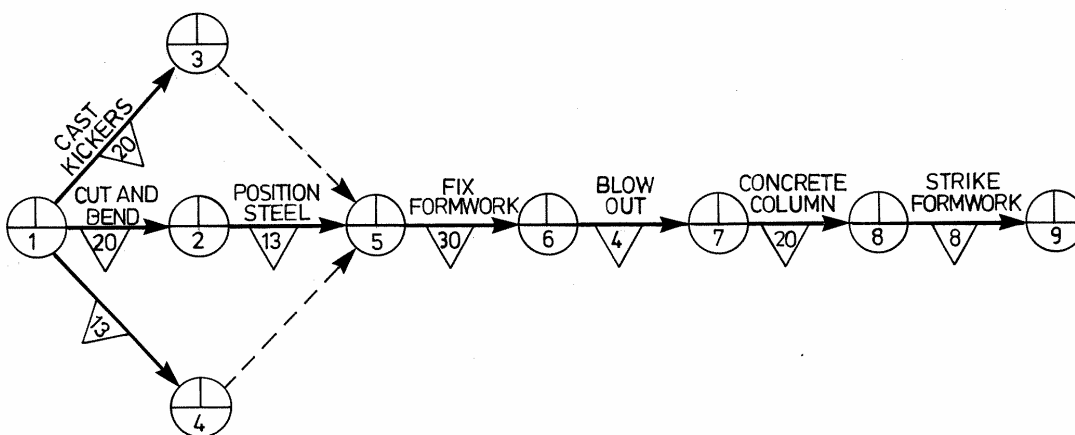


Figure 2

- 6 a) Construction plant can be hired or purchased. Explain **three** factors which have to be considered before ordering plant for a project.
- b) The price for a job has been worked out from the average output of a specialised item of hired plant, quoted by the manufacturer. Explain **two** features of the actual work which may significantly change the output of the machine, from that quoted.
- 7 Quantities of materials and goods are often delivered in 'house lots'. List **six** components which are suitable for delivery in 'house lots'.
- 8 Describe **three** skills which a buyer of materials for a construction project should have.
- 9 Explain the relationship between a specification for materials and components and the contract drawings for a project.
- 10 Identify **three** factors which may dictate the rate at which materials are delivered to a site.

AT THE END OF THE EXAMINATION, INSERT THIS SHEET IN YOUR ANSWER BOOK. IF A WRONG NUMBER IS GIVEN ANOTHER CANDIDATE MAY BE CREDITED WITH YOUR WORK.

RISK ASSESSMENT SHEET

Activity	Hazard(s) present	Risks involved	Likelihood of occurrence	Probable severity	Risk rating	No. and occupations of persons involved

Preventative measures

- Likelihood of occurrence
- 1. **Low (consistent with normal hazards of living)**
 - 2. **Below average**
 - 3. **Medium risk**
 - 4. **Above average**
 - 5. **High**
 - 6. **Not yet assessed**

- Probable severity
- 1. **No injury**
 - 2. **Slight injury-first aid required-no lost time**
 - 3. **Minor injury with less than 3 days off work**
 - 4. **Injury-more than 3 but less than 29 days off work**
 - 5. **Major injury-more than 30 days off work**
 - 6. **Permanent disability**
 - 7. **Fatal**

Figure 1

Answers to Sample Questions

- 1 a) Candidate must explain that the hazard causes a danger in the workplace through a specific activity taking place, resulting in a risk of injury to an operative and/or health and safety of others.
- b) Answer should be related to an identified activity from the candidate's occupational area (examples of hazard and risk are as follows)

e.g.

Trowel Occupations

Hazard: handling bagged cement (incorrect use of cutting tools)

Risk: skin infection e.g. dermatitis, alkaline burns.

Way in which hazard is minimised: wearing gloves.

Wood Occupations – site carpentry route

Hazard: handling and erecting trussed rafters.

Risk: falling from a height, manual handling injury, slipping.

