ENTRANCE EXAMINATIONS, FEBRUARY 2013 QUESTION PAPER BOOKLET
M. Phil.(Cognitive Science) and
Ph.D.(Cognitive Science)

Marks: 75
Time: 2.00 hrs.   Hall Ticket No._____

1. Write your ~~~~~~~~ Hall Ticket Number in the OMR Answer Sheet given to you. Also write the Hall Ticket Number in the space provided above.

2. Read carefully the following instructions:

   a. This Question paper has Two Sections: Section- A and Section- B

   b. Section - A has 25 and Section - B has 50 objective type questions of one mark each.

   c. **There is negative marking for all the questions in sections A and B. Each wrong answer carries -0.33 mark.**

   d. Answers are to be marked on the OMR answer sheet following the instructions provided there upon.

   e. Calculators are permitted. Logarithmic tables are not allowed

   f. Hand over the OMR answer sheet at the end of the examination to the Invigilator.

   g. No additional sheets will be provided. Rough work can be done in the question paper itself / space provided at the end of the booklet.

SECTION A

Directions: Read the passage and answer questions 1-8.

It is impossible to approach the question of overpopulation apolitically, because, not surprisingly, demographic patterns are dissimilar around the world, and questions of religion, culture, government, and degree of industrial development affect these patterns. In industrialized nations, birthrates are, for the most part, lower than death rates. But in Asia and Africa, many countries have annual growth rates of 2.5 to 3.5 per cent. The ability of most of these rapidly increasing populations to find food, water, shelter, and warmth is diminished as the population increases; people are forced to try to grow food and raise livestock on marginal land, which only exacerbates problems of erosion and deforestation. Concerns about air and water pollution are ignored in the scramble for food and fuel, with the result that as the population grows, the land is less able to sustain those already living on it. Pressure on already depleted natural resources could result in fundamental changes to local or even global ecosystems, changes that may be permanent. In order to keep environmental damage from escalating to the point at which it is irreversible, industrialized nations should at least offer support to undeveloped countries in the form of education about sanitation and family planning, and ideally should begin work on the long-range goal of worldwide population stability.

1. The primary purpose of this passage is to

   A. point out that a potentially disastrous mistake was made when world leaders failed to take political responsibility for the problems of overpopulation
   B. argue that technology could be developed to counteract much of the environmental damage that has already taken place
   C. assert that overpopulation causes environmental damage, and suggest that industrialized nations take an active role in alleviating such damage
   D. analyze the ways in which overpopulation affects the environment, and recommend international legislation that would force nations to take action.

2. With which of the following statements would the author most likely agree?

   A. no country's citizens should be allowed unlimited reproductive freedom
   B. problems of overpopulation might be solved if society were properly managed, but the idea of a properly managed society is politically naïve
   C. some of the problems associated with overpopulation may produce effects that are irreversible
   D. industrialized nations should share some of their agricultural abundance with developing nations

3. The author mentions which of the following as a factor influencing a country's demographic patterns?

    A. the level of agricultural production
    B. the degree to which the climate has changed over time
    C. high rates of overconsumption
    D. the quality of its natural resources

4. Which of the following is NOT an example of a kind of environmental degradation mentioned specifically by the author?

    A. a livestock owner overgrazes his land, allowing the soil to be adversely affected by wind and rain
    B. an old factory does not comply with federal regulations on noise pollution , thereby diminishing the quality of life for those near the factory
    C. on the outskirts of a small town, people scavenging for firewood cut down one of the few remaining stands of trees in the area.
    D. when a city expands beyond its sewer lines, outlying residents dispose of waste in a nearby stream

5. The author points out that in industrialized nations

    A. population remains stable and unchanged
    B. population tends to increase
    C. population tends to decrease
    D. population trends tend to remain unpredictable

6. According to the author in undeveloped nations

    A. population remains stable and unchanged
    B. population tends to increase
    C. population tends to decrease
    D. population trends tend to remain unpredictable

7. According to the author

    A. demographic patterns are similar around the world
    B. demographic patterns are dissimilar around the world
    C. natural resources are comparable around the world
    D. natural resources are scarce all over the world

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8. According to the author excessive growth of populations leads to

    A. degradation of the ecosystem
    B. political chaos
    C. financial crises
    D. corruption

Two Teddy bears, three Donald ducks and four mickey mouse toys are arranged in a row such that:

(i) The teddy bears are not at the ends but both of them together.

(ii) No two mickey mouse toys are together and only one of the mickey mouse toys is next to a teddy bear.

Answer the following questions based on the information given above:

9. In how many different ways can these toys be arranged?

    A. 4
    B. 5
    C. 6
    D. 7

Determine whether the following statements are true or false and answer the following questions:

 (i) The extreme positions are always occupied by toys of the same variety.
(ii) A Donald duck always occupies the 5th position.
(iii) Mickey mouse toys occupy the extreme positions.

