

LOCATION: SWANSEA

LLEOLIAD: ABERTAWE

LEVEL 5

LEFEL 5

**EXAMINATION PERIOD
MAY 2020**

**CYFNOD ARHOLIADAU
2020**

**MODULE CODE:
M5X01176**

TIME: 2 HOURS

ALL CANDIDATES TO ANSWER QUESTION 1 IN SECTION A

**ALL BENG MECHANICAL, MECHANICAL & MANUFACTURING AND
EXTREME SPORTS CANDIDATES TO ANSWER ANY TWO
QUESTIONS FROM SECTION B (ANDREW THORN)**

**ALL BENG MOTORSPORT, MOTORCYCLE, AND AUTOMOTIVE
ENGINEERING CANDIDATES TO ANSWER ANY TWO QUESTIONS
FORM SECTION C (MARK SANDFORD)**

*Equipment or materials required – Calculators may be used
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Section A

Question 1

AddTi Ltd are considering investing in some additional tooling to enhance their business producing low volume complex titanium components using additive technology, for aerospace and motorsport companies. AddTi are considering two alternative approaches. Option A has an initial investment of £44,000 and option B has an initial investment of £33,000. The tooling for both options will be scrapped and have no value after 4 years. The finance department have calculated that the following cash flows can be expected for the 4 year duration of the projects.

Year	Project A (£)	Project B (£)
0	(44,000)	(33,000)
1	14,000	11,250
2	18,000	09,750
3	24,000	12,000
4	8,000	16,000

- a) Calculate the payback for each project in years and months **(4 marks)**
- b) Calculate the Annual Accounting Rate of Return for each project **(3 marks)**

Present Value Factors

Rate	12%	13%	14%	15%	16%	17%	18%	19%	20%
Year									
0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.636	0.613	0.592	0.572	0.552	0.543	0.516	0.499	0.482

- c) Calculate the Net Present Value for each project using a discount factor rate of 13%. **(7 marks)**
- d) Comment on your finding stating which project you would select. **(2 marks)**
- e) For Project A calculate the Internal Rate of Return to the nearest whole %. **(6 marks)**
- f) When making capital investment decisions evaluate two factors that should be considered as part of the decision-making process. **(3 marks)**

Section B

Question 2

Gambel Ltd is a well-established engineering company manufacturing gaskets and seals for use in valves and pumps predominantly. The company has a well-established workforce many of whom have worked for them for over 25 years. Attendance, holidays and sickness have been recorded manually by the relevant section supervisor and now the company wants to move to a new electronic system.

You have been employed by the company as the new factory manager and have been tasked with preparing a report as to why this change is needed and what issues will need to be considered to ensure that the change takes place smoothly.

(25 marks)

Question 3

Wellman Engineering Services Ltd are a key provider of maintenance, welding, fabrication and inspection services to your organization. Recently they have witnessed a 30% increase in their costs and have asked to meet with your organization to renegotiate the contract.

- a) Discuss in detail what issues should be addressed prior to entering into negotiations with Wellman Engineering Services.

(12 marks)

- b) Evaluate what tactics you could use in the negotiations giving reasons for your choice.

(13 marks)

Question 4

Highlift manufacturer materials handling equipment for warehousing applications.

- a) The company is manufacturing a new lift truck that sells for £42,000. The cost of materials and labour is taken as £28,000 per truck. Fixed costs are £600,000.

Calculate the break-even point and draw a break-even chart showing the current position.

(7 marks)

- b) Explain what is meant by the terms direct cost and indirect costs.

(3 marks)

- c) The company is also looking to develop a new range of robotic handling equipment. They currently have quite large debts and credit is poor. They need to raise £300,000 for the project to go ahead. Analyse what options the company has to finance the project giving reasons for choices.

(15 marks)

Section C

Question 5

Sponsorship is an important income stream for the arts and sport. In many cases it is the only effective income stream.

- a) Outline some types of sponsorship and what an organisation could hope to achieve by spending money on sponsorship.
(8 marks)
- b) You are joining a new Swansea based team about to enter the British Motorcycle Motorcross Championship. You have been asked to develop a strategy in order to gain sponsorship to fund the team in the next season. Describe your process and strategy to the team principal. (It would be appropriate to use the S.O.S.T.A.C model).
(9 marks)
- c) Explain how a sponsorship arrangement can be expanded to include other elements as part of the marketing mix.
(8 marks)

Question 6

Many motorsport team bosses describe team working as an essential ingredient of a successful motorsport company.

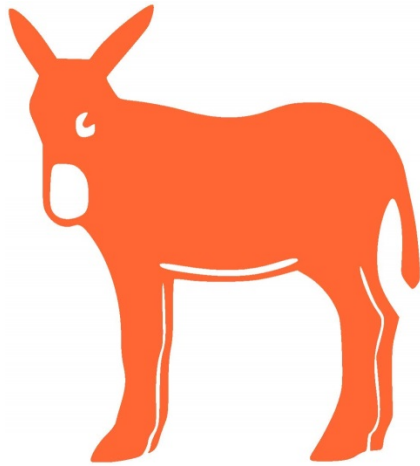
A new team is to be established to run a vehicle in a new one make prototype sports car series.

- a) Explain the stages in the formation of a team and why it is important in motorsport.
(4 marks)
- b) Good leadership is an important part of establishing and running a motorsport team. Evaluate the traits and style that could be appropriate for the head of a motorsport company in the following situations.
 - i) Vehicle development and testing **(5 marks)**
 - ii) Arranging sponsorship funding **(5 marks)**
 - iii) Practice and the race weekend **(5 marks)**

The leader is required to motivate the team after a rather disappointing initial shake-down and test session. Describe two models of motivation and how the team principle could employ them.

(6 marks)

Question 7



An internationally renowned race car team have decided to produce a high performance road car. Orange Donkey Racing have teamed up with a variety of engineering consultants to research, design and develop the hybrid vehicle. The organisation wish to promote the technology transfer from the racetrack to road vehicles

Orange Donkey Racing wish to ensure that any intellectual property developed is effectively protected.

1. What tactics should Orange Donkey undertake to ensure that their ownership of intellectual property is not compromised when dealing with new employees and external consultancy companies. **(5 marks)**
2. Develop a strategy to protect the following vehicle aspects, explain your reasoning, the process involved and any potential concerns.
 - a) The revised vehicle logo **(6 marks)**
 - b) A distinctive, stylised wheel design **(6 marks)**
 - c) The novel adoption of a specialised transmission for linking the rear axle to a kinetic energy recovery storage system **(8 marks)**