Way in which hazard may be minimised: mechanised handling, suitable facilities for access and egress to the workplace e.g. scaffolding

Decorative Occupations – painting and decorating route

Hazard: using solvents in a confined space

Risk: asphyxiation, breathing difficulty, industrial asthma.

Way in which the hazard may be minimised: use of half masks, goggles, respirators, extract ventilation.

Stonemasonry route

Hazard: working at height (use of tools, handling excessive weights)

Risk: slipping, falling from a height.

Way in which the hazard may be minimised: use of appropriate access equipment, scaffolding, towers, harness and lanyard.

Roof slating and tiling

Hazard: replacing tiles/slate on a wet roof

Risk: slipping, falling from a height.

Way in which hazard can be minimised: use of appropriate access equipment e.g. roof ladder.

Plastering – solid work route

Hazard: handling bagged plaster.

Risk: skin infection e.g. dermatitis, alkaline burns.

Way in which the hazard may be minimised: wearing gloves.

Plastering – fibrous work route

Hazard: abrading fluted columns.

Risk: breathing in fine dust, inhalation of fibres, eye irritation.

Way in which hazard may be minimised: use of half masks, goggles, respirators.

- 2 a) Typical examples could include:
copper, cement, brick, plasterboard, roof trusses etc. (2 marks)
- b) Any **three** from the following:
monetary value of the material
likelihood of theft
durability of the material with respect to weather damage/deterioration
possibility of mechanical damage
volume of storage required
availability of space
frequency of access required
possible location to the point of use with examples as follows
- 3 a) Any **two** from the following:
outlines sequence of activities
identifies resource requirements
indicates planned duration of main site activities
preparatory work for the contract or works programme
- b) Any **three** from the following:
Operation: work activity e.g. outer skin of brickwork
Quantity: amount of work related to activity, e.g. m, m², m³ etc
Method: way in which the work will be done, e.g. 2/1 gang
Output: speed with which the work will be done
Gang Size: number of people needed to complete the activity
Gang Hours: total time needed for the activity/job.
Remarks: any other information related to activity, e.g. materials to be obtained from an approved supplier.
- 4 a) Any **three** from the following:
date delivered
quantity delivered
location of delivery (address)
material/component type (description of goods)
contract number/order number
sender details
- b) Checker enters delivery note details in to a Goods Received Book. All delivery tickets are entered and attached to the Goods Received Note. At the end of the month the checker will forward the delivery tickets, advice and consignment notes to the company accountant for payment.

- c) Checker should: verbally inform the driver of the damage; record the damage on the goods received note; inform head office/contracts manager/site agent; place damaged goods on one side or return (any **two** points).
- 5 a) Any **three** from the following:
time allocation for an activity
activity duration
numbered events in sequence
dummies
different routes from start to finish
earliest/latest start/finish
- b) Scheduled 91 days
Work taken 95 days
Over-run by 4 days
- 6 a) Any **three** of the following:
is the plant required for continuous use or only short periods of time
total cost of hiring and purchase
provision of operator (or not)
responsibilities for repairs and maintenance
insurances
certainty of having plant on side when required.
complexity of programming
cash flow provision of the company
minimum usage required to make outright purchase financially viable.
- b) Any **two** of the following:
work may be required in a confined space (restricted headroom etc)
breakdowns, repairs, maintenance requirements greater than expected
inexperience of the operatives using the plant (training may be needed)
work not undertaken in exactly the same conditions that the manufacturer has estimated.
- 7 Any **six** from the following:
windows
door frames and linings
trussed rafters and associated ironmongery
architraves, skirtings
kitchen units
sanitary ware
or other valid components
- 8 Any **three** of the following:
purchase materials at the most competitive price
purchase materials of the correct specified quality
purchase the correct quantity
purchase the right materials at the right time
purchase from the right supplier (specification for work may dictate this).

- 9 Specification describes in words what the drawings show in pictures. Both contract documents identify minimum acceptable qualities of materials and workmanship for the work.
- 10 Any **three** from the following:
availability of site storage areas
reliability of supplier
rate of consumption
effects on work if materials are not available for use
cash flow of company (avoidance of long storage time)
avoidance of possible double handling
available plant for unloading.

