# ENTRANCE EXAMINATION - ACADEMIC SESSION JANUARY 2023

## Program: PhD Health Sciences (Full time and part time)

Time:90 Minutes

Max. Marks: 100

(Select the most appropriate answer)
(There are **no negative** marks for wrong answers)

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| 1. | When an informant is provided with a set of pictures of different sanitary conditions and asked to arrange them in a certain order and asked to explain the reasons for the ordering, the data collection technique being used is......................<br>a. Structured questioning technique<br>b. Focus group discussion technique<br>c. Participant observation technique<br>d. Projective techniques |
| 2. | Ecological fallacy is indicates<br>a. Matching between groups<br>b. Biases in Randomised controlled study<br>c. Chance error<br>d. None of the above |
| 3. | Which of the following statements is false<br>a. The higher a country's GDP per person, the more money it is likely to spend on health<br>b. The lower a country's GDP per person, the less money it is likely to spend on health<br>c. Countries who spend the most on health always have the highest life expectancies<br>d. Countries who spend the least on health are more likely to have poor health outcomes |
| 4. | What is metadata<br>a. Data about the data<br>b. Old data<br>c. upcoming data<br>d. universal data |
| 5. | Chemical, ionizing agent or virus that can cause birth defects<br>a. Teratogenic<br>b. Mutagenic |

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| | | c.  Carcinogenic |
| | | d.  Embryogenic |
| 6. | The most important first aid on getting bitten by a rabid animal is | |
| | | a.  Dress the wound |
| | | b.  Wash the wound with soap and running water |
| | | c.  tie a tournique above the bite |
| | | d.  take the victim to the nearby hospital |
| 7. | Multinomial regression is used when _____. | |
| | | a.  Dependent variable is binary |
| | | b.  Independent variables are binary |
| | | c.  Dependent variable is nominal with more than 2 categories |
| | | d.  Independent variables are nominal with more than 2 categories |
| 8. | Which of the following is not a component of the Multidimensional Poverty Index? | |
| | | a.  Health |
| | | b.  Education |
| | | c.  Standard of living |
| | | d.  occupation |
| 9. | The total genetic pool of the microorganisams in and around our body is called | |
| | | a.  Microbiota |
| | | b.  Hologenome |
| | | c.  Metagenome |
| | | d.  Microbiome |
| 10. | Epidemiological design that is most suited to study prevalence of a chronic condition is | |
| | | a.  Cohort |
| | | b.  Case control |
| | | c.  Cross-sectional |
| | | d.  Case series |
| 11. | The process of reading through written narratives to discern their intrinsic meaning and reduce sections of the text to a phrase or clause as part of analysis is called: | |
| | | a.  collapsing |
| | | b.  narrating |
| | | c.  coding |
| | | d.  memoing |
| 12. | What is distinctive about a narrative literature review? | |
| | | a.  It is a review based exclusively on stories about companies, in book and case-study form. |
| | | b.  It is an historically-based review, starting with the earliest contributions to the field. |
| | | c.  It is a paraphrase style of reviewing which does not require referencing. |
| | | d.  It serves as a means of gaining an initial impression of a topic, which you will understand more fully as you conduct your research. |
| 13. | Which of the following cannot be random sampling? | |
| | | a.  Stratified Sampling |
| | | b.  Snowball Sampling |

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| | | c. Systematic sampling |
| | | d. Cluster Sampling |
| 14. | What is R naught in infectious disease epidemiology? | |
| | | a. Number of people who get infected from a single case in a fully susceptible population |
| | | b. Number of people who get infected from a single case in the general population |
| | | c. The number of secondary cases |
| | | d. The initial loading number of primary case |
| 15. | Which among the following is an example of artificial passive immunity? | |
| | | a. OPV vaccination |
| | | b. Anti-diphtheria sera |
| | | c. Maternal TT vaccination for neonatal tetanus prevention |
| | | d. Post-chicken pox infection |
| 16. | Which of the following is ideal to deal with confounding? | |
| | | a. Validation |
| | | b. Randomisation |
| | | c. Screening |
| | | d. Post-hoc blocking |
| 17. | All of the following are true of the relationship between health and education, except | |
| | | a. Children with uneducated parents are likely to be just as healthy as children with educated parents |
| | | b. Good health encourages the enrollment of students in school |
| | | c. Infant mortality is lower among babies of educated mothers as compared to mothers with no schooling |
| | | d. Women with more years of schooling are more likely to adopt modern methods of contraception |
| 18. | The first level in the Indian health system where a doctor is expected to be available everyday is at the | |
| | | a. Subcentre |
| | | b. First Referral Unit |
| | | c. Community Health Centre |
| | | d. Primary Health Centre |
| 19. | The alternate form of a gene is known as | |
| | | a. Allele |
| | | b. Dominant character |
| | | c. Recessive character |
| | | d. Alternate type |
| 20. | 99DOTS strategy is for treatment adherence of | |
| | | a. Leprosy |
| | | b. HIV |
| | | c. Malaria |
| | | d. TB |
| 21. | Prior distribution is essential to do _____. | |
| | | a. Survival analysis |
| | | b. Regression analysis |

