

# Mark Scheme

Principal Learning

## EG301 Engineering Level 3 Unit 1: Investigating Engineering Business and the Environment

## SECTION A

Question Number	Answer	Mark
1	(ii)	(1)

Question Number	Answer	Mark
2	(iii)	(1)

Question Number	Answer	Mark
3	(iv)	(1)

Question Number	Answer	Mark
4	(iii)	(1)

Question Number	Answer	Mark
5	(iv)	(1)

Question Number	Answer	Mark
6	(iii)	(1)

Question Number	Answer	Mark
7	(iii)	(1)

Question Number	Answer	Mark
8	(iv)	(1)

Question Number	Answer	Mark
9	(iv)	(1)

Question Number	Answer	Mark
10	(i)	(1)

Question Number	Answer	Mark
11	(iii)	(1)

Question Number	Answer	Mark
12	(iii)	(1)

Question Number	Answer	Mark
13	(i)	(1)

Question Number	Answer	Mark
14	(iv)	(1)

Question Number	Answer	Mark
15	(i)	(1)

Question Number	Answer	Mark
16	(iii)	(1)

Question Number	Answer	Mark
17	(iv)	(1)

Question Number	Answer	Mark
18	(iii)	(1)

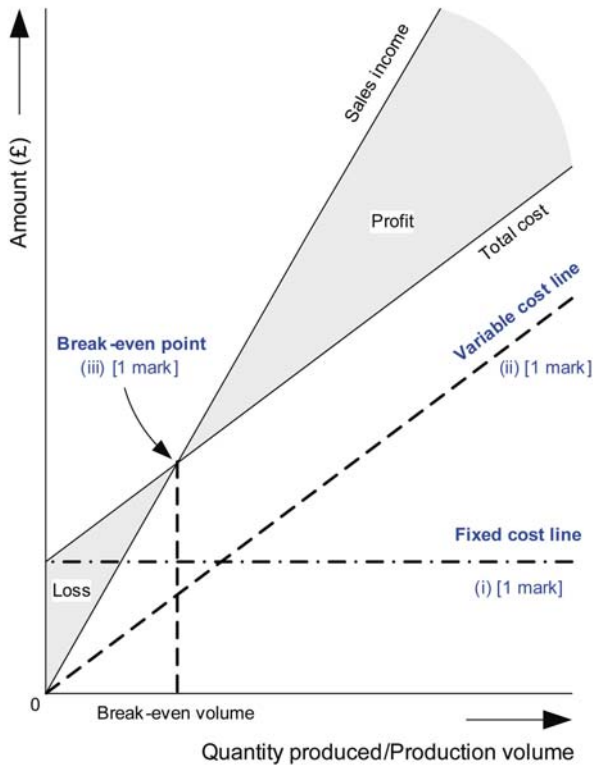
Question Number	Answer	Mark
19	(ii)	(1)

Question Number	Answer	Mark
20	(iv)	(1)

## SECTION B

Question Number	Answer	Mark
21	<p>Three different engineering functions should be listed together with three examples of information that the function requires for its normal day-to-day operation.</p> <p>Any three from: <u>Engineering Function</u></p> <ul style="list-style-type: none"> <li>• Production or manufacturing</li> <li>• Quality assurance</li> <li>• Research and development</li> <li>• Product support/maintenance</li> <li>• Technical sales</li> <li>• Or other appropriate</li> </ul> <p><u>Information used</u></p> <ul style="list-style-type: none"> <li>• Process sheets or work instructions</li> <li>• Quality standards or quality manuals</li> <li>• Strategic plans or tactical plans</li> <li>• Service sheets or maintenance manuals</li> <li>• Specifications, data sheets or price lists</li> <li>• Or other appropriate</li> </ul> <p>One mark should be awarded for each function and a further one mark for an appropriate example of the information that it requires. No repeats permitted.</p>	(6)

Question Number	Answer	Mark
22	<p>The explanations should mention the following:</p> <p>GNP:</p> <p>Total annual value [1] of all goods and services [1] produced by a particular nation</p> <p>GDP:</p> <p>Total annual value of all goods and services produced within a particular country's borders [1] regardless of where the owners of those goods and services actually live [1].</p>	(4)

Question Number	Answer	Mark
23(a)	 <p>Break-even chart should show the features above.</p> <p>Axes correctly labelled [1]  Total cost line shown [1]  Income line shown [1]</p>	(3)

Question Number	Answer	Mark
23(b)	<p>Label the following features on your answer to (a):</p> <ul style="list-style-type: none"> <li>(i) fixed cost line</li> <li>(ii) variable cost line</li> <li>(iii) break-even point</li> </ul>	(3)

Question Number	Answer	Mark
24	<p>Answers should make reference to any of the legislation listed in the unit content. For example:</p> <p><u>Legislation:</u> Control of Substances Hazardous to Health (COSHH) [1]  <u>Control measures (1 mark for any of the following):</u>  You must not carry out work which could expose your employees to hazardous substances without first considering the risks and the necessary precautions. [1]  Or alternatively: You must prevent your employees being exposed to hazardous substances. [1]  Or alternatively: You must clearly label all hazardous substances (e.g. chemicals) and ensure that they are stored safely and securely.[1]</p> <p><u>Legislation:</u>  Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR) [1]  <u>Control measures (1 mark for any of the following):</u>  If there is an accident connected with work and your employee, or self-employed person working on the premises sustains a major injury, or a member of the public suffers an injury and is taken to hospital from the site of the accident, you must notify the enforcing authority without delay by telephoning or completing the appropriate forms [1]  Or alternatively: You must keep a record of any reportable injury, disease or dangerous occurrence. This must include the date and method of reporting; the date, time and place of the event; personal details of those involved; and a brief description of the nature of the event or disease [1]  Or alternatively: You must not carry out work which could expose your employees to hazardous substances without first considering the risks and the necessary precautions [1]  Or alternatively: You must prevent your employees being exposed to hazardous substances. [1]</p> <p>Or any other appropriate legislation responses.</p>	(4)