Trowel - Bricklaying (6313-300)

Sample Questions

- 1 State the Regulations which control the use of the following during site operations
 - a) brick cleaning acids
 - b) portable power tools
 - c) working at heights
 - d) movement of loads by human effort.

- 2 Describe briefly what safety action should be taken when using an electric masonry bench saw (brick cutter) with a diamond edged blade in the following situations.
 - a) Before the blade is to be mounted
 - b) Sparks are emitted from the blade whilst cutting
 - c) If an electrical fire starts, what type of fire extinguisher should be used.

- 3 A half-brick thick boundary wall is to be erected to a height of 2.000 m around a dwelling. The foundations to the wall are to be built in sulphate bearing soils and the mortar used for the superstructure walling is a coloured sand and lime pre-mix. State
 - a) which type of cement should be specified for use in the foundations
 - b) which type of bricks should be used as a rigid damp proof course
 - c) what the maximum spacing between the attached piers should be
 - d) the minimum overhang of the scaffold boards if a trestle scaffold is to be erected to aid completion.

- 4
 - a) State the next operation that should be undertaken when setting out a building with the frontage line established.
 - b) A rectangular building has been set with a length of 10.000 m and a width of 8.000 m. State what the diagonals should measure, to the nearest 10 mm, to ensure squareness.

- 5 Complete the bonding arrangement in figure 1 below for courses A and B. All spacings are quarter of a brick.

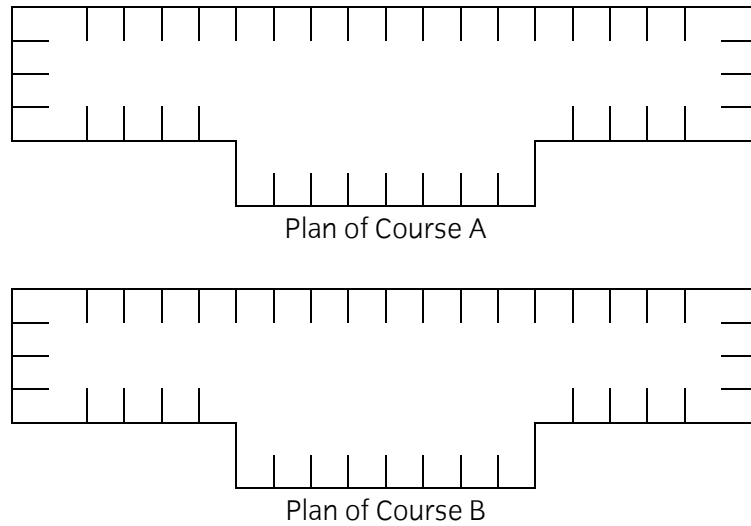


Figure 1

- 6 a) State the purpose of vermiculite concrete used as infill at the rear of a fireplace fireback.
- b) The Building Regulations stipulate minimum heights that chimney stacks should be constructed. State the minimum heights of the chimney stacks shown in figures 2 and 3 below.

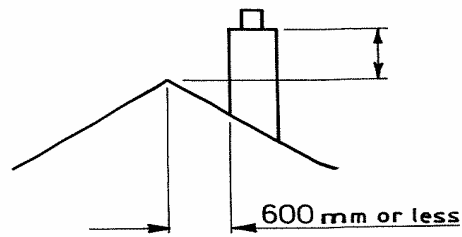


Figure 2

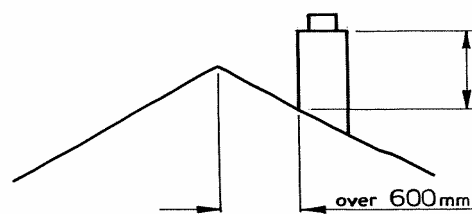


Figure 3

- 7 a) State why a bricklayer should rake out the bed joints on each side of a chimney stack parallel with the incline of the roof.
 b) Insert the positions of the front apron, and the horizontal DPC that it is linked with, to the chimney stack shown in figure 4.

