Exam Production of Aerospace Systems

Date: Tuesday, April 14, 9.00-12.00; 2C Rooms 1 and 2

Multiple Choice Questions

(1 alternative per question – 3 points per MC question)

1	**B**
2	**A**
3	**C**
4	**B**
5	**C**
6	**B**
7	**D**
8	**B**
9	**A**
10	**C or D**
11	**C**
12	**B**
13	**B**
14	**A**
15	**C**

Open Questions

(4 points each sub-question)

Question 16

a) Higher complexity, non-releasable shapes, one mould for each product, …
b) Sand casting (large, simple, steel); lost die/investment/lost wax casting (specific alloys, complex parts, details)
c) Draft angles, no significant thickness variations, releasability,….

Question 17

a) Shear forces acting on slip planes, movement of dislocations
b) Elastic deformations like springs (atomic distances increase slightly) – “stretching”
c) Spring back, creating a difference between part an tool geometry, tool design
d) No, they don’t deform (just solidify).

Question 18

a) Process control: product control after every step; product control: end control of product
b) Check of materials used; check on working conditions, in-situ check during lay-up; check on curing parameters; product control afterwards; LDS; Witness specimen
c) AA set the rules, checks (audit); certifies

Question 19

a) pfracture is ultimate bearing strength; p¬2% is related to ovalisation (yielding)
b) $p_{fracture}$ = 800 MPa (smallest); because $p_{2\%}$ should be multiplied by 1.5 (1.5 x 600 MPa = 900 MPa)

Question 20

a) Filament winding, fibre placement, pultrusion
b) Press forming processes (Like compression moulding)

10:	93 – 101
9,5	88 - 92
9	84 – 87
8,5	79 - 83
8	74 - 78
7,5	69 - 73
7	65 - 68
6,5	60 - 64
6	55 - 59
5,5	50 - 54
5	46 - 49
4,5	41 -45
4	36 -40
3,5	31- 35
3	27 -30
2,5	22 -26
2	17-21