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HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

End Term (Even) Semester Examination May-June 2025

Roll no..............................

Name of the Program and semester: MBA (Sem II)
Name of the Course: *BUSINESS ANALYTICS & RESEARCH METHODS*
Course Code: **MBA 204**

Time: 3 hour   Maximum Marks: 100

Note:
- *(i)* This question paper contains two Sections-Section A and B
- *(ii)* Both Sections are compulsory
- *(iii)* Answer any two sub questions from a, b & c in each main question of Section A. Each sub question carries 10 marks.
- *(iv)* Section B, consisting of a case study, is compulsory. It is of 20 Marks.

Section A

Q1.

(2X10=20 Marks)
Que (a) Explain with appropriate diagrams the concept of normal distribution?

CO 1,   (10 Marks)

Que (b) Write a short note on following. You may use a suitable example to explain the concept
- a) Correlation
- b) Regression

CO 1,   (10 Marks)

Que (c) Two variables are having a covariance of 15. The standard deviation of the two variables is 1.5 and 2.5 respectively.
- **a)** What is the Pearson correlation coefficient for the two variables?
- **b)** What is your conclusion on the relationship between the two variables?

CO 1,   (10 Marks)

Q2   (2X10=20 Marks)
Que (a) Explain with example the scales of measurements i.e. Nominal, Ordinal, Interval, and Ratio scale?

CO 2,   (10 Marks)

Que (b) Enlist various sampling strategies used for data collection. Discuss any one of the sampling strategies with an appropriate example?

CO3 (10 Marks)

Que (c) Explain with appropriate examples on the merits and de-merits of choosing qualitative vs quantitative research methodology?

CO 2,   (10 Marks)

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Q3.   (2X10=20 Marks)

Que (a) Discuss the stepwise procedure for conducting business research?

CO 2, (10 Marks)

Que (b) You are planning to conduct quantitative research, for which you will have to adopt scales for measuring various variables. Discuss the factors you will consider while adopting a scale?

CO3 (10 Marks)

Que (c) You have joined the marketing research team of a major car manufacturer. The car manufacturer is planning to launch a new electric car in the market. Before the launch of the car, the company is interested to understand the perception towards the adoption of electric vehicles. Hence, your marketing team decided to conduct qualitative research by interviewing the existing customers of the company. Your reporting manager has asked you to lead the initiative. So you must develop a semi-structured interview protocol for executing the research. Illustrate the semi-structured interview protocol you may develop for executing the research work

CO5 (10 Marks)

Q4.   (2X10=20 Marks)

Que (a) A team of quality engineers is working on stabilizing the weight of the new product. The weight of the 11 samples in grams is 75, 65, 53, 60, 61, 67, 60, 73, 75, 74, and 54. Demonstrate the stepwise procedure for calculation and explain the **variance and standard deviation** of the weight of the product.

CO3 (10 Marks)

Que (b) A management consultant believes that the adoption of certain best practices can enhance the satisfaction level of customers in a resort. To test the assertion the team of managers randomly selected a sample of customers before and after the implementation of best practices. The results of customer satisfaction levels before and after the interventions are illustrated in the annexture 1. Test the assertion made by the consultant at 95% CI and answer the following questions.

A) What are the null and alternate hypotheses

B) Which test you will use to test the assertion

C) Illustrate if you reject the null hypothesis or fail to reject the null hypothesis

CO4 (10 Marks)

Que (c) Analyzing the text presented in **Annexture 2,**

a) Enlist and classify various gaps identified by the researcher to execute the literature review.

b) Discuss the methodology adopted by the researcher to execute the literature review

CO4 (10 Marks)

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Section B

Q5. Case Study   (20 Marks)

Contact tracing is identified as an essential surveillance mechanism in the wake of recent virus outbreaks, as app-based contract tracing aids in detecting the infected individuals promptly and contributes towards offering an adequate preventive and curative response. These contact tracing apps (CTA) have reached a stage where their evaluation as a public health tool is warranted. Critical evaluation and learning from user experiences regarding past approaches can provide pertinent guidelines for developing future approaches for overcoming past limitations. This may enable accelerated adoption, which is vital for combatting the spread of a pandemic. A recent study attempts to address this gap by furnishing answers to the following research questions: What barriers affect the consumers' adoption of CTA developed for monitoring and controlling the spread of pandemics? What issues form the bedrock for these different barriers? How can these issues and barriers leading to user resistance be overcome to accelerate adoption? To do the same, the study investigated user resistance concerning the COVID-19 tracking app *'Aarogya Setu'* launched by the government of India in April 2020, by analyzing the online comments made by the app's early adopters. Analysis of online users' comments as a methodology has emerged as an important tool of investigation across different disciplines. The study employed this method of analysis of online comments, especially those highlighting users' resistance towards adopting the app, as these comments can be a rich source of information for establishing causality. A sample of such user comments along with their ratting of the App is presented in annexture 3.

