

Total number of printed pages: 100 Programme(PG)/2nd/PCSE213 2023

Human Computer Interaction

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer any five questions.

Q1.

- (a) What do you mean by the term model in the context of HCI?
- (b) What are the different models of HCI? Discuss briefly about them with their pros and cons.

(5+15)

Q2.

- (a) What are the basic factors that affect the usability of an interface? Briefly explain about them.
- (b) Do you believe these factors are dependent on each other or they are independent. Justify your answer with proper examples.

(10+10)

Q3.

- (a) With an example, discuss the differences between within-group and between-group.
- (b) Why is the Latin Square method used in empirical research?
- (c) Consider you have developed an application for food delivery. In order to do the empirical research what should be your research questions?

(5+5+10)

Q4.

You have developed a virtual keyboard and want to check the performance of it with respect to the two existing keyboards - *Key1* and *Key2*, respectively. You have conducted an empirical study with eight participants for a representative text sample. In the following the typing time for the eight participants (p_1, p_2, \dots, p_8) are given. Use ANOVA to check whether your keyboard performs better than the two others with a significance level of 5%.

	<i>Your keyboard(sec)</i>	<i>Key1(sec)</i>	<i>Key2(sec)</i>
p1	20	25	21
p2	15	11	19
p3	8	9	11
p4	10	10	7
p5	11	13	15
p6	9	9	10
p7	8	11	14
p8	10	8	9

F table -

Critical values of F for the 0.05 significance level:

	1	2	3	4	5	6	7	8	9	10
1	161.45	199.50	215.71	224.58	230.16	233.99	236.77	238.88	240.54	241.88
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.39	19.40
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14
10	4.97	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98

(20)

Q5.

- (a) Consider you are using a touch screen mobile device. You got a call from one of your friends and want to accept the call using your index finger. The accept button is 4 cm away from your present position of index finger. The **accept** icon width is 1cm . Compute the index of difficulty using Fitt's Law. It has been observed that you need 2 seconds to accept the call. What will be your throughput ?
- (b) What are the drawbacks of Fitt's Law? Suggest at least one technique to overcome it.

(12+(4+4))

Q6. Write short notes on

- Nielsen's heuristics
- Cognitive walkthrough
- KLM
- Think aloud protocol
- 5 Es

(20)