NAT –IE Sample Paper

[Pre Engineering Group]

ntstests.pk

VERBAL ABILITY

Complete the sentences by choosing the most appropriate word, from the given lettered choices (A to D) below each.

1. There are _____ views on the issue of giving bonus to the employees.
a) Independent
b) Divergent
c) Modest
d) Adverse

2. Since she had not exercised in five years, Margarita attempt to jog five miles on her first day of cardio-training was a little _____.
a) Pessimistic
b) Irrelevant
c) Quixotic
d) Relieved

3. More insurers are limiting the sale of property insurance in coastal areas and other regions _____ natural disasters.
a) safe from
b) according to
c) despite
d) prone to

4. Roman Regions _____the Mountain_____of Masada for three years before they were able to seize it.
a) dissembled, bastion
b) assailed, symbol
c) besieged, citadel
d) honed, stronghold

5. Unlike his calmer, more easygoing colleagues, the senator was _____ , ready to quarrel at the slightest provocation.
a) whimsical
b) irascible
c) gregarious
d) ineffectual

Each question below consists of a related pair of words, followed by five lettered pairs of words. Select the lettered pair that best expresses a relationship similar to that expressed in the original pair.

6. HEIGHT: MOUNTAIN
a) Depth : Trench
b) Shade : Tree
c) Weight : Age
d) Speed : Highway

7. ACT : ACTION
a) Therapy : Thermometer
b) Oblivion : Obvious
c) Liturgy : Literature
d) Image : Imagine

8. DISTANCE:MILE
a) liquid: liter
b) bushel: corn
c) weight: scale
d) fame: television

Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters.

9. EXODUS
a) Influx
b) Home-coming
c) Return
d) Restoration

10. DETER
a) Twist
b) Intimidate
c) Encourage
d) Straighten

11. QUIZZICAL
a) Amused
b) Unequivocal
c) Contorted
d) Dissimilar

12. EXPAND
a) Convert
b) Condense
c) Congest
d) Conclude

Choose the word most similar in meaning to the capitalized ones.

13. CANNY
a) Obstinate
b) Handsome
c) Clever
d) Stout

14. WARRIOR
a) Soldier
b) Sailor
c) Pirate
d) Spy

15. DISTANT
a) Far
b) Removed
c) Reserved
d) Separate

Read the passage to answer question 16-20

The explosion of a star is an awesome event. The most violent of these cataclysms, which produce supernovae, probably destroys a star completely. Within our galaxy of roughly 100 billion stars the last supernova was observed in 1604. Much smaller explosions, however, occur quite frequently, giving rise to what astronomers call novae and dwarf novae. On the order of 25 novae occur in our galaxy every year, but only two or three are near enough to be observed. About 100 dwarf novae are known altogether. If the exploding star is in a nearby part of the galaxy, it may create a "new star" that was not previously visible to the naked eye. The last new star of this sort that could be observed clearly from the Northern Hemisphere appeared in 1946. In these smaller explosions the star loses only a minute fraction of its mass and survives to explode again. Astrophysicists are fairly well satisfied that they can account for the explosions of supernovae. The novae and dwarf novae have presented more of a puzzle. From recent investigations that have provided important new information about these two classes of exploding star, the picture that emerges is quite astonishing. It appears that every dwarf nova – and perhaps every nova – is a member of a pair of stars. The two stars are so close together that they revolve around a point that lies barely outside the surface of the larger star. As a result the period of rotation is usually only a few hours, and their velocities range upward to within a two-hundredth of the speed of light.

