

Answers Exam Production of Aerospace Systems

Code: AE2207

Friday, July 5, 2013

Multiple Choice Questions

- | | | |
|----|---|---|
| 1 | 4 | D |
| 2 | 4 | B |
| 3 | 4 | C |
| 4 | 4 | A |
| 5 | 4 | B |
| 6 | 4 | C |
| 7 | 4 | B |
| 8 | 4 | C |
| 9 | 4 | C |
| 10 | 4 | C |

Open Questions

- | | | | |
|----|----|----|---|
| 11 | a. | 3 | Drilling (rotating tool, feed in axial direction, fixed work piece),
Milling (rotating tool, feed in transverse direction, fixed wp)
Turning (steady tool, rotating work piece)
Machining: Chip removal by sharp cutting tools; not shearing |
| | b. | 2 | Rake, tool and flank/release/clearance angle |
| | c. | 3 | Rake angle: should preferably positive – else high forces
Tool angle: not too small – breaking; not too high – high forces
Flank angle: positive but small; spring back & friction & wear |
| | d. | 4 | Hard materials – special tooling materials needed
Abrasive materials – abrasive resistant tools needed
Delamination |
| 12 | a. | 2 | sand casting |
| | b. | 4 | riser: overflow (see is cavity is filled)/reserve for cooling down
runner: hole to pour the metal in
gate; channel from runner to product; flow control
core: insert to create cavity |
| | c. | 3 | small; non reusable die |
| | d. | 3 | draft angles; slope with vertical lines for easy removal of product |
| 13 | a. | 4 | size, work share, risk share, different materials, accessibility, |
| | b. | 4. | manufacturing divisions; division lines for easy manufacturing
mounting divisions: division lines for operational reasons
manu: permanent joints, all joints possible;
moun.: removable joints or hinges; bolts (and sometimes rivets) |
| | c. | 3. | local thickness increase; reinforcement; (joint materials) |
| 14 | a. | 4 | Rivet shear; sheet bearing, sheet net section, sheet shear out |
| | b. | 4 | solid rivets: squeezing, normal tolerances, reasonable forces, cheap
hi-loks: close fit; high tolerance; high forces; expensive, composites |
| | c. | 3 | E.g. increase rivet pitch; decrease rivet diameter; increase overlap; |

- 15 a. 3 Learning curve: decreasing time needed for next products; experience
Repetitive; exponential
- b. 4 Part manufacture: batch production, cell organization or work force;
storage; workshop, no fixed locations
Assembly line: one by one production; stations; same work force;
Delivery interval, fixed sequence
- c. 3 BEP: AC at which: all costs = all revenues
16. a. 3 injection moulding = casting with pressure; flow of plastic
Not filament winding – short fibres
Not rubber forming - - thermoplastic paste
Not die casting – too high viscosity
- b. 3 No, because injection moulding is the only feasible option
- c. 3 Large series, because you can depreciate costs over more products

Total points = 105

MC = 40

Open = 65