10. A. Only (i) is true;
    B. Only (ii) is true
    C. Only (iii) is true
    D. None of the above

11. A. Only (i) and (ii) are true;
    B. Only (ii) and (iii) are true;
    C. Only (i) and (iii) are true;
    D. (i), (ii), and (iii) are true.

12. A. Only (i) is false;
    B. Only (ii) is false
    C. Only (iii) is false
    D. None of the above

13. A. Only (i) and (ii) are false;
    B. Only (ii) and (iii) are false;
    C. Only (i) and (iii) are false;
    D. None of the above

Two collectors, Rama and Rekha, are each selecting a group of three wildlife prints from a group of 7 prints T, U, V, W, X, Y and Z. No print can be in both groups. The selections made by Rama and Rekha are subject to the following conditions:

    i.   If U is in Rama's group, W must be in Rekha's group
    ii.   If X in Rama's group, Z must be in Rekha's group
    iii.   T and Z cannot be in same group
    iv.   W and Y cannot be in the same group

14. If X is in Rama's group, any one of the following could be in Rekha's group except:

A. T
B. U
C. V
D. W

15. Which of the following pairs of groups selected by Rama and Rekha conform to the restrictions?

	Rama	Rekha
A.	T, U, V	W, X, Y
B.	T, U, Z	V, W, X
C.	U, X, Z	T, W, Y
D.	V, W, X	U, Y, Z

16. If U is in Rama's group, which of the following is true?

A. T must be in Rama's group
B. Y must be in Rama's group
C. V must be in Rekha's group
D. Y cannot be in Rekha's group

17. What is the value of f(f(5))?

   (i) $f(x) = x^2+1$ for odd x.
   (ii) $f(x) = 4x+1$ for even x.

   A 100
   B. 105
   C. 95
   D. 110

18. X is positive and $5 > 1/X$. Then, X is

   A. greater than 1/5
   B. equal to 1/5
   C. less than 1/5
   D. None of the above

19. The three angles of a triangle are in the ratio of 1:2:3. What type of a triangle is it?

   A. An equilateral triangle
   B. An isosceles triangle
   C. An obtuse angled triangle
   D. A right angled triangle

20. In a bottle opener,

   A. Fulcrum is between effort and resistance
   B. Effort is between fulcrum and resistance
   C. Resistance is between fulcrum and effort
   D. Bottle opener is not a lever

21. If the velocity of an object increases causing its momentum to change by 30%, what will be the change in its kinetic energy?

   A. 69%
   B. 149%
   C. 169%
   D. 49%

22. Concave lenses can be used to correct

   A. Hypermetropia
   B. Presbyopia
   C. Myopia
   D. Emmetropia

23. Most of the dry weight of the plants comes from

A. Carbon Dioxide in the air
B. Sunlight
C. Nutrients in the soil
D. None of the above

24. In households, electric appliances are normally connected

A. in series between phase and neutral wires
B. in parallel between phase and neutral wires
C. in series between phase and ground wires
D. in parallel between phase and ground wires

25. The retinal cells responsible for color vision are

A. Rods
B. Cones
C. Pyramids
D. Cylinders

SECTION B

26. The sparring of the two lawyers appeared _____; however, outside the courtroom, the friendship between the two is _____.

A. pointless .. cooperative
B. hostile .. obvious
C. heightened ..concealed
D. brilliant ..precluded

27. In radio, a morning broadcasting time often _____ a larger and more _____ audience and, thus, one that is more appealing to advertisers of expensive products.

A. demands ..attractive
B. denotes ..agreeable
C. indicates ..prosperous
D. encourages ..widespread

28. Recent investigation into business and morality reveals the way in which apparently _____ business decisions, typically lost sight of in the ordinary operations of commerce, in reality _____ moral choices of major importance.

    A. unimportant .. represent
    B. unreliable .. provoke
    C. unparalleled .. symbolize
    D. unprecedented .. allow

29. While many people enjoy observing rituals and customs not _____ their culture, they _____ participating in them.

    A. sanctioned by .. avoid
    B. central to .. relish
    C. upheld in .. condone
    D. accustomed to .. encourage

30. Modernity appears to be particularly _____ mistaken notions, perhaps because in breaking free from the fetters of convention, the result is that we are very likely to be _____ unexamined hypotheses and unprepared actions.

    A. immune to .. accepting of
    B. contrary to .. reliant on
    C. fraught with .. susceptible to
    D. insensitive to .. liberated from

31. The _____ issues that arise inherently from the very nature of social scientific investigation must be judged separately from the solely _____ issues, which are hotly debated one moment and forgotten the next.