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| | c. Bayesian analysis<br>d. Factor analysis |
| 22. | A study was initiated in a large factory in 2011 to assess the incidence of injuries among machine workers in comparison to that among clerical staff. Employee medical records of each group from 2000 up to 2010 were reviewed. The underlying study design is<br>   a. Trial with historical controls<br>   b. Case control<br>   c. Retrospective cohort<br>   d. Cross sectional |
| 23. | What is the function of a contingency table, in the context of bivariate analysis?<br>   a. It shows the results you would expect to find by chance.<br>   b. It summarizes the frequencies of two variables so that they can be compared.<br>   c. It lists the different levels of p value for tests of significance.<br>   d. It compares the results you might get from various statistical tests. |
| 24. | The positive predictive value of a new test used to screen HIV is 98% in sexually transmitted disease (STD) clinic and 25% in general population. Why?<br>   a. Positive predictive value depends on the prevalence of the condition<br>   b. Higher levels of STD and consequently higher false positives among STD clinic attendees<br>   c. Sensitivity of the test is high but specificity of the test is low<br>   d. Specificity of the test is high but sensitivity of the test is low |
| 25. | The incremental Cost Effectiveness Ratio (ICER) may be simply defined as<br>   a. The increase in the cost of intervention due to inflation<br>   b. The ratio of increase in the cost to baseline cost<br>   c. The extra cost per extra unit of health effect.<br>   d. None of the above |
| 26. | If variables X and Y are independent, Variance of (X-Y), ie. Var (X-Y) is<br><br>_____.<br>   a. Zero<br>   b. Var(X)-Var(Y)<br>   c. Var(X)+Var(Y)<br>   d. Var(Y-X) |
| 27. | Three risk factors for heart disease can't be controlled. Which of these are they?<br>   a. Medicine use, vaccines, alcoholism<br>   b. Age, sex, heredity<br>   c. Diet, drug use, smoking<br>   d. None of the above |
| 28. | A DALY is a measure of losses due to which of the following<br>   a. Mortality, life expectancy<br>   b. Illness, morbidity<br>   c. injury, rehabilitation<br>   d. death, disability |
| 29. | Health expenditure by a government agency is considered<br>   a. Private expenditure on health<br>   b. Public expenditure on health |

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| | c. For-profit expenditure on health<br>d. Bilateral expenditure on health |
| 30. | The most common type of genetic variation are<br>   a. Indels<br>   b. Copy number variations<br>   c. Chromosomal rearrangements<br>   d. Single nucleotide polymorphisms |
| 31. | If most of the children of a particular village suffered from night blindness, the nutritional supplement they need to be provided with would include<br>   a. Raddish<br>   b. Pulses<br>   c. Fruits like Gauva<br>   d. Carrots |
| 32. | An epidemiologist wanted to study whether blood group 'O' is protective against peptic ulcer disease as compared to the other three blood group types. Here, blood group is the<br>   a. Exposure variable<br>   b. Outcome variable<br>   c. Confounder<br>   d. Effect modifier |
| 33. | The difference between a measure and an indicator is that:<br>   a. indicators have a more direct relationship to the underlying concept than measures.<br>   b. measures are unambiguous quantities, whereas indicators are devised from common sense understandings.<br>   c. indicators are unmistakable quantities, whereas measures are subjective and value-laden.<br>   d. measures are devised and then applied as if they were direct indicators of a concept. |
| 34. | Qualitative research methods are also known as:<br>   a. Interpretivist approaches<br>   b. Emphirical approaches<br>   c. Positivist traditions<br>   d. Ephistemological approaches |
| 35. | The "3R"s of waste management is<br>   a. Reduce, Reuse, Recycle<br>   b. Reduce, Recycle, Regain<br>   c. Reduce, Reform, Reuse<br>   d. Reduce, Recycle, Reproduce |
| 36. | Which of the following is true about women's health?<br>   a. Women and girls suffer from more DALYs lost than men and boys<br>   b. Men disproportionately suffer a greater burden of disease than women<br>   c. the world over, maternal deaths are the single most important cause of death in women<br>   d. women have a shorter life expectancy than men |