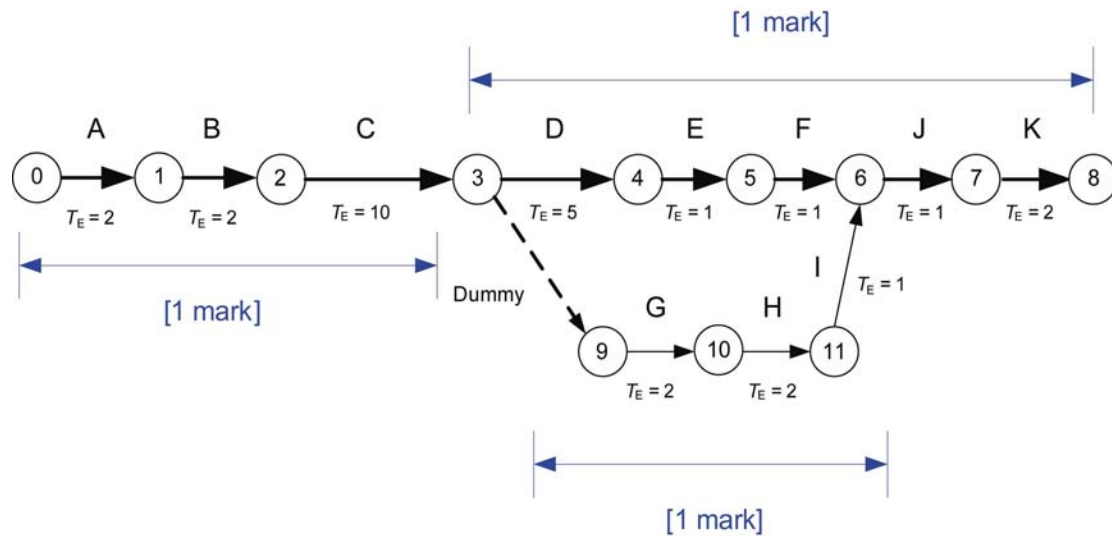
## SECTION C

Question Number	Answer	Mark
25(a)	<p>Advantages could include:</p> <p>Lower labour costs [1]            Access to expanding markets in China and the Pacific Rim [1]</p> <p>Disadvantages could include:</p> <p>Distance from the home (European) market and consequent increase in transport costs and carbon footprint [1]</p> <p>And any other appropriate answers.</p>	(3)

Question Number	Answer	Mark
25(b)	<p>Specialised defence projects tend to be one-off projects and may require short-term input from a number of specialists drawn from different departments within the company.</p> <p>Matrix structures are highly flexible and therefore well suited to the delivery of projects of this type. One disadvantage of this approach is the potential lack of commitment from contributing areas (who may have other priorities) and the need for skilled and effective project management.</p>	(2)

Question Number	Answer	Mark
25(c)	<p>The typical format and content of an engineering contract is as follows:</p> <p>Preliminary information:  DATE - the effective date of the contract  [CONTRACT NAME] - the name given to the contract</p> <p>- by and between -</p> <p>[BUYER NAME] - the name of the purchaser</p> <p>- and -</p> <p>[SELLER NAME] - the name of the company</p> <p>PRELIMINARY STATEMENT, DEFINITIONS AND INTERPRETATION</p> <p>Any one or more of the above [1]</p> <p>SCOPE OF CONTRACT - informs the company what the contract is about</p> <p>CONTRACT PRICE and arrangements for PAYMENT and DELIVERY - financial information (may also include information relating to local taxes)</p> <p>Any one or more of the above [1]</p> <p>4. Arrangements for INSTALLATION, COMMISSIONING AND ACCEPTANCE</p> <p>5. WARRANTIES - what assurances are given concerning the product or service</p> <p>6. TERMINATION, CONFIDENTIALITY and BREACH OF CONTRACT and arrangements for the SETTLEMENT OF DISPUTES</p> <p>Other SCHEDULES (e.g. DEFINITIONS AND INTERPRETATION) and ANNEXES providing further information relevant to the product or service.</p> <p>Any one or more of the above</p>	(3)

Question Number	Answer	Mark
25(d)	<p>Advantages could include:</p> <p>Reduced costs resulting from savings in employment costs and overheads</p> <p>Disadvantages could include:</p> <p>Dangers associated with dependence on other manufacturers/supplier</p> <p>or alternatively:</p> <p>Less control on quality and potential conformance issues</p>	(2)



Question Number	Answer	Mark
26(a)	identify critical path [1] identify dummy path [1] identify pre-manufacture [1]	(3)

Question Number	Answer	Mark
26(b)	24 days [2] Or 22 days [1]	(2)

Question Number	Answer	Mark
26(c)	Produce an accurate description of the activity (breaking it down into individual tasks) [1] Decide on the hazards that are associated with each task [1] Estimate the risk associated with each of these hazards [1]  or alternatively: Assess each risk under the headings of high', 'medium' and 'low' [1]  or alternatively: Decide on what measures should be adopted to control these risks (starting with the 'high' category first). [1]	(3)

Question Number	Answer	Mark
26(d)	Calculations should be based on: Total production cost = £300 + (£400 x 4) + (£450 x 4) + (£150 x 4) = £4,500 [1] Profit = income - total production cost = £8,000 - £4,500 = £3,500 [1]	(2)