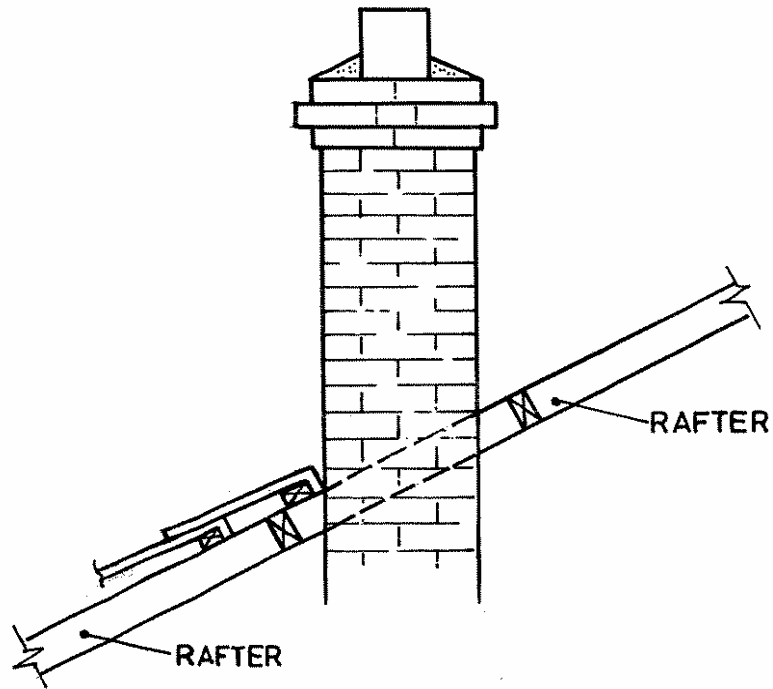


Figure 4

- 8 a) State what constructional aid would be used to determine the cutting to the lower half of the arch when constructing a bulls-eye arch.
 b) State which tool would be used to space out the voussoir positions on the bulls-eye arch.
- 9 a) State how many key bricks should be incorporated into an axed bulls-eye arch.
 b) Name the setting out aid shown in figure 5 below.

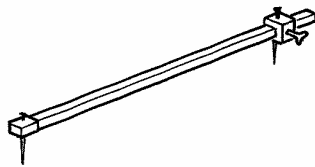


Figure 5

- c) State what constructional aid is used to determine the shape of the voussoirs.
 d) State what should be used to radiate the voussoirs during construction of an axed arch.

- 10 Calculate what the staff reading would be at X in figure 6 below if a level reading taken at the TBM (A) is 1.25 m and a reduced level at B of 7.25 m is required.

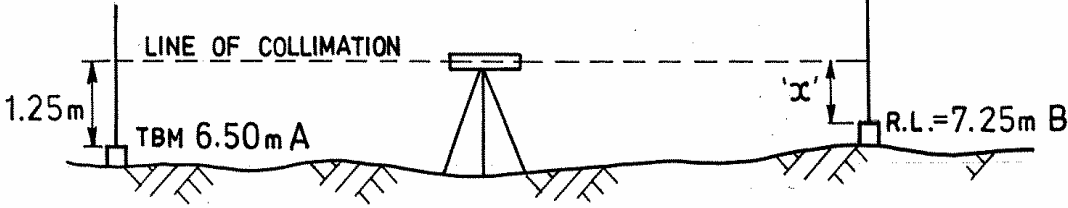


Figure 6

Answers to Sample Questions

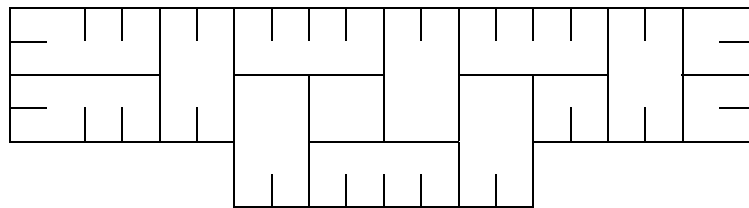
- 1 a) Control of Substances Hazardous to Health (COSHH)
 b) Provision and Use of Work Equipment Regulations (PUWER)
 c) Working at Height Regulations
 d) Manual Handling Regulations.