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| 37. | The measure of association that indicates faster or slower progress of the study group in development of the outcome when compared to the reference group:<br>    a.  Odds ratio<br>    b.  Risk ratio<br>    c.  Hazard ratio<br>    d.  Attributable fraction |
| 38. | The Essay on the 'Most Effectual Means of Preserving the Health of Seamen in the Royal Navy' was published by<br>    a.  William Farr<br>    b.  James Lind<br>    c.  Joseph Lister<br>    d.  Pettenkoffer |
| 39. | The process of using multiple methods to discern the validity of specific findings in qualitative research is called:<br>    a.  validation<br>    b.  triangulation<br>    c.  insider-outsider perspective<br>    d.  relativity |
| 40. | ICTC as per NACO stands for<br>    a.  Information Communication and Training Center<br>    b.  Integrated Counseling and Testing Centre<br>    c.  Initial Consultation and Testing Centre<br>    d.  Information Communication and Testing Centre |
| 41. | Which type of measurement has an absolute zero value?<br>    a.  Nominal<br>    b.  Ordinal<br>    c.  Interval<br>    d.  Ratio |
| 42. | What is data wrangling?<br>    a.  Spliting datasets<br>    b.  tidying data<br>    c.  cleaning data<br>    d.  All of the above |
| 43. | Which one is a standard normal distribution?<br>    a.  $N(0,0)$<br>    b.  $N(1,0)$<br>    c.  $N(1,1)$<br>    d.  $N(0,1)$ |
| 44. | The procedure of selecting a desired portion from the population which describes the characteristics of the whole population is..<br>    a.  Sampling<br>    b.  Extracting<br>    c.  variability<br>    d.  deviation |
| 45. | P Value is an estimate of _____.<br>    a.  Type I error<br>    b.  Type II error |

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| | c. Power of a test<br>d. Standard error |
| 46. | Public health surveillance can be described primarily as which of the following?<br>a. Monitoring public health problems and taking appropriate corrective actions<br>b. A program to control disease outbreaks.<br>c. A system for collecting health-related information.<br>d. A system for monitoring persons who have been exposed to a communicable disease. |
| 47. | Which of the following is an indirect cost when calculating cost of illness?<br>a. Food costs during medical consulation<br>b. Diagnostic costs<br>c. Transport Costs<br>d. Loss of Wages of bystander |
| 48. | What is meant by a "spurious" relationship between two variables?<br>a. One that is so ridiculously illogical it cannot possibly be true.<br>b. An apparent relationship that is so curious it demands further attention.<br>c. A relationship that appears to be true because each variable is related to a third one.<br>d. One that produces a perfect negative correlation on a scatter diagram. |
| 49. | Cancer type originating in epithelial cells is known as<br>a. Lymphoma<br>b. Carcinoma<br>c. Myeloma<br>d. Sarcoma |
| 50. | The steps in team building are,<br>a. Forming, Storming, Informing and Performing<br>b. Forming, Norming, Informing and Performing<br>c. Informing, Storming, Norming and Performing<br>d. Forming, Storming, Norming and performing |
| 51. | The best defintion of the concept of "Opportunity Cost" as currently understood is -<br>a. Health benefits that could have been achieved had the money been spent on the next best alternative intervention or healthcare programme<br>b. Cost of improving health if there was limited capacity to implement health interventions.<br>c. Health Benefits that could have been achieved if there was more opportunity to the spend the budgeted amount.<br>d. Cost of creating an opportunity to improve health by using a particular intervention. |
| 52. | Select the state with lowest Infant Mortality Rate in the given list<br>a. Bihar<br>b. Chhattisgarh<br>c. Madhya Pradesh<br>d. Uttar Pradesh |
| 53. | Which is India's rank in the overall number of Covid-19 deaths<br>a. First |

