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Question 1

a)

Year	Project A
0	(44000)
1	14000
2	18000
3	24000
4	8000

Pay back = 2 years + x months

months = Income required / contribution per month

contribution per month = 24000 / 12 = 2000

Income required = 44000 - (14000 + 18000)

= 12000

So, months = 12000 / 2000 = 6

project A payback is 2 years and 6 months

year	project B
0	(35000)
1	11250
2	9750
3	12000
4	16000

Similarly

Payback = 3 years + x months

Income required = 35000 - (11250 + 9750 + 12000)

= 0

So months = 0

project B payback is 3 years.

b) $AAR = \frac{\text{Profit}}{\text{Average Capital employed}}$

project A:

profit $= (14000 + 18000 + 24000 + 8000 - 44000)/4 = 5000$

Average Capital employed $= 44000/4 = 11000$

$AAR_A = 5000/11000 = 45.5\%$

project B

profit $= (16000 + 12000 + 9750 + 11250 - 33000)/4 = 4000$

Average Capital employed $= 33000/4 = 8250$

$AAR_B = 4000/8250 = 48.5\%$

c) project A

year	Cash flow	Discount Factor	Present Value
0	(44000)	1	(44000)
1	14000	0.885	12390
2	18000	0.783	14094
3	24000	0.693	16632
4	8000	0.613	4904

Net present value $= 12390 + 14094 + 16632 + 4904 - 44000 = 4020$

project B

year	Cash flow	discount factor	present value
0	(33000)	1	(33000)
1	11250	0.885	9956.25
2	9750	0.783	7634.25
3	12000	0.693	8316
4	16000	0.613	9808

Net present value $= 9808 + 8316 + 7634.25 + 9956.25 - 33000$
$= 2714.5$

d) For payback period, project B takes longer than project A
For AAR, project B is slightly higher than project A
For NPV, project B is less than project A
Overally, I will select project A

e) For project A, if we use x to represent IRR, we have following equation

$$\frac{14000}{(1+x)} + \frac{18000}{(1+x)^2} + \frac{24000}{(1+x)^3} + \frac{8000}{(1+x)^4} = 44000$$

$$\Rightarrow \quad 22(1+x)^4 = (1+x)\left[(1+x)\left[7(1+x)+19\right]+12\right]+4$$

$$1+x \approx 1.1743$$

$$x \approx 0.1743$$

IRR of project A is 17%

f) ① The future of this product.

The investors should consider if this product can share the market with other competitors, if the future government polity will affect this product, if the additive technology is reliably enough and when will the market be saturated.

② The external factors.

The investors should consider how the covid-19, the trade-war between US and China, the Brexit and so on will affect the production, delivery and sale of this product.

Question 5

a) there are many types of sponsorships:

① programme sponsorship such as TV and films

② Arts sponsorship such as venues and competitions

③ sports sponsorship

④ sponsorship of individuals (generally celebrities)

⑤ social sponsorship

By sponsorship, we can

① increase brand awareness

② Build and enhance corporate image

③ improve or maintain relationships

④ attract distributors and agents

⑤ reach a large audience at an effective cost.

b) we can use S.O.S.T.A.C to develop the strategy

S: Situation — where are we now

① Physically, we are a Swansea-based team, so we should firstly look at the enterprizes, organizations, universities and goverment of Sewansea. We wanna know what the main enterprises' market aim, if there will be professional corporation with research groups, if the goverment wants to utilize events to increace attration

② We should try to know our competitors (other teams) such as their history, their charictaristic. What strength do they have? What sponsorships do they own?

Objectives — where are we going

There is no doubt that we want to be the the champion finally, but what stage should we achieve in the first few seasons? What progress should we make in the next few seasons? Also, what technology do we want to develop to make a profound influence on this whole event?

Then consider what amount of money do we need from sponsors to reach those goals.

Strategy — how do we get there

① Firstly consider the possible local sponsors as discussed in Situation.

② We should try to find sponsors from differere fields with those sponsored our competitors.

③ Develop our own team culture and try to find some organization who are similar

Tactics — the details of strategy

Review potential sponsors and find a good way (like culture as discussed above) to contact them

A - Action (Putting the plans to work)

Prepare our strengths and negoiate with perspective sponsors. Negoiate skill plays an important role here.

C. Control (monitoring and review)

Monitor the impact of sponsorship and make adjustments. If it goes well, attemp to seek for continues

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coperation. If not, considering possible errors and learn from it. Then use this strategy to seek for new sponsors

c)

Question 7

1. Determine what type do the IPs belong and then register or apply them at corresponding optical department.

2

a) the revised vehicle logo is a trade mark, so they can protect it using a trade mark registration

① Before applying, tie should search throught the optical database to make sure it is not already taken.

② It's more likely to apply successfully by making up a name

③ A trade mark once registered will last for ten years, so be careful of the final design. Also, register it in all the relevant classifications of goods or service.

② Infiringement does not automatically lead to court procedings so they need too keep their eye open in their market

b) Apply for a patent for it.

Orange Donkey should make sure there is no disclosure during developing and the technology is novel. Besides, they should review any contractual or collaborative elements to ensure ownership. Then they should produce full specification drawings, sequence, etc. They can turn to patent agent. Finally, file at UK Patent Office.

c) This is trade secrets.

Sign non-disclouse aggrement with key employees and possible cooperators.

Thanks for your reading