Que. Using qualitative research techniques, present a sentimental analysis of user's comments and identifying the key factors those you think may impact the adoption of the app.

CO5 (20 Marks)

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Annexture 1. Feedback from sample of customers before and after the implementation of best practices

S.No	Satisfaction level (Before)	Satisfaction level (After)
1	185	203
2	205	211
3	212	226
4	193	195
5	213	247
6	188	184
7	150	281
8	238	262
9	224	218
10	215	240

Annexture 2.

The following text is extracted from a literature review paper

……. Reviews from the past on Digital Healthcare analysed literature from various perspectives like DIY Healthcare (Piwek et al., 2016), SI-IT Innovation (Or et al., 2011), futuristic healthcare technologies (Mitzner et al., 2010), digital health awareness and adoption (Kim & Park, 2012). Furthermore, the bottlenecks of the given literature include limited understanding of healthcare service drivers and integration of technology acceptance-based constructs (Jokisch et al., 2022) and an absolute necessity to develop methodological process stability (Limayem et al., 2007) at a global level. From a methodological pov, the prevailing reviews have principally employed qualitative methods and, hence, cannot provide a thorough representation of the field (Choi & Kim, 2016). Some LRs have incorporated 'bibliometric analysis' as a methodology, but, they are not competent enough, either in terms of methods, advancements or scope in order to address the limitations of the bibliometric analysis (Akter et al., 2010). Consequently, this research proposes to address the identified voids by using both content analysis and bibliometric analysis as methodological approaches, with the theoretical foundation based on TCV (Sheth et al., 1991).

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Annexture 3. User comments on Aarogyasetu APP

S.No	Rating (out of 5)	Comment given by users
1	1	I am not able to get started with this app, on entering phone number says "There is some error logging you in" , even sometimes it get logged in but stuck on OTP section because i am not getting otp, tried many times Pls look into this
2	2	Its good app But should add bankers also as they are also working sincerely at this pandemic time Facing lots of issues as public transport has stopped Should add bankers name also in the list of doctors police and nursing staff
3	2	I m trying to log in first time but showing I already logged in ...
4	3	Please add Bankers in the categories, they are also exposed to high risk. I am a banker but there is no option to choose from categories given
5	3	In the app Professional like Bank option is not their. Where individuals can't provide correct data. Banker's are also vulnerable and may be carrier of virus Kindly update and also provide edit option for profession
6	3	It is use less app it don't have any artificial intelligence and data updation not real-time. If I put fake information to this app it is not showing any other user about real situation 🤷 🤷 😲 😲
7	3	This application is good but, this is not accessibletotally with with screen reading softwares which visually impaired persons do used to access any kind of application. please make it more accessible for visually impaired persons who uses screen reading softwares to access this kind of.
8	3	Auto detection risk of inpection requires otherwise positive person be said negative , need some modification , The app should be detect automatically. China covid 19 app better to detect . Here only question asked . Not satisfied
9	3	Please include the option of banker (and bank mitra kiosk service small banking as occupation)in the app as they continuously serving our nation and having exposure to a huge mass in daily basis. So it will be helpful for them also .
10	3	This doesn't work on rooted device I am using android 5.1 version. It showing device rooted.
11	3	I installed this app in every mobile of our house, 4 of them, and its just not even logging in. Whenever I put my number and press next, it shows "We are not able to log you in at this moment". Kindly fix this.

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12	2	App data is not getting saved.. Everyone I restart the app I am persented with the 4 dots screen and on the 4th screen i am told to Register for the app. I think there is some bug as it is asking evertime the same info. Rather it should save that data.
13	1	Absolutely rubbish app, just because of marketing people are downloading it, it is not adding any single value, purely wastage of time data and space.
14	1	Very very very bad app, when it is opening the pictures are not coming and when went to self test it is not coming I am trying it from 2 days. Aarogya setu please see to it................
15	3	Worst app. Not getting proper update. As per exact calculate tamilnadu count 2058 but, this app showing 1937. Very very worst app 😡 😡 😡
16	1	Bad app It needs to show the locations where the risk is high but it just ask some questions that anyone knows through commonsense
17	3	It won't accept OTP no matter how many times I try. May extending OTP time may solve this. Pls help. I'm using BSNL net.
18	1	Disappointing app to be honest.Expected much better info.I know its been made in a hurry but could have expected better out of it like mapwise marking ,doctor answeing questions and doubts and much more.Hope we get frequent updates for the app.
19	3	Could not able to add personal information. Always a pop appears in the screen which read as " try checking your internet". Also banking is nowhere mentioned in type of profession.
20	1	Don't download this app. It's a violation of the right to privacy. They say it uses only Bluetooth when in fact it uses GPS trails. You can't disagree with this fact as it's one of the permissions requested by the app. Other countries like Singapore are using only Bluetooth data. Also there is no oversight on who has access to this location data.