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| | b. Second |
| | c. Third |
| | d. Fourth |
| 54. | The neurotoxin that is released into the environment by the indiscriminate disposal of CFL bulbs<br>    a. Mercury<br>    b. Aluminium<br>    c. Glass<br>    d. Dioxin |
| 55. | Setting the $p$ level at 0.01 increases the chances of making a:<br>    a. Type I error<br>    b. Type II error<br>    c. Type III error<br>    d. Sampling error |
| 56. | Screening tests may often label a diseased person as normal. Such a situation is called:<br>    a. True positive<br>    b. False positive<br>    c. True negative<br>    d. False negative |
| 57. | If Standard Deviation (SD) of a variable $X$ is $4$, how much will be the SD of $X+2$?<br>    a. 8<br>    b. 4<br>    c. 2<br>    d. 0 |
| 58. | Which declaration by WHO reiterated the importance of Primary Health Care 40 years after the landmark Alma Ata declaration of 1978?<br>    a. Astana Declaration<br>    b. Bangkok Declaration<br>    c. Delhi Declaration<br>    d. Ottawa Declaration |
| 59. | Which of the following participate in Antibody-dependent cell mediated cytotoxicity (ADCC)?<br>    a. Dendritic cells<br>    b. Lymphocytes<br>    c. Macrophages<br>    d. Natural Killer cells |
| 60. | Leptospirosis is caused by<br>    a. A virus<br>    b. A bacteria<br>    c. A prion<br>    d. A fungi |
| 61 | Autogamy refers to |
| |     a. Self destruction of gametes<br>    b. Self polliation in flowers<br>    c. Flower withering |

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| | d. Cross pollination of flowers |
| 62 | Which of the following is not used to describe variability in the data<br>    a. Range<br>    b. Standard deviation<br>    c. Mode<br>    d. Quartiles |
| 63 | What day of the week will it be 53 days from a Monday?<br>    a. Wednesday<br>    b. Friday<br>    c. Saturday<br>    d. Sunday |
| 64 | The part of root which is involved in perceiving gravity is<br>    a. Root cap<br>    b. Endodermis<br>    c. Elongation zone<br>    d. Quiescent center |
| 65 | The illuminating source used as a source of excitation of fluroscent dyes in a confocal microscope?<br>    a. Electron beam<br>    b. Masers<br>    c. Mercury lamp<br>    d. Lasers |
| 66 | The regionally localized proteins or mRNAs within the unfertilized egg that regulate development are called<br>    a. Cytoplasmic determinants<br>    b. Morphometric determinants<br>    c. Gene regulators<br>    d. Mosaic forming factors |
| 67 | Which of the following analytical technique does not use optical measurement?<br>    a. ELISA<br>    b. Spectrometry<br>    c. Flow cytometry<br>    d. Differential Scanning Calorimetry |
| 68 | The tetanus vaccine given to humans in the case of a deep cut is a<br>    a. DNA vaccine<br>    b. Toxoid vaccine<br>    c. Subunit vaccine<br>    d. Recombinant vector vaccine |

| 69 | The sum of digits of a two-digit numbers is 6. If the fraction formed by taking 3 less than the number as numerator and 4 more than the number as denominator is 3/4 , what is the |
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| |     a.  36<br>    b.  24<br>    c.  45<br>    d.  54 |
| 70 | The dye used in Gram staining is<br>    a.  Giemsa<br>    b.  Crystal violet<br>    c.  Methylene blue<br>    d.  Rhodamine |
| 71 | A train of length 110 m is moving at a rate of 180 kmph. How long it will take to cross a platform of 165m?<br>    a.  5.5 s<br>    b.  1.53 s<br>    c.  6.2 s<br>    d.  4.4 s |
| 72 | The cost of 10 books, 8 pens and 12 pencils is 240 rupees. If 8 books, 6 pens and 10 pencils costs 180 rupees, what would be the cost for 1 book, 1 pen and 1 pencil?<br>    a.  25<br>    b.  30<br>    c.  35<br>    d.  40 |
| 73 | Two numbers are in the ratio 5:4. Gopal subtracts 15 from each so that they're now in the ratio 7:5. Find the smaller number.<br>    a.  30<br>    b.  35<br>    c.  40<br>    d.  50 |
| 74 | Find the odd one out in the series: 13, 19, 29, 39, 41, 53, 59<br>    a.  19<br>    b.  39<br>    c.  29<br>    d.  59 |
| 75 | Find the missing number: 4, 11, 22, 37, ........<br>    a.  43<br>    b.  79<br>    c.  56<br>    d.  59 |