- 2 a) Isolate the machine
 b) Switch off and increase water supply
 c) CO₂ or powder

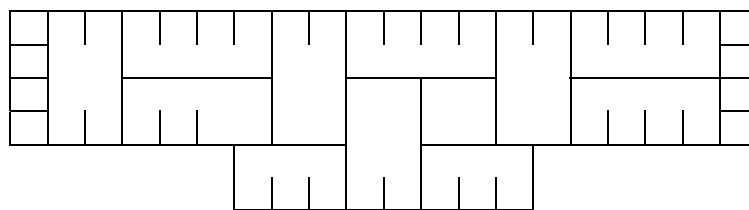
- 3 a) Sulphate resisting cement
 b) Engineering bricks
 c) 3 m to centre
 d) Four times the thickness.

- 4 a) Establish and set out the main setting out quoin/quarter
 b) $10 \times 10 + 8 \times 8 = 164$

5



Plan of Course A



Plan of Course B

- 6 a) To allow for any expansion when the fireback gets hot.
 b) Fig 6 = 6.600 mm; Fig 7 = 71.00 mm
- 7 a) To allow for the lead flashings (soakers) to be fixed into.
 b) 1 mark for apron inserted under DPC, 1 mark for correct height of DPC
- 8 a) A trammel
 b) Dividers.
- 9 a) Four.
 b) Trammel heads/rod.

- c) Template.
- d) Building line.

10 $6.50 \text{ m} + 1.25 \text{ m} = 7.75 \text{ m}$
 $7.75 \text{ m} - 7.25 \text{ m} = 0.50 \text{ m}$

Wood Occupations – Site Carpentry (6313-301)

Sample Questions

- 1
 - a) Explain why during the installation of second fixing components on site, all operatives **must** understand and work to appropriate Health and Safety legislation.
 - b) Name the Government body which has the power to close a site on Health and Safety grounds.

- 2 List **four** relevant safety precautions that should be followed when installing first and second fixings.

- 3 State timber components used to
 - a) cover the joints between door linings and plaster
 - b) cover the joints between walls and floors
 - c) provide hanging support for pictures
 - d) protect walls from chair backs.

- 4 List **four** precautions which **must** be taken when manually lifting materials and components on site.

- 5 Explain briefly a reason for
 - a) knowing the weight of sliding doors before purchasing appropriate door gear
 - b) fitting a third butt hinge close to the top of a door
 - c) identifying the position of the lock block in a flush door
 - d) fitting falling butts to toilet doors.

- 6 Identify where the following are normally found on roofs.
 - a) Back gutters.
 - b) Verges.
 - c) Valleys.
 - d) Eaves.

- 7 Explain briefly why
 - a) careful checks should be carried-out before drilling or fixing into any plastered surfaces
 - b) positions for notches or cut-outs in floor joists **must** conform with current Building Regulations.

- 8 Sketch **each** of the following terms.
 - a) 'Cupping' to floor boards in relation to annual rings.
 - b) 'Waney edge' on cladding materials.
 - c) 'Arris knots' on softwood.
 - d) 'Bowling' on lengths of timber.

- 9 Explain briefly **four** essential considerations when installing a new floor mounted wood machine.

- 10 Describe briefly the function of **each** of the following on a floor mounted circular rip saw.
- a) Riving knife
 - b) Isolator.

Answers to Sample Questions

- 1
 - a) Ensures all operatives are working safely and are protected by the relevant legislation if an accident should occur.
 - b) Health and Safety Executive.

