

Subject: Digital Transformation of the World Economy**Final** exam, Option **A**

Modules 2-3 (2017/2018)

First name _____ (please

Last name _____ fill-in the names

Group _____ in Russian)

Instructions: Please provide an answer to each question.

#	Question	Answer	Points
Provide "YES" or "NO" answer:			
1	A byte is the smallest unit of storage	No	2
A	<ul style="list-style-type: none"> We call a 1 or a 0 a bit. For practical purposes A bit is the smallest unit of storage A bit can store a discrete information - two separate states: Yes/no, true/false, boy/girl; North/South 		
2	A bit is a string of 8 bytes	No	2
A	<ul style="list-style-type: none"> A byte is a string of 8 bits: 00000000 One byte stores one character, 'X' or '\$' A byte has 256 permutations: from 00000000, 00000001, 00000011 ... to 11111111 		
3	Coding information into integers (a number that can be written without a fractional component) is a digital transformation of information	No	2
A	<ul style="list-style-type: none"> transforming information into 0 and 1 is digital transformation of information 		
4	Digital divide is a gap between the rate of technological advances and the rate at which organizations are able to adapt and transform	Yes	2
5	The rate of innovation and the rate of productivity in the 4 th industrial revolution are almost identical	No	2
A	<ul style="list-style-type: none"> The rate of productivity is slower than the rate of innovation 		
6	Size is not relevant to the evolution of communication	No	2
A	<ul style="list-style-type: none"> Size of devices is an important feature of communication's evolution – the devices got much smaller 		

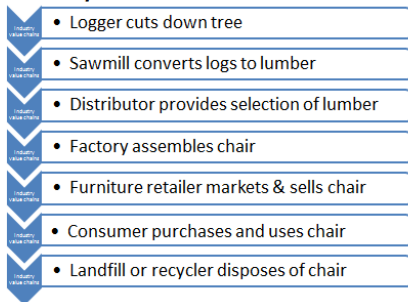
Provide a short answer			
7	Name 3 features that we call a “backbone” of the digital economy	big data computing power hyperconnectivity	6
8	Name two new factors of production that are as, if not more, important for the growth in digital economy than traditional factors of production	Knowledge Big data	4
9	Among 4 industrial revolutions discussed in class, which one boosted human physical power? Describe in what way.	First three industrial revolutions boosted human physical power (2 points) 1IR - water & steam power used to <i>mechanize</i> production (2 points) 2IR - electric power used to create <i>mass</i> production (2 points) 3IR - electronics & IT used to <i>automate</i> production (2 points)	8
10	In what way the 4th Industrial Revolution (4IR) is distinguishable from the previous three?	While first three IRs provided a boost to physical power of humans, 4IR is providing a boost to mental power	4
11	Give any two of the several features of digital economy discussed in class and provide their explanation	1. Disintermediation (2 points) 1.1 Elimination of intermediaries (3 points) 2. Prosumption (2 points) 2.2 production by consumers (3 points)	10
12	What is dial-up, broadband and bandwidth? Their roles in the digital economy?	dial-up access – accessing Internet by dialing a telephone number on a conventional telephone line (2 points) Broadband - a wide bandwidth data transmission (2 points) bandwidth – range of frequency of the transmitted signal (2 points)	8

		Connection to digital economy – Broadband is a high-speed internet access that is always on and faster than dial-up access (2 points)	
13	Using Moore’s law of productive technology, compare computing power available today and 10 years ago. In what units is it measured?	2018: $2018-1986=32$ 2^{32} (4 points) 2008: $2008-1986=22$ 2^{22} (4 points) Measured in number of instructions per second (million – MIPS or billion – BIPS) (2 points)	10
14	Describe two types of big data. Give examples.	“Long” data: many observations relative to variables (2 points) examples: tax records – (1 point) “Wide” data: few observations relative to variables (2 points) examples: Amazon clicks, newspapers – (1 point)	6
15	Choose one major difference between the first wave and the second wave of e-commerce. Write a paragraph that describes this difference.	First-mover advantage. In the first wave of e-commerce, many companies and investors believed that being the first Web site to offer a particular type of product or service would give them an opportunity to be successful. This strategy is called the first-mover advantage. (2 points) In the first wave (1997- 2012), companies relied on first-mover advantage to ensure success in all types of markets and industries. (2 points) In the second wave, companies realized that first-mover advantage leads to success only for some companies in certain specific markets and industries. (2 points) A good example of a company that was successful in the second wave by not being a first mover is Google. (2 points)	8

16	Create a diagram that describes the industry value chain for the retail book business.	See slide “Industry value chains” below	10
17	What are Altcoins?	Cryptocurrencies other than Bitcoin	2
18	What is Blockchain’s main value proposition?	Removing the need for a trusted authority to conduct transactions in a low trust environment.	4

Industry value chains

Industry value chain for a wooden chair



- Every product / service has an industry value chain that can be identified and analyzed for economic opportunities
- Creating industry value chain
 - start with the inputs to SBU
 - work backward to identify its suppliers’ suppliers, then the suppliers of those suppliers, and so on
 - add customers and work forward to identify customers’ customers, then the customers of those customers, and so on