| 76 | Find the odd one in the group: L, T, E, V, Q <br>    a. L <br>    b. E <br>    c. V <br>    d. Q |
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| 77 | Today is Monday. After 63 days it, will be: <br>    a. Tuesday <br>    b. Saturday <br>    c. Monday <br>    d. Sunday |
| 78 | Three times the first of four consecultive even numbers is equal to the sum of double of third number and half of fourth number. Identify the second number <br>    a. 20 <br>    b. 24 <br>    c. 28 <br>    d. 32 |
| 79 | When the digits of a two digit number interchanged it become double of its square root. Identify the number <br>    a. 64 <br>    b. 81 <br>    c. 16 <br>    d. 36 |
| 80 | sum of squares of two numbers is 325 and their product is 150. The sum of the numbers is…. <br>    a. 30 <br>    b. 15 <br>    c. 25 <br>    d. 20 |
| 81 | Which property measure the resistance of a liquid to flow <br>    a. Density <br>    b. Viscosity <br>    c. Volume <br>    d. Solubility |
| 82 | Mesons are found in <br>    a. X-rays <br>    b. Gamma rays <br>    c. Cosmic rays <br>    d. Laser beam |

| 83 | In a box, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither red nor green?<br>   a. 1/3<br>   b. 3/4<br>   c. 7/19<br>   d. 8/21 |
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| 84 | A person buys a shirt with marked price Rs.300/- at 20% discount. In order to make a profit of 20% the person should sell the shirt for<br>   a. Rs. 288<br>   b. Rs. 300<br>   c. Rs. 240<br>   d. Rs. 360 |
| 85 | Which one of the following number is a prime number<br>   a. 183<br>   b. 157<br>   c. 121<br>   d. 161 |
| 86 | A student received following marks in the five of the six courses, 91, 86, 81, 79 and 92. Average of his marks in six subject is 85.How may marks did he received in the sixth subject<br>   a. 83<br>   b. 81<br>   c. 85<br>   d. 88 |
| 87 | What is the sum of the factors of $4b_2c_2 - (b_2 + c_2 - a_2)_2$ ?<br>   a. a+b+c<br>   b. 2 (a+b+c)<br>   c. 0<br>   d. 1 |
| 88 | A father said to his son, "I was as old as you are at the present at the time of your birth". If the father's age is 38 years now, the son's age five years back was:<br>   a. 14 years<br>   b. 19 years<br>   c. 33 years<br>   d. 38 years |
| 89 | In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?<br>   a. 30%<br>   b. 70%<br>   c. 100%<br>   d. 250% |

| 90 | What is the unit for measuring the amplitude of a sound? <br> a. Deceibel <br> b. Coulomb <br> c. Hum <br> d. Cycles |
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| 91 | Which of the following metals forms an amalgam with other metals? <br> a. Tin <br> b. Mercury <br> c. Lead <br> d. Zinc |
| 92 | The sky appears blue because of: <br> a. Refraction <br> b. Scattering <br> c. Reflection <br> d. Total Internal reflection |
| 93 | Why does a compact disc (CD) show a rainbow of colours with white light? It is due to: <br> a. Interference <br> b. Diffraction <br> c. Scattering <br> d. Dispersion |
| 94 | A person is driving towards west. What sequence of direction should he follow so that he is driving towards South <br> a. Left,right,right <br> b. Right,right,left <br> c. Left,Left, Left <br> d. Right, right,right |
| 95 | Earth, Saturn,Pluto,......... <br> a. Uranus <br> b. Moon <br> c. Galaxy <br> d. Sun |
| 96 | Find the odd man out <br> a. RUX <br> b. CFI <br> c. BDG <br> d. FIL |

| 97 | How many meaningful words can be formed from the letters of the word 'INDUSTRIAL' |
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| | a. Four |
| | b. Three |
| | c. Five |
| | d. Six |
| 98 | Taj Mahal is related Love in the same way Jallianwala bagh is related to ---- |
| | a. Amritsar |
| | b. Martyrdom |
| | c. War |
| | d. Punjab |
| 99 | 2021 Nobel Prize for chemistry was given for the work on |
| | a. Asymmetric organocatalysis |
| | b. Method for genome editing |
| | c. Lithium-ion batteries |
| | d. Evolution of enzymes |
| 100 | Atoms of an isotope has |
| | a. Same mass number |
| | b. Same electronic configuration |
| | c. Same atomic number |
| | d. Different Mass number |