- 2 Any **four** from the following:
Ensure hand and power tools are safe to use
Work area is clean and tidy
Access equipment is available and safe to use
Personal Protective Equipment (PPE) is available for use
Appropriate first aid facilities/equipment are available if required
All operatives are aware of company onsite regulations

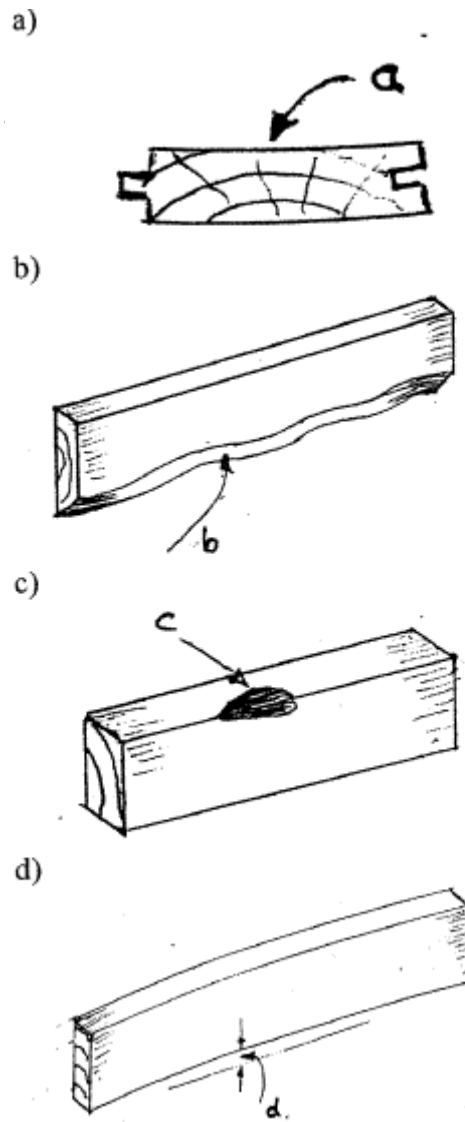
- 3
 - a) Architraves
 - b) Skirting boards
 - c) Picture rails
 - d) Dado rails

- 4 Any **four** from the following:
Ensure area is clear of obstacles and waste materials
Correct position for lifting must be used, ie back straight, knees bent
Seek assistance whenever possible
Do not lift above waist height
Protect hands and feet by wearing appropriate PPE
Place items; do not drop them into place

- 5
 - a) To ensure the gear will adequately and continuously support the weight.
 - b) Gives additional support to heavy doors and/or holds the door together in the event of serious fire.
 - c) To ensure the door is hung on the right edge and lock and furniture correctly fitted.
 - d) To keep doors in an open position when not in use.

- 6
 - a) Behind chimneys or walls.
 - b) At the gable ends of a pitched roof which has gable ends or side of flat roof.
 - c) Internal junction of a roof surface
 - d) At the bottom of a pitched roof where the gutters and fascia are fitted.

- 7
 - a) To ensure live services ie electric/water are not concealed within the surfaces.
 - b) To ensure the joists are not adversely weakened.



- 9 Any **four** from the following:
 Placed in a safe and practical position
 Securely bolted or attached to the floor
 Floor should not have a non-slip surface
 Must be installed by qualified personnel
 All service tools and attachments stored close to machine.
- 10 a) Keeps the two sawn pieces apart and prevents the timber from pinching on the sides of the blade.
 b) All large floor or bench mounted machines should be fitted with isolators, enabling the operator to safely carry out servicing after the machine is isolated and without affecting the performance of other machines.

Decorative - Painting & Decorating (6313-302)

Sample Questions

- 1 State where the relevant technical information could be obtained for
 - a) preparatory treatment for a given substrate
 - b) suitable paint system for a given substrate
 - c) recommended spreading rate
 - d) risk assessment prior to using proprietary oil glaze.

- 2 Identify a suitable coating for a
 - a) wood primer with anti-bleed properties
 - b) metal primer suitable for galvanized steel
 - c) finishing paint suitable for an exterior timber substrate.