16. According to the passage, our observations of nova are hampered by their extreme brightness.

a) Loss of mass
b) Speed of rotation
c) Distance from Earth
d) Tremendous violence

17. The production of supernova
a) occurs frequently
b) occurs 25 times in 1 year
c) occured in 1946
d) occured in 1604

18. By the term "new star" the author mean one that has recently gained in mass.
a) moved from a distant galaxy
b) become bright enough to strike the eye
c) not previously risen above the horizon
d) become visible by rotating in its orbit

19. Which from the following statement(s) true about novae and dwarf novae
I. 25 novae and super novae occur in our galaxy every year
II. occur in result of smaller explosions
III. only 100 of smaller explosions are known
a) I only
b) II only
c) III only
d) I and II

20. When novae and dwarf novae occur,
a) the star survive to explode again
b) the star destroys completely
c) the star devides in two parts
d) the star becomes a dwarf novae
e) None of these

ANALYTICAL REASONING

21. Testifying before the Senate committee investigating charges that cigarette manufacturers had manipulated nicotine levels in cigarettes in order to addict consumers to their products, tobacco executives argued that cigarette smoking is not addictive. The primary reason they gave in support of this claim was that cigarette smoking was not regulated by the Federal Drug Administration.

For the tobacco executives' argument to be logically correct, which of the following must be assumed?
a) Substances that are not addictive are not regulated by .....the Federal Drug Administration.
b) The tobacco executives lied when they claimed that .....cigarette smoking was not addictive.
c) Some addictive substances are not regulated by the .....Federal Drug Administration.
d) There is no scientific proof that cigarette smoking is .....addictive.

22. People should be held accountable for their own behavior, and if holding people accountable for their own behavior entails capital punishment, then so be it. However, no person should be held accountable for behavior over which he or she had no control.

Which of the following is the most logical conclusion of the argument above?

a) People should not be held accountable for the .....behavior of other people.
b) People have control over their own behavior.
c) People cannot control the behavior of other people.
d) Behavior that cannot be controlled should not be .....punished.

23. There is clear evidence that the mandated use of safety seats by children under age four has resulted in fewer child fatalities over the past five years. Compared to the five-year period prior to the passage of laws requiring the use of safety seats, fatalities of children under age four have decreased by 30 percent.

Which one of the following, if true, most substantially strengthens the argument above?

a) The number of serious automobile accidents involving .....children under age four has remained steady over the .....past five years.
b) Automobile accidents involving children have decreased .....sharply over the past five years.
c) The use of air bags in automobiles has increased by .....30 percent over the past five years.
d) Most fatal automobile accidents involving children under .....age four occur in the driveway of their home.

24. Three men (Tom, Peter and Jack) and three women (Eliza, Anne and Karen) are spending a few months at a hillside. They are to stay in a row of nine cottages, each one living in his or her own cottage. There are no others staying in the same row of houses. Anne, Tom and Jack do not want to stay in any cottage, which is at the end of the row. Anne, Tom and Jack do not want to stay in any cottage, which is at the end of the row. Karen is next to Peter and Jack. Karen is next to Peter and Jack. None of the girls occupy adjacent cottages. The house occupied by Tom is next to an end cottage.

How many of them occupy cottages next to a vacant cottage?

a) 2
b) 3
c) 4
d) 5

25. An employee has been assigned the task of allotting offices to six of the staff members. The offices are numbered 1 - 6. The offices are arranged in a row and they are separated from each other by six foot high dividers. Hence voices, sounds and cigarette smoke flow easily from one office to another. Miss Robert's needs to use the telephone quite often throughout the day. Mr. Mike and Mr. Brown need adjacent offices as they need to consult each other often while working. Miss. Hardy, is a senior employee and has to be allotted the office number 5, having the biggest window. Mr. Donald requires silence in the offices next to his. Mr. Tim, Mr. Mike and Mr. Donald are all smokers. Miss Hardy finds tobacco smoke allergic and consecutively the offices next to hers to be occupied by non-smokers. Unless specifically stated all the employees maintain an atmosphere of silence during office hours.

In the event of what occurrence, within a period of one month since the assignment of the offices, would a request for a change in office be put forth by one or more employees?

a) Mr. Donald quitting smoking.
b) The installation of a noisy teletype machine by Miss Hardy in her office.
c) Mr. Robert's needing silence in the office (s) next to her own.
d) Mr. Tim taking over the duties formerly taken care of by Miss. Robert.

