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MHS-014

POST GRADUATE DIPLOMA IN BIOETHICS (PGDBE)

Term-End Examination

December, 2016

00443

MHS-014 : RESEARCH METHODOLOGY

Time : 2 hours *Maximum Marks : 70*

PART A

*Attempt **all** questions. Each question carries **one** (1) mark. Select the most appropriate choice from the given choices for each of the following questions. Write your answers on the Answer Sheet provided to you.* *50×1=50*

1. A well-designed clinical trial is

(1) Always ethically sound

(2) Mostly not ethically sound

(3) Need not be ethically sound

(4) Occasionally ethically sound

2. Translational research is

(1) Cycling of research and feedback from laboratory to clinic to laboratory

(2) Development of potentially new therapeutic modalities

(3) Evaluation of safety and efficacy of treatment

(4) Research conducted in an area with predominantly different language

3. An independent variable in a study is

(1) A parameter that can be determined or manipulated at the outset

(2) An outcome that is determined by an unbiased observer

(3) That cannot be determined by inclusion and exclusion criteria

(4) That can only be a single variable

4. Which of the following is ***not*** included in the Bradford-Hill criteria for assessing casuality ?

(1) Consistency

(2) Sensitivity

(3) Specificity

(4) Temporality

5. A random error is

(1) Transient, inconsistent and cannot be corrected

(2) Not affected by sample size

(3) Controlled by increasing accuracy

(4) Corrected by adjusting for the error in measurement

6. Which of the following is an example of an analytic study ?

(1) Case series

(2) Case control

(3) Cross-sectional

(4) Ecological

7. The use of serially numbered opaque sealed envelopes is a method for

(1) Allocation concealment

(2) Randomization

(3) Blinding

(4) Interventional compliance

8. Analysis by intention to treat is carried out without considering all of the following *except*

(1) Protocol deviation

(2) Allocation assignment

(3) Compliance

(4) Withdrawal

9. The appropriate graphical representation for the continuous data is

(1) Bar diagram

(2) Histogram

(3) Line chart

(4) None of the above

10. The variables which can be experimentally manipulated by an investigator are called

(1) Dependent variables

(2) Independent variables

(3) Confounding variables

(4) Extraneous variables

11. Which one of the following is ***not*** a measure of dispersion ?

(1) Range

(2) Percentile

(3) Variance

(4) Interquartile range

12. Descriptive statistics deals with

(1) Description of decision-making process

(2) Organising, displaying and describing the data

(3) Probability distribution

(4) None of the above

13. If a statistical test does ***not*** reject null hypothesis, it is known as

(1) Type-I error

(2) Type-II error

(3) Both the above

(4) None of the above

14. Which of the following is a measure based on every item of observation ?

(1) Mode

(2) Standard Deviation

(3) Range

(4) Quartile Deviation

15. Which of the following is the strongest correlation ?

(1) – 1

(2) 0·98

(3) 0·0

(4) 0·5

16. In a single-factor ANOVA, the computed value of F will be zero when

(1) There is no difference in the treatment means

(2) There is no difference in the block means

(3) The data are skewed left

(4) F will never be zero

17. The appropriate distribution to test whether or not two population variances are equal is

(1) Z-distribution

(2) F-distribution

(3) Chi-square distribution

(4) Standard distribution

18. Error deviations measure distances

(1) Within groups

(2) Between groups

(3) Both (1) and (2)

(4) None of the above

19. The representative sample is used so that the results of a study are

(1) Reliable

(2) Generalisable

(3) Convenient

(4) Limited

20. The population from which the study sample is selected is known as

(1) Accessible population

(2) Target population

(3) Total population

(4) Universal population

21. A sampling distribution is the probability distribution for which one of the following ?

(1) Sample

(2) Sample statistics

(3) Population

(4) Population parameter

22. Which of the following is the most common example of a situation for which the main parameter of interest is a population proportion ?

(1) Binomial Experiment

(2) Normal Experiment

(3) Randomized Experiment

(4) Observational Study

23. The expected value of a random variable is the

(1) Value that has the highest probability of occurring

(2) Mean value over an infinite number of observations of the variable

(3) Largest value that will ever occur

(4) Most common value over an infinite number of observations of the variable

24. Positive confounder causes over-estimation of an association and negative confounder causes under-estimation of an association.