- 3 The internal walls in a commercial kitchen previously decorated with oil paint are in good condition but there is grease and mould present.
 - a) Outline the process for washing the internal walls 'to a finish'.
 - b) State the reason for this chosen method.
 - c) State what would be the **most** suitable cleaning material.
 - d) State how the mould should be treated.
 - e) State what personal protective equipment (PPE) should be used when carrying out the above tasks.

- 4 A room measures 4 metres long by 3 metres wide by 2.5 metres high.
 - a) Calculate the total area of the ceiling and walls.
 - b) Calculate the quantity of emulsion paint required for two coats to ceiling and walls if one litre covers 15m².

- 5 Identify the paint defect from the paint description below.
 - a) Undercoat showing through finishing coat.
 - b) Failure to keep a wet edge when applying eggshell.
 - c) Failure to brush out gloss on a vertical surface.
 - d) Gloss applied too thickly on a window sill.

- 6 From figure 1 below use the key to identify the correct sequence for glossing a four panelled door commencing with 3 panels/mouldings.

Key

- 1 top rail
- 2 bottom rail
- 3 panels/mouldings
- 4 muntins
- 5 stiles
- 6 middle or lock rail

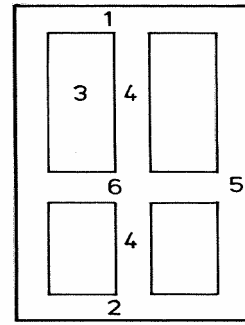


Figure 1

- 7
- a) State **two** stages of preparation before hanging a finishing paper when repairing an oil painted gloss surface in good condition.
 - b) State **two** materials that are applied to sound porous surfaces to help reduce excessive absorption, improve adhesion and give slip and slide to wallpaper.
- 8 State the likely paperhanging defect or result of the following actions
- a) not allowing sufficient soaking time before hanging the paper or covering
 - b) allowing different soaking times for different lengths
 - c) heavy over use of a seam roller.
- 9 State a graining tool or brush for carrying out each of the following graining processes
- a) blending and softening oil graining
 - b) initial spreading of graining colour
 - c) producing pores in brushed grained oak
 - d) used with a clean rag for wiping out figure of oak
 - e) blending and softening water graining.
- 10
- a) State the **two** forms in which gold leaf can be obtained.
 - b) Describe briefly the condition of a painted surface which would be ideal for gilding.
 - c) State what material should be applied to adhere a leaf metal to a painted surface.

Answers to Sample Questions

- 1
 - a) B.S. 6150; specification; paint can; manufacturers' information
 - b) specification; product information
 - c) product information; paint can
 - d) manufacturers' data sheets, paint can

- 2
 - a) aluminium wood primer
 - b) etch primer; acrylic metal primer; mordant solution
 - c) alkyd gloss paint; MVP; exterior wood stains

- 3
 - a) Work from the bottom upwards and rinse from the top down
 - b) To prevent streaks being left on the wall
 - c) Sugar soap/detergent
 - d) Fungicidal wash
 - e) Eye protection; rubber gloves; overalls

- 4
 - a) Walls perimeter = $4+3+4+3 = 14 \text{ m} \times 2.5 \text{ m} = 35 \text{ m}^2$
Ceiling = $4 \text{ m} \times 3 \text{ m} = 12 \text{ m}^2$
Total area to paint = $35 \text{ m} + 12 \text{ m} = 47 \text{ m}^2$
 - b) Area $47 \text{ m}^2 \times 2 \text{ coats} = 94 \text{ m}^2$
 $94 \div 15 = 6.26 \text{ litres (7 litres)}$
1 x 5 litre
1 x 2.5 litre

- 5
 - a) grinning
 - b) flashing/sheariness/fat edge or wet edge build
 - c) runs/sags/curtains
 - d) wrinkling/rivelling/shrivelling

- 6
 - 3 – Panels/mouldings
 - 4 – muntins
 - 1 – top rail
 - 6 – middle or lock rail
 - 2 – bottom rail
 - 5 – stiles

