

Mark Scheme (Results)

June 2012

Principal Learning

Engineering
EG301 Paper 01

Investigating Engineering Business
and the Environment

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

SECTION A

Question Number	Answer	Mark
1	B	(1)

Question Number	Answer	Mark
2	A	(1)

Question Number	Answer	Mark
3	D	(1)

Question Number	Answer	Mark
4	C	(1)

Question Number	Answer	Mark
5	C	(1)

Question Number	Answer	Mark
6	C	(1)

Question Number	Answer	Mark
7	B	(1)

Question Number	Answer	Mark
8	A	(1)

Question Number	Answer	Mark
9	A	(1)

Question Number	Answer	Mark
10	C	(1)

Question Number	Answer	Mark
11	B	(1)

Question Number	Answer	Mark
12	A	(1)

Question Number	Answer	Mark
13	B	(1)

Question Number	Answer	Mark
14	D	(1)

Question Number	Answer	Mark
15	B	(1)

Question Number	Answer	Mark
16	D	(1)

Question Number	Answer	Mark
17	A	(1)

Question Number	Answer	Mark
18	C	(1)

Question Number	Answer	Mark
19	B	(1)

Question Number	Answer	Mark
20	D	(1)

SECTION B

Question Number	Answer	Mark
21	<p>Accept any one of the following:</p> <p>Advantage</p> <ul style="list-style-type: none"> • Lower import prices of materials (1) • Lower rate of inflation (1) • Cheaper labour if using offshore manufacturing (1) <p>Disadvantage</p> <p>DO NOT ACCEPT THE OPPOSITE OF THE ADVANTAGE GIVEN</p> <ul style="list-style-type: none"> • Imported competitive products are cheaper (1) • Higher export prices (1) • Overseas customers may buy from other foreign supplier (1) 	(2)

Question Number	Answer	Mark
22	<p>Any four of the following:</p> <ul style="list-style-type: none"> • Reference to capacity (1) • Reference to capability (1) • Competitor activity (1) • Funds available (1) • Market share (1) • Stakeholder expectations (1) • Labour market (1) • depends on skills available in the company (1) • capability can be limited by knowledge (1) • changes to designers can influence capability (1) 	(4)

Question Number	Answer	Mark
23	<p>1 mark identification, 1 mark expansion (x 2)</p> <ul style="list-style-type: none"> • Machinery must be maintained to specified standards (1) to check it is safe to be used/PAT testing (1) • Make sure fluids/oil/coolant are full (1) and not leaking (1) • To keep the machinery well maintained (1) to make sure all features are working (1) • Safety guards (1)/emergency stop are working correctly (1) • To identify maintenance (1)/replacement needs (1) • To gather statistical information about machine condition (1) to track machine capability (1) 	(4)

Question Number	Answer	Mark
24	Accept any four of the following: <ul style="list-style-type: none"> • Inventory is tracked through processes (1) • Finance is tied up in stock (1) • Investments need to be monitored (1) • Some items may need to be used within a certain timescale (1) • Ensures that materials/components are ordered when required (1) • Any shortages can be identified (1) • Can allow lean manufacturing systems to be implemented (1) • Aids forecasting of completion dates (1) • Allows handover within the production cycle/schedule (1) • Audit trail (1) • Can be used to give information about costs within the production cycle (1) 	(4)

Question Number	Answer	Mark
25(a)	Any two valid points available for full marks <ul style="list-style-type: none"> • A business which has operated for at least 2 years (1) • Will have a customer base (1) • Will have developed a reputation (1) • Good-will may have been established with customers/suppliers (1) 	(2)

Question Number	Answer	Mark
25(b)	1 mark for identification, 1 mark for expansion (x 2) <ul style="list-style-type: none"> • Ability to produce designs in house (1) depends on skills available in the company (1) • If skills do not exist (1), designs may need to be outsourced (1) • Capability can be limited by knowledge (1) change of designers can influence capability (1) • Number of design staff available (1) and number of design stations (CAD workstations) (1) 	(4)

SECTION C

Question Number		Indicative Content
26(a)		<ul style="list-style-type: none"> • Is there a market large enough to make a profit (1) • To identify the price ranges which customers are prepared to pay (1) • To identify which types of products are popular (1) • To consider customer requirements (1) • Allows target markets to be defined (1) • Products which are similar may have saturated the market (1) • The company may consider developing a product with different features (1) • Company can consider its own USP (1) • Customers may want features such as Bluetooth (1) • Should the product be compatible with similar products from other companies (1) • Enhanced materials/components may give a new product a competitive edge (1) • How intuitive is the competitors product to use (1) • How successful is the competitors product (1) • What makes their product successful (1) <p>Ensure answer is in context of competitor activity in the mobile phone market.</p>
Level	Mark	Descriptor
	0	No rewardable material
1	1-2	Simple statements considering carrying out market research and competitive products.
2	3-4	Additionally considers the success of other products and profitability of the new product.
3	5-6	A detailed consideration of the major factors such as consumer needs, existing products, why products are a success, features which consumers want.

Question Number		Indicative Content
26(b)		<p>Some comparison between sustainable materials and conventional materials required for full marks.</p> <ul style="list-style-type: none"> • Locally sourced (1) sustainable materials may have appropriate properties for the job (1) • There is less need for transport (1) compared to importing materials (1) • Construction projects are more sympathetic to the area (1) than a 'western' building (1) • Materials such as timber are readily available (1) compared to steel (1) • Locals are familiar with working with the materials (1) and can be employed on site (1) • The structures can be maintained more easily (1) compared to ones which use modern technologies (1) • Uses local sustainable materials (1) that could feature in Carbon offsetting (1) against the use of steel/other materials in the UK (1)
Level	Mark	Descriptor
	0	No rewardable material
1	1-2	Superficial consideration of materials and/or skills available, possibly design being in-keeping with the area.
2	3-4	Come comparison expected between local and western materials. Consideration of skills required to maintain.
3	5-6	A comparison of the local and western materials should consider availability, skills, transport, sustainability, and the fitness for purpose of western designs.

Question Number		Answer
27		<p>Span of Authority</p> <ul style="list-style-type: none"> • Enter and search premises (1) • Instruct that premises are undisturbed for investigations (1) • Take measurements/photographs/recordings (1) • Take samples of substances (1) • Dismantle/test articles which could cause danger (1) • Retain items for testing (1) • Interview any person (1) • Ask for/inspect documents (1) • Require space to carry out investigations (1) <p>Right of Inspection</p> <ul style="list-style-type: none"> • Inspect premises following an accident (1) • Identify the cause of an accident (1) • Advise on methods of accidents prevention (1) • Identify where health and safety laws have been broken (1) • Prosecute individuals/companies (1) • Issue prohibition/improvement notices (1) • Issue written/formal warnings (1)
Level	Mark	Descriptor
	0	No rewardable material
1	1-2	Very limited statements which could consider investigate incidents and inspect premises.
2	3-5	Some discussion about the roll of the HSE in investigations, prosecutions, warnings etc.
3	6-8	Should consider how the span of authority and right of inspection are linked, e.g. HSE has the right to enter any workplace to sample materials in order to complete an investigation with view to prosecuting a company.

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