26. Three girls Joan, Rita, and Kim and two boys Tim and Steve are the only dancers in a dance program, which consists of six numbers in this order: One a duet; two a duet; three a solo; four a duet; five a solo; and six a duet. None of the dancers is in two consecutive numbers or in more than two numbers. None of the dancers is in two consecutive numbers or in more than two numbers. The second number in which Tim appears is one that comes after the second number in which Kim appears.

Rita must perform only in duets if

a) Kim is in number two
b) Kim is in number five
c) Tim is in number two
d) Tim is in number six

27. Mrs. Green wishes to renovate her cottage. She hires the services of a plumber, a carpenter, a painter, an electrician, and an interior decorator. The renovation is to completed in a period of one working week i.e. Monday to Friday. Every worker will be taking one complete day to do his job. Mrs. Green will allow just one person to work per day. The painter can do his work only after the plumber and the carpenter have completed their jobs. The painter can do his work only after the plumber and the carpenter have completed their jobs. The painter can do his work only after the plumber and the carpenter have completed their jobs.

In case the painter works on Thursday, which among the following alternatives is possible?

a) The painter can do his work only after the plumber and the carpenter have completed their jobs.
b) The painter can do his work only after the plumber and the carpenter have completed their jobs.
c) The painter can do his work only after the plumber and the carpenter have completed their jobs.
d) The painter can do his work only after the plumber and the carpenter have completed their jobs.

28. In a small inn, one or more of the chefs have to perform duty during dinner every day. The chefs are Nicholas, Antonio, and Jeremy. None of them can be assigned to dinner duty two or more days in a row.

In case Antonio and Jeremy share the dinner duty thrice over a five-day period, which among the following would be true?

a) Nicholas is on dinner duty alone on the first of the five days.
b) Nicholas is on dinner duty alone on the first of the five days.
c) Nicholas is on dinner duty alone on the first of the five days.
d) Nicholas is on dinner duty alone on the first of the five days.

29. Five educational films A, B, C, D, & E are to be shown to a group of students. The films are to be shown in a particular order, which conforms to the following conditions: A

must be shown earlier than C, B must be shown earlier than D, E should be the fifth film shown.

Which among the following is an acceptable order for showing the educational films?

a) A, C, B, D, E
b) A, C, D, E, B
c) B, D, C, A, E
d) B, D, E, A, C

30. There are three on-off switches on a control panel A, B, and C. They have to be changed from an initial setting to a second setting according to the following conditions: In case only switch A is the switch on in the initial setting, then turn on switch B. In case switches A and B are the only switches on in the initial setting, then turn on switch C. In case all the three switches are on initially setting, then turn off the switch C. For any other initial setting, turn on all switches that are off and turn off all switches, if any, that are on.

In case switch B is the only switch on in the initial setting, what must be the second setting?

a) A on, B on, C on.
b) A on, B on, C off.
c) A on, B off, C on.
d) A off, B off, C on.

31. The only people to attend a conference were four ship captains and the first mates of three of those captains. The captains were L, M, N and O; the first mates were A, D and G.

Each person in turn delivered a report to the assembly as follows:

Each of the first mates delivered their report exactly after his or her captain. The first captain to speak was M, and captain N spoke after him.

In case A spoke immediately after L and immediately before O, and O was not the last speaker, L spoke

a) Second
b) Third
c) Fourth
d) Fifth

32. A five-member research group is chosen from engineers I, J, K and L and chemists M, N, O and P. At least three engineers must be in the research group. However, I refuses to work with L, J refuses to work with M, N refuses to work with O, L refuses to work with N.

If J and K are chosen, which is necessarily true?

I. I is chosen
II. L is chosen
III. Either N or O is chosen

a) I only
b) II only
c) III only

d) II and III only

33. An increasing number of people prefer to retain their own individuality and their own identity and consequently this has lead to a decline in the marriage rate.

a) Very few people prefer to bring up a family.
b) Emotionally divorce is not an easy procedure.
c) 700 couples from 1000 surveyed couples complained that they were losing their identity.
d) Married people have to make a considerable effort to make the marriage last.

