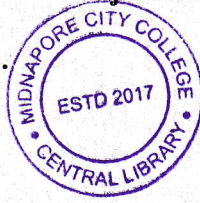


The West Bengal University of Health Sciences
M.Sc. in Medical Microbiology Part-I September, 2022 Examination

Subject : Research Methodology and Environmental Sciences

Time : 3 hrs.



Use separate answer script for each group

Full Marks : 100

Attempt all questions

Group – A

1. Choose the most appropriate answer the following : 5 x 2

- a) The runs scored by a batsman in 5 ODIs are 31, 97, 112, 63 and 12. The mean is
 i) 63. ii) 65. iii) 66. iv) 61.
- b) The range of probability of an event A (P(A)) is:
 i) $0 \leq P(A) \leq 1$. ii) $-1 \leq P(A) \leq 1$. iii) $-1 \leq P(A) \leq 0$. iv) $-2 \leq P(A) \leq 2$.
- c) A _____ variable is a variable whose values can theoretically take on an infinite number of values within a given range of values.
 i) Continuous. ii) Discrete. iii) Both i and ii. iv) Qualitative.
- d) Find the mode of the call received on 7 consecutive days: 11, 13, 13, 17, 19, 23, 25
 i) 11. ii) 13. iii) 17. iv) 23.
- e) In a Standard Normal distribution:
 i) $sd=0$. ii) $sd=1$. iii) $sd=-1$. iv) $sd=2$.

2. Write a short note on Frequency Polygon. What do you mean by degrees of freedom? Compute the median of the following frequency distribution of body weights (kg). 3+2+5

Class intervals	51-53	54-56	57-59	60-62	63-65	66-68	69-71
Frequencies	5	7	14	28	15	8	3

3. Answer the following : 6 x 5

- a) Define hypothesis. Write the objective of experimental research. 2+3
- b) What are the components of experimental research? Write the importance of literature review in project proposal formulation.
- c) Write a short note on Normal distribution with properties.
- d) Find whether or not there is a significant correlation between O₂ consumption (ml per minute) and pulmonary minute ventilation (litres per minute) using the following data.

Individuals	1	2	3	4	5	6	7	8	9
O ₂ consumption	281	246	369	330	258	315	246	330	298
Ventilation	6.55	7.10	9.00	8.50	6.00	7.00	6.50	9.00	7.50

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e) Compute the SE of the mean using the following frequency distribution of body weights (cm).

Class intervals	156-160	161-165	166-170	171-175	176-180
Frequencies	4	14	25	11	6

f) Write a short note on Null hypothesis.

Group – B

4. Mention the scope of environmental studies in relation to public health. Briefly discuss the detrimental effect of fossil fuel burning on human health. 4+6
5. How do ecosystems maintain their natural balance? Why are the top carnivores the worst affected in an ecosystem under stress? 5+5
6. Classify air pollutants based on origin. Write about different occupational health hazards associated with air pollution. 4+6
7. What is greenhouse effect? Give an account on health effects of global warming in developing countries. Mention the role of Montreal Protocol in managing greenhouse effect. 3+5+2
8. What is waste management? Do you correlate the increase in solid waste with globalization and urbanization? Justify. 2+8

