







- c) Tables and bar charts with appropriate error bars      d) Experimental protocols pertaining to the selected research topic

**PART B (10 x 2 = 20 Marks)**

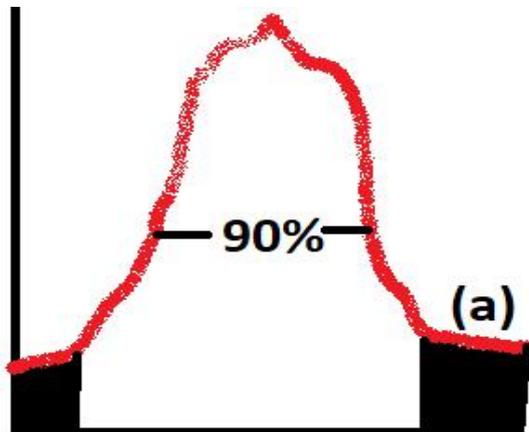
11. List any TWO objectives of pursuing a research work in a selected domain CO1 [K<sub>2</sub>]

12. **Abstract** CO1 [K<sub>3</sub>]

**Background:** The coronavirus epidemic, which started in China, has become a worldwide pandemic. Despite global efforts to contain the disease spread, the outbreak is still on the rise, owing to the community spread pattern of this infection. Many countries have gone for a shut down for control of spread. Dental professionals can be infected as well as dental clinics can be a potential source of spread of infection. Therefore, a dental surgeon should be adequately prepared regarding the spread of the disease. **Materials and Methods:** An online questionnaire was sent to dental surgeons through their professional and social groups. The questions were related to the source of corona (Covid-19) infection, the precautions to be taken by dentists, the work schedule during the lock down period, and also the response and precautions to be taken after the lockdown period. The results were tabulated, and statistical analysis was performed. **Results:** 1235 responses were received. Above 84% of the participants were not practicing during the lockdown period in India. The participants have knowledge of COVID 19 infection mostly through TV and internet sites and social media platforms. There will be a statistically significant increase in the use of personal protective equipments during the postlockdown practice. Most of the participants prefer N95 masks (62%), disposable gowns (54%). **Conclusion:** The dentists were aware of the problems of the spread of corona COVID 19 and are in the process of having more stringent infection control measures in their practice.

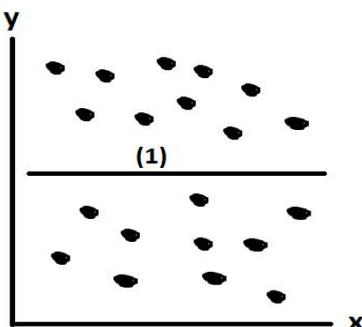
Under what type will you classify the above furnished abstract?

13. Observe the below shown CI related graph. If the accepted area is 90%, calculate the rejected area (black shaded portion) labelled as “a”. (Hint: Assume as two tailed area) CO2 [K<sub>3</sub>]



14. Differentiate descriptive with inferential statistics CO2 [K<sub>2</sub>]

15. Observe the below furnished correlation graph where the “dot” symbol denotes the correlation data point between “x” and “y”, and the horizontal straight line (1) reveals the strength of correlation. CO2 [K<sub>4</sub>]



Whether any correlation exists between “x” and “y”? What could be the probable

correlation value (r)? [**Hint:** Recall Karl Pearson Correlation coefficient]

16. What is normal or Gaussian distribution? CO2 [K<sub>2</sub>]
17. Calculate the arithmetic mean for the provided data that shows the various concentration of lead (Pb) collected from different water bodies. Interpret the data upon its permissible level (**Hint:** Normal permissible level is 0.3 mg) CO2 [K<sub>3</sub>]

Concentration of lead [Pb] (mg) (x)
0.5
0.9
0.2
0.6
1.1
0.3
0.8

18. Why is a research plan required? CO1 [K<sub>2</sub>]
19. List the major layout of a research report CO3 [K<sub>1</sub>]
20. What is the full form of “APA” style used under reference section? CO3 [K<sub>2</sub>]

**PART C (6 x 5 = 30 Marks)**

21. Write few hypothetical statements (minimally FIVE) related to your domain 5 CO1 [K<sub>4</sub>]
22. Calculate the standard deviation (sd) for the following data. 5 CO2 [K<sub>3</sub>]

Antimicrobial sensitivity (mm) (x)	Surface area of the cloth (cm <sup>2</sup> ) (f)
8	15
11	22
15	18
25	27
7	31
9	11
12	14

23. What is standard error? Outline its importance 5 CO2 [K<sub>2</sub>]
24. Write short notes on the following with appropriate examples: 5 CO2 [K<sub>2</sub>]

i) Pure or fundamental research; ii) Qualitative research

25. What factors a researcher should consider during the selection of a research problem? 5 CO1 [K<sub>2</sub>]
26. Recall your early executed project work and write a formal acknowledgement part 5 CO3 [K<sub>2</sub>]

**Answer any FOUR Questions**  
**PART D (4 x 10 = 40 Marks)**

27. Describe in detail the various steps adopted sequentially to execute scientific research 10 CO1 [K<sub>2</sub>]
28. Observe the furnished data below of two different items. Apply paired t-Test and comment about the acceptance or rejection of hypothesis at 5% level of significance (**Hint:** Use two tail table value) 10 CO2 [K<sub>4</sub>]

x	y
52	22
41	19
65	35
71	53
40	21

29. Observe the below depicted data of distribution of marks of three different teams. Assume that the formulated null hypothesis is “Distribution of marks is similar across the teams”. 10 CO2 [K<sub>4</sub>]

Mark distribution of Team 1 [A]	Mark distribution of Team 2 [B]	Mark distribution of Team 3 [C]
82	68	73
75	75	86
69	91	63
81	85	77
83	79	90

Apply one way ANOVA to validate the formulated hypothesis at 5% level of significance and interpret the same.

30. Give a detailed account on the various types of primary data collection methods, 10 CO2 [K<sub>2</sub>]  
and its advantages and limitations in a research work
31. Explain in detail the various components of a technical research report 10 CO3 [K<sub>2</sub>]

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