

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2019

Course: Technology Management

Semester: IV

Programme: MBA Core Operations Management

Time: 02 hrs.

Max. Marks: 100

Instructions:

SECTION A

S. No.		Marks	CO
Q 1 a)	Write the full form of the following	10	
	(i) IoT	2	CO2
	(ii) CAM	2	CO1
	(iii) JIT	2	CO1
	(iv) CTO	2	CO2
	(v) EGTS	2	CO2
Q 2 b)	Fill in the Blank	10	
	(i) _____ technology has low variety and low analyzability to unpredictable outcomes.	2	CO3
	(ii) _____ is a leadership role that must have technical, analytical business competencies.	2	CO1
	(iii) Wikipedia is a good example of _____ the content.	2	CO4
	(iv) Alexander Osterwalder proposed structured business model and created a framework _____ that had nice section.	2	CO2
	(v) _____ is an arrangement, technology is granted to the other company under a contract in exchange of royalties.	2	CO3

SECTION B

Q 3	Short Answer Type (Question Answer any four)		
a)	Explain three phases of Abernathy and Utterbach Model.	5	CO5
b)	What are different types of alliances of collaboration that a technology firm can have?	5	CO3

c)	Discuss key factors that will promote innovation in an organization.	5	CO4
d)	What are the key characteristics of a sustainable business model?	5	CO4
e)	What is technology forecasting methods explain with the help of an example?	5	CO5
SECTION-C			
Q 4	Long Answer Question (Answer any two)		
a)	What is innovation management and what are types of innovations.	15	CO3
b)	Explain technology transfer in the Indian public research system.	15	CO6
c)	What are the drivers of Technology Management and Explain impact of technology management at different levels of Management?	15	CO4
SECTION-D			
Q 5	Case Study		
	<p>Midland Tools and ChangZhong: A technology collaboration for new product manufacture and development Midland Tools, a UK company, and ChangZhong Machinery, a company in Northwest China, are both in the medium size category of machine tool manufacturers. Midland Tools' major products include CNC single and multi spindle automatic turning lathes and turning centres produced to international quality standards. Changzhong is also a specialised turning machine manufacturer. Approximately half its output is of conventional machines and half is CNC machines. The quality of its machines has been given a high ranking in terms of customers' satisfaction in the domestic market and in 1997 it shared with one other Chinese company a national best quality award for its CNC turning lathes from the Ministry of the Machinery Building Industry. Chang-Zhong has captured 24% of the Chinese market for CNC turning machines. The objective for ChangZhong in collaborating with Midlands Tools was to acquire the advanced technology the company had developed. Through the transfer process ChangZhong could learn specialist subassembly skills, process programming know-how, design know-how and final assembly skills. In terms of technological capability improvement ChangZhong's eventual aim from the collaboration was to enable it to produce complete CNC turning centres of the type to be introduced to local market. Midland Tools' objective on the other hand was to improve product competitiveness by combining technological and cost advantage. Through the collaboration Midland Tools would be able technically to achieve greater competitive advantage and, together with ChangZhong, could developed the product at lower cost. From a long-term strategic point of view the competitive strength of their co-developed product, coupling with high technology with low cost, would be very important in enhancing their position in both local and world markets (see Table 1). The technology collaboration agreement between the two companies was signed in 1997. The technology product was a CNC turning lathe of entirely new design. The form of collaboration comprised subcontracting, new product co-development and co-production. In the initial stage of the project the terms of payment agreed was that Midland Tools provided technology free of charge in the form of drawings and in return purchased machine carcasses supplied by CJC</p>		

at reduced cost. The transfer arrangement was based on four phases. i) In phase one the basic machine was to be manufactured and sold by Midland Tools with machine carcasses made and supplied to Midland Tools by ChangZhong. ii) In phase two complete machines were to be made by ChangZhong. iii) In phase three Midland Tools and ChangZhong would co-design and co-develop new versions of the machine. iv) In phase four, carcasses of the newly developed machines would be made in China by ChangZhong for supply to Midland Tools and complete machines made by ChangZhong for sale in the local market.

Table 1 Objectives for the technology collaboration between Midland Tools and ChangZhong

	Midland Tools	ChangZhong
Objectives	Development of new product cost reduction development of market	Technology capability improvement of a new product development of market
Financial Benefit	Increased sales in world markets	Export machine carcasses and increase local sales
Technological Benefit	Cost effective product	Acquisition of latest technology
Strategic Benefit	Development of new product and market	Development of new product and market

Midland Tools' main activities would include provision of drawings, key parts, training and technical supervision to ChangZhong as well as final assembly on the basis of carcasses supplied from ChangZhong and sale of products in the world market. ChangZhong's responsibilities would be for machining parts and assembling carcasses and for complete manufacture in the later phases. In relation to new product development both parties would jointly be involved in design and development. The focus of this would be to produce designs that would benefit from the opportunities offered for cost reduction from:

- i) Local "in-house" manufacture of parts by ChangZhong;
- ii) Purchase of proprietary and commercial parts by ChangZhong from local suppliers;
- iii) Local assembly by ChangZhong;
- iv) Joint selling of the newly developed products in local and world markets.

a)	Explain Benefits that Midland Tools and ChangZhong can have with this collaboration.	15	CO6
b)	Assuming yourself as an employee ChangZhong of what can be risks in this collaboration and how can you mitigate those risk and challenges to make this collaboration a success.	15	CO7

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	(v) ERP	2	CO2
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SECTION B

Q 3	Short Answer Type (Question Answer any four)		
a)	Explain the phases of Thomas S Kuhn's Model.	5	CO5
b)	What are different types of alliances of collaboration that a technology firm can have?	5	CO3
c)	Explain three perspectives of enterprise technology management.	5	CO4

d)	What are the key characteristics of a sustainable business model?	5	CO4
e)	What is technology forecasting methods explain with the help of an example?	5	CO5
SECTION-C			
Q 4	Long Answer Question (Answer any two)		
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