- 7 a) abrade surface to remove gloss finish; size and crosslined.
b) Any **two** of the following:
glue size
thinned paste (starch ether/cellulose)
hot and cold starch
primer sealer
alkaline resisting primer
- 8 a) blisters/overlaps
b) blistering/overlaps/mismatching
c) polishing of joints/paste staining/flattening of emboss
- 9 a) blending and softening oil graining
b) initial spreading of graining colour
c) producing pores in brushed grained oak
d) used with a clean rag for wiping out figure of oak
e) blending and softening water graining
- 10 a) loose; transfer
b) smooth/non-absorbent/grease-free
c) gold size/mordant

Plastering – Solid Work (6313-306)

Sample Questions

- 1 State when manual handling of materials should be carried out.
- 2
 - a) State **two** functions of a lightweight aggregate.
 - b) State the **two** commonly used lightweight aggregates that are used in premixed lightweight gypsum plasters.
- 3
 - a) Describe briefly the qualities of a sand suitable for plastering.
 - b) State **two** faults that could occur if an unsuitable sand is used.
- 4 Describe with the aid of a sketch how the side laps and wall joints to brickwork are carried out when fixing diamond shaped EML.
- 5 Describe with the aid of a sketch how the first two pairs of dots are applied at the top and bottom of a wall which is 3.000 m long and 2.400 m high. The wall is to be floated in the plumb, dot and screed method and has good adhesion and suction.
- 6 State the materials, thickness and mix proportions required for the butter coat when applying pebbledash or dry dash.
- 7
 - a) State the purpose of a renderstop or bellcast bead.
 - b) List **two** possible locations for a renderstop or bellcast bead.
- 8 Calculate the volume of mixed material to render a wall 6.500 m in length and 3.150 m in height with an average thickness of 20 mm. Deduct one window 1.200 m wide and 1.000 m high. The height to DPC is 150 mm and is not rendered.
- 9 State why an independent tied scaffold is preferred for external rendering.
- 10
 - a) Sketch a basic in-situ running mould.
 - b) List the **four** main components of a basic in-situ running mould.

Answers to Sample Questions

- 1 When it is safe to do so.
- 2 a) To improve thermal properties
Bulk out mix
b) Exfoliated vermiculite
Expanded perlite
- 3 a) Clean
Free from impurities
Well graded
b) Any **two** of:
Plaster mix would not bind together and adhere to the surface
Finished surface may crack and shrink
Finished surface may crumble and flake.
- 4 Metal lapped 25mm and wired at 150mm c/c (2 marks)
Metal turned on to brickwork with 75mm lap and fixed (2 marks)
- 5 The wall is checked for high spots (1 mark) then small dots are placed approximately 150mm from the ceiling at either end (1 mark). At the base of the wall about 150mm from the floor and directly below the first dots, further dots are bedded (1 mark) and plumbed into place by use of a plumb rule, level or gauges and line (1 mark).
- 6 One part Ordinary Portland Cement (OPC) (2 marks)
One part hydrated lime (1 mark)
Six parts sand (1 mark)
- 7 a) To direct water away from the face of the wall. (2 marks)
b) Any **two** of: (2 marks)
Above doorways
Windows
Damp proof courses
Plinths
- 8 Length of wall: 6.500 m
Rendered height: 3.150 m-0.150 m =3.000 m
Gross area: 6.500 m x 3.00 m = 19.5 m²
Window: 1.200 m x 1.000 m = 1.2 m²
Net area: 19.5 m² – 1.2 m² =18.3 m²

Volume of material: 18.3 m² x 0.020 m² = 0.366 m³

Correct answer and working 4 marks

Correct answer with no working or wrong working 2 marks

Mistake in working leading to slight mistake in answer 1 mark
No working with wrong answer 0 marks

9 It is preferred because the use of a putlog scaffold may result in unsightly piercings or patches as the putlogs are removed during finishing. (four marks)

- 10 a) Mark scheme
Diagram correct 2 marks
Diagram mainly correct with some flaws 1 mark
Major problems with diagram or not attempted 0 marks
- b) Stock
Horse
Brace or handle
Profile

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