34. Successfully adjusting to one's environment leads to happiness. War at a universal level war destroys the weaker people, who are the most unable to adjust to their environment. Thus, war at the universal level puts weaklings out of their misery and allows more space for their predators to enjoy life in a better manner. As those actions have to be performed, which maximize the level of happiness of the greatest number, war at a universal level should take place.

I. Technology could change the environment.
II. War at the universal level would be an integral part of the environment.
III. It is possible for the strong to survive without suppressing the weak.

a) I only
b) III only
c) II only
d) I and III only

35. In a one day cricket match, the total runs made by a team were 200. Out of these 160 runs were made by spinners.

I. 80% of the team consists of spinners.
II. The opening batsmen were spinners.

a) Only I
b) Only II
c) Both
d) None of the Above

36. The Government run company had asked its employees to declare their income and assets but it has been strongly resisted by employees union and no employee is going to declare his income.

I. The employees of this company do not seem to have any additional undisclosed income besides their salary.
II. The employees union wants all senior officers to declare their income first.

a) Only I
b) Only II
c) Both
d) None

37. The distance of 900 km by road between Bombay and Jafra will be reduced to 280 km by sea. This will lead to a saving of Rs. 7.92 crores per annum on fuel.

I. Transportation by sea is cheaper than that by road.
II. Fuel must be saved to the greatest extent.

a) Only I
b) Only II
c) Both
d) None

38. Modern man influences his destiny by the choice he makes unlike in the past.
I. Earlier there were fewer options available to man.
II. There was no desire in the past to influence the destiny
a) Only I
b) Only II
c) Both
d) None

39. Only good singers are invited in the conference. No one without sweet voice is a good singer.
I. All invited singers in the conference have sweet voice.
II. Those singers who do not have sweet voice are not invited in the conference.
a) Only I
b) Only II
c) Both
d) None

40. No country is absolutely self-dependent these days.
I. It is impossible to grow and produce all that a country needs.
II. Countrymen in general have become lazy.
a) Only I
b) Only II
c) Both
d) None

QUANTITATIVE REASONING

41. Three partners shared the profit in a business in the ratio 5 : 7 : 8. They had partnered for 14 months, 8 months and 7 months respectively. What was the ratio of their investments?

a) 5 : 7 : 8
b) 20:49:64
c) 38:28:21
d) None

42. The average temperature for Wednesday, Thursday and Friday was 40C. The average for Thursday, Friday and Saturday was 41C. If temperature on Saturday was 42C, what was the temperature on Wednesday?

a) 39 C

b) 44 C

c) 38 C

d) 41 C

43. Interest obtained on a sum of Rs. 5000 for 3 years is Rs. 1500. Find the rate percent.

a) 8%

b) 9%

c) 10%

d) 11%

44. Three numbers are in ratio 1:2:3 and HCF is 12. The numbers are:

a) 12,24,36

b) 11,22,33

c) 12,24,32

d) 5,10,15

45. 1.14 expressed as a per cent of 1.9 is:

a) 6%

b) 10%

c) 60%

d) 90%

46. If 2/3 of A=75% of B=0.6 of C, then A:B:C is

a) 2:3:3

b) 3:4:5

c) 4:5:6

d) 9:8:10

47. A sells an article to B at a profit of 10% B sells the article back to A at a loss of 10%. In this transaction:

a) A neither losses nor gains

b) A makes a profit of 11%

c) A makes a profit of 20%

d) B loses 20%

48. The ratio between the perimeter and the breadth of a rectangle is 5 : 1. If the area of the rectangle is 216 sq. cm, what is the length of the rectangle?

a) 16 cm

b) 18 cm

c) 24 cm

d) Data inadequate

e) None of these

49. What is the probability of getting a sum 9 from two throws of a dice?

a) 1/6

b) 1/8

c) 1/9

d) 1/12

50. A hall is 15 m long and 12 m broad. If the sum of the areas of the floor and the ceiling is equal to the sum of the areas of four walls, the volume of the hall is:

a) 720

b) 900

c) 1200

d) 1800

51. (-10)x(-100)=_____?.