    A. reiterated ..pragmatic
    B. innate .. realistic
    C. theoretical .. arbitrary
    D. perpetual .. temporal

32. To examine the _____ of importing concepts from one discipline to enhance another, merely look at the degree to which words from the first may, without distortion, be _____ the second.

    A. danger .. meaningless for
    B. popularity .. created within
    C. etiquette ..revitalized by
    D. validity .. employed by

33. When developing a completely new skill, it is typical to feel _____. One's status as a _____ , however, is usually ephemeral, as the initial sense of awkwardness soon gives way to mastery.

    A. impertinent .. demagogue
    B. maladroit .. tyro
    C. calumnious ..dessicant
    D. elated .. novice

34. PLAYER : TEAM ::

    A. oil : liquid
    B. line : drawing
    C. hiss : recording
    D. ingredient : mixture

35. EXCRETION : KIDNEY ::

    A. lymphoma : cancer
    B. propulsion : engine
    C. respiration : lung
    D. disinfection : soap

36. INVARIABLE : CHANGE ::

    A. incurable : disease
    B. unfathomable : depth
    C. extraneous : proposition
    D. ineffable : expression

37. SHEARING : WOOL ::

    A. reaping : grain
    B. shredding : paper
    C. breathing : wine
    D. trimming : hedge

38. SYNOPSIS : CONDENSED ::

    A. digression : repeated
    B. mystery : enticing
    C. antiquity : forgotten
    D. plagiarism : pirated

39. ADMONISH : COUNSEL ::

   A. mollify : intensity
   B. enervate : vitality
   C. manufacture : opinion
   D. remunerate : payment

40. APOSTATE : FAITH ::

   A. apostle : leader
   B. defector : allegiance
   C. potentate : religion
   D. patriot : principle

41. EPIDEMIOLOGY : DISEASE ::

   A. radiology : fracture
   B. epistemology : knowledge
   C. numerology : formulas
   D. ichthyology : religion

There are five events, A, B, C, D, and E that can happen. The occurrence of every event is governed by the following rules:

If A occurs, then either B or C or both will occur.
If B occurs, then D cannot occur.
If C occurs, then E must occur.
If D occurs, then C must occur.
If E occurs, then A will occur and B will not occur.
If D does not occur, then A will also not occur.

Now answer the following questions (42-46):
42. If C has occurred, then which event will definitely occur?

   A. A only
   B. B only
   C. D only
   D. A and D

43. If E has not occurred, then which of the following statements must be true?
(i) C has not occurred   (ii) B has occurred   (iii) D has not occurred

(iv) A has not occurred

A. (i) and (ii) only
B. (iii) and (iv) only
C. (i), (iii), and (iv)
D. (i) and (iv) only

44. If B has occurred, then which statement will be definitely false?

A. D has not occurred
B. C has not occurred
C. E has not occurred
D. A must occur

45. If A has occurred, then which event(s) will definitely occur?

A. B only
B. C and D only
C. B and E only
D. C, D and E

46. If D occurs, then any of the events can occur except:

A. A
B. B
C. A and E
D. None of the above

47. If Z = 52 and ACT = 48, then BAT will be equal to

A. 39
B. 41
C. 44
D. 46

48. In the correctly worked out multiplication problem below each letter represents a different digit. What is the value of R?

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        PQ
    x   QP
    ------------------
        PQ
       TQ
    ------------------
       TRQ
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A. 6
B. 4
C. 0
D. 2

49. In a class of 80 students, 60 students passed in Mathematics, History or both, and 40 students passed in History. How many students passed only in Mathematics?

A. 20
B. 30
C. 40
D. 50

50. Whenever A goes out to a movie, he eats out. However, if A goes for a movie on any day, then the next day he eats out. A ate out on Monday. Therefore,

A. A went to see a movie on Monday
B. A went to see a movie on Sunday
C. A ate out both on Sunday and Monday
D. None of the above

Questions 51-52 are based on the information contained in the following passage.

A boy is asked to put in a basket one papya when ordered "One", one banana when ordered "Two", one apple when ordered "Three" and is asked to take out one papya and one banana when ordered "Four". The following sequence of orders is given:

12332142314223314113234

51. How many total papayas were in the basket at the end of the above sequence?

A. 1
B. 4
C. 3
D. 2

52. How many total fruits would be in the basket at the end of the above sequence?

    A. 9
    B. 8
    C. 11
    D. 10

53. Six persons are playing a card game at a round table. Venkat is facing Rakesh who is to the left of Harsha and to the right of Sita. Harsha is to the left of Lakshmi. Gautam is to the left of Sita. If Lakshmi exchanges her seat with Gautam and Sita exchanges with Rakesh, who will be sitting to the left of Lakshmi?