(1) The statement is true

(2) The statement is false

(3) Only the first part is true

(4) Only the second part is true

25. In a statistical test, if the mean scores from two populations differ significantly, then

(1) Accept Null Hypothesis

(2) Reject Null Hypothesis

(3) Accept Alternative Hypothesis

(4) None of the above

26. Randomization is a process that assigns participants

(1) By chance

(2) By choice

(3) Alternatively to either arms

(4) None of the above

27. With large sample size, an estimate will be

(1) Closer to population parameter

(2) Equal to population parameter

(3) With more standard error

(4) None of the above

28. Double-Blinding means

(1) The participant and the statistician do not know to which group the participants are assigned

(2) Neither the participant nor the investigator knows to which group the participants are assigned

(3) Either the participant or the investigator knows to which group the participants are assigned

(4) The participants and the investigator close their eyes before administrating treatment

29. If a statistical test does ***not*** reject null hypothesis, then it is possible that we made

(1) Type-I error

(2) Type-II error

(3) Both Type-I and Type-II errors

(4) The power of the test is high

30. Sub-group analyses are indicated

(1) When RCT is done on a large sample

(2) To look for potential heterogeneity of treatment effect related to risk

(3) Always

(4) Never to be done

31. James Lind carried out the first controlled clinical trial. The disease he studied was

(1) Scurvy

(2) Pellagra

(3) Rickets

(4) Beri Beri

32. Clinical trial monitoring is done to

(1) Ensure favourable results

(2) Avoid bias

(3) Control confounders

(4) None of the above

33. Regression is used

(1) To measure the association between two variables

(2) To estimate dependent variables using independent variables

(3) To estimate independent variables using dependent variables

(4) None of the above

34. In a regression equation $y = 10 + 5x$, which of the following is correct ?

(1) Correlation coefficient between x and y is 5.

(2) For a unit increase in x, there is 10 units increase in y.

(3) For a unit increase in y, there is 5 units increase in x.

(4) For every unit change in x, there is 5 units change in y.

35. A variable that changes in response to another variable is a/an

(1) Independent variable

(2) Dependent variable

(3) Random variable

(4) Manipulated variable

36. In a regression of Birth weight on Gestational age

(1) Birth weight is the predictor

(2) Gestational age is the predictor

(3) Both Birth weight and Gestational age are predictors

(4) Information is insufficient to answer

37. The 95% confidence interval for the prevalence of hypertension is (0·12, 0·29). The true representation is

(1) Probability that this interval may hold the true value, is 0·95

(2) The population parameter will be between 0·12 to 0·29

(3) The estimated value is higher than the expected level in the population

(4) None of the above

38. P-value is a statistical test, i.e.,

(1) Probability of getting extreme values under null hypothesis

(2) Probability of getting extreme values under alternate hypothesis

(3) Probability of rejecting null hypothesis when it is true

(4) None of the above

39. Translational research refers to

(1) Paradigm to biomedical research

(2) Focuses as interactive feedback loops

(3) Accelerate knowledge transfer from bedside to bench

(4) All of the above

40. Statistical test on hypothesis is

(1) Always based on null hypothesis

(2) Always based on alternate hypothesis

(3) Based on both (1) and (2)

(4) Based on the power of the test

41. Factorial experiment helps in

(1) Studying several factors at a time

(2) Studying a single factor multiple times

(3) Evaluating the effects of interaction

(4) Both (1) and (3)

42. In a study of comparison of the mean ages at marriage of women in two different States of the country, the null hypothesis will be

(1) Significant difference in the mean ages of marriage

(2) Same mean marriage ages in the two States

(3) The mean age of marriage in one State is higher than the other

(4) There is difference in the mean ages of marriage

43. Institution Review Board

(1) Is empowered to approve the study

(2) Cannot insist on modification

(3) Concerns only with the ethical aspect of study

(4) All of the above

44. Case-control study design provides

(1) Maximum evidence

(2) Greater evidence than Cohort study

(3) Minimal evidence

(4) Better evidence than case series

45. Incidence rates can be best calculated in

(1) Case series

(2) Case-control studies

(3) Cohort studies

(4) Randomized controlled trials

46. A Case-control study

(1) May begin with exposure

(2) Always begins with exposure

(3) May begin with disease

(4) Always begins with disease

47. Multiple outcomes are best studied in

(1) Randomized controlled trial

(2) Case-control study

(3) Cohort study

(4) None of the above

48. The advantages of a cohort study are all of the following *except*

(1) Ability to assess incidence

(2) Ability to assess rare exposures

(3) Ability to assess rare outcomes

(4) Ability to study the relation between exposure and outcome

49. A phase-4 trial evaluates

(1) Dosage

(2) Delivery mechanisms

(3) Short-term safety

(4) Long-term safety

50. T-tests are most useful in which type of data ?

(1) Continuous

(2) Ordinal

(3) Nominal

(4) Binary

PART B

*Write short notes on any **four** of the following in about 200 – 300 words each.*
*Each carries **five (5)** marks.* *4×5=20*

51. Phases of Clinical Trials

52. Binomial Distribution

53. Sampling Methods

54. Measurement of Central Tendency

55. Case-Control Studies

56. Double Blinding Trials