    A. Venkat
    B. Gautam
    C. Rakesh
    D. Harsha

Questions 54-57 are based on the information contained in the following set of statements.

    A. A causes B or C, but not both.
    B. F occurs only if B occurs.
    C. D occurs if B or C occurs.
    D. E occurs only if C occurs.
    E. J occurs only if E or F occurs.
    F. D causes G or H or both.
    G. H occurs if E occurs.
    H. G occurs if F occurs.
    I. Sculptures C and H are exhibited in the same room

54. If A occurs, which may occur?

    I. F and G
    II. E and H
    III. D

    A. I only
    B. B. II only
    C. C. III only
    D. I and III or II and III, but not both

55. If B occurs, which must occur?

    A. F and G
    B. D and G
    C. D
    D. G and H

56. If J occurs, which must have occurred?

   A. E
   B. Both E and F
   C. Either B or C
   D. G

57. Which may occur as a result of a cause not mentioned?

   I.   D
   II.   A
   III.   F

   A. I only
   B. II only
   C. I and II only
   D. I, II and III

58. ABCD is a cyclic quadrilateral, i.e. a quadrilateral enclosed in a circle. The sum of its angles is

   A. 90 degrees
   B. 180 degrees
   C. 270 degrees
   D. 360 degrees

59. How many solutions does the equation $(x+2)^3 = x^3-4$ have?

   A. One
   B. Two
   C. Three
   D. Four

60. What is the probability that when a dice is thrown an even number or 6 may occur?

   A. 1/2
   B. 1/6
   C. 2/3
   D. None of the above

61. Which of the following statements is definitely true?

    A. There should be at least one obtuse angle in a triangle.
    B. There are at least 2 acute angles in a triangle.
    C. A triangle can have at most 2 obtuse angles.
    D. A triangle can have at most 2 acute angles.

62. The distance between the following pair of points (2,3) , (4,1) is

    A. $\sqrt{2}$
    B. $2\sqrt{2}$
    C. 2
    D. 4

63. The image formed in a convex mirror (like in a side mirror in s car or a bike) is

    A. Always real
    B. Always virtual
    C. Neither real nor virtual
    D. Real or virtual depending on the position of the object

64. The degree of convergence or divergence of light rays achieved by a lens is expressed as its power. Thus, power P depends on the focal length of the lens f as,

    A. f
    B. f^2
    C. $1/f$
    D. $1/f^2$

65. If a wire is cut such that the length is halved, then its resistance

    A. Will remain the same
    B. Will be doubled
    C. Will be halved
    D. Will increase by a factor of four

66. A train is 100m long and is travelling at 50m/s. A child at the beginning of a 150m long railway platform is using a stopwatch to measure the time it takes for the last compartment to pass her after the engine has passed her. How much was her reading?

    A. 2s
    B. 9s
    C. 0.5s
    D. 3s

67. A scientist discovers a fossil of a primate that is now extinct. Which of the following is true

   A. That primate is an ancestor of humans
   B. That primate cannot be an ancestor of humans
   C. That primate can be an ancestor of humans
   D. That primate is an ancestor of all non-human primates

68. In the domain of genetics, dominance

   A. Implies the heterozygote is phenotypically identical to one of the two homozygotes
   B. happens in haploid organisms
   C. implies the heterozygote is genotypically identical to one of the two homozygotes
   D. is a social construct

69. For an organism to move in space in a manner other than by the flow of the external environment

   A. Muscles are required
   B. Neurons are required
   C. Eyes are required
   D. None of the above is necessary

70. Chlorophyll is required for

   A. Respiration
   B. Photosynthesis
   C. Transpiration
   D. Structural stability

71. When the plant 'Touch-me-not' (*Mimosa pudica*) reacts to your touch

   A. It uses neurons for signaling
   B. It uses electrical signals
   C. It uses mechanical coupling
   D. It use odorants for signaling

72. In a dynamo a commutator is required to generate DC because

    A. Magnetic field is not a constant field but changes with current in the armature coils
    B. Electric field is not a constant field but changes with current in the armature coils
    C. The coil cuts the magnetic field in alternating directions at different phases of its rotation
    D. Both the electric and magnetic fields are not constant but changes with current in the armature coils

73. An aqueous solution turns blue litmus paper red. What could be the pH of the solution?

    A. 6
    B. 7
    C. 8
    D. 9

74. Which of the following is an endothermic process

    A. Evaporation of water
    B. Dilution of an acid
    C. Reaction of water with quick lime
    D. Reaction of acid and base

75. When a guitarist changes the position on the string we hear a difference in sound mostly because the sound produced changed in

    A. wavelength
    B. amplitude
    C. phase
    D. duration