a) -100

b) -1000

c) -10000

d) 1000

52. (-5)x(-4)X(-3)?

a) 60

b) 180

c) -60

d) 120

53. Write the fraction of 5%.

a) 1/10

b) 1/20

c) 1/25

d) 1/30

54. Simplify $15ax^2/5x$

a) $3ax^2$

b) 3ax

c) $5ax^2$

d) 5ax

55. Simplify 5⁄2 ÷ 1⁄x

a) 5x/2

b) 5/2x

c) 2/5x

d) 2x/5

56. Simplify a(c - b) - b(a - c)

a) ac - 2ab - bc

b) ac - 2ab + bc

c) ac + 2ab + bc

d) ac + bc

57. Calculate the Average of 1,2,3,4,5.

a) 1

b) 2

c) 3

d) 4

58. Plane geometry

a) has only two dimensions.
b) manipulates cubes and spheres.
c) cannot be represented on the page.
d) is ordinary.

59. A single location in space is called a

a) Line
b) Point
c) Plane
d) Ray

60. A single point

a) has width.
b) can be accurately drawn.
c) can exist at multiple planes
d) makes a line.

SUBJECT KNOWLEDGE

PHYSICS

61. The dimensional formula ML2 T-2 represents

a) The moment of a force
b) acceleration
c) Force
d) Momentum

62. Watt/sec is a unit of

a) momentum
b) force
c) energy
d) power

63. A fixed pulley is employed to

a) do more work with the same force but without using pulley
b) change the direction of force
c) same work
d) have mechanical advantage greater than one

64. The force of friction that comes into action after the motion has started is known as

a) dynamic friction
b) static friction
c) friction only
d) limiting friction

65. Let a disc, a cylinder, a solid sphere, and a ring be rolled down in an inclined plane simultaneously. Which will reach first?

a) disc
b) cylinder
c) solid sphere
d) ring

66. Forces of 3N, 4N and 12N act at a point in mutually perpendicular direction. The magnitude of the resultant force in newton is

a) 13
b) 11

c) 5
d) indeterminate from the information given

67. Which of the following is not necessary for work to be done?
a) an applied force
b) a force component along the displacement
c) a displacement
d) a constant speed

68. A body at rest may have
a) speed
b) momentum
c) velocity
d) energy

69. We know that forces are vectors because
a) they obey the same mathematical rules that displacement obey
b) they are defined in such a way that they are vectors
c) they always add to zero
d) they have magnitude

70. A car accelerates for 10s at 6 m/s2. What is its final seed if its initial was 4 m/s?
a) 34 m/s
b) 64 m/s
c) 60 m/s
d) 30 m/s

CHEMISTRY

71. Matter is composed of
a) radicals
b) molecules
c) atoms
d) ions

72. During the process of chemical bonding, atoms try to attain
a) noble gas configuration
b) stable configuration
c) simple configuration
d) unstable configuration

73. The attractive force that holds atoms together in molecules is called
a) bond
b) chemical bond
c) force of attraction
d) electrostatic force

74. Nature of cathode rays remains the same irrespective of the
a) glass used
b) gas used
c) electrode used
d) potential used

75. Cathode rays always travel in a
a) circular path
b) cured path
c) zig zag path
d) straight path

76. Deflecting of cathode rays towards positively charged plats indicate it is
a) negatively charged
b) neutral
c) electromagnetic wave
d) positively charged

77. By reducing the pressure of the gas in a discharge tube
a) gas glows
b) gas ionizes
c) gas conducts electricity
d) a discharge takes place

78. Neon sign is an example of
a) florescent tube
b) distillation tube
c) discharge tube
d) electrolytic tube

79. Electric current in the conductors is the movement of
a) charged particles
b) electrons
c) protons
d) neutrons

80. Atomic theory was particulate by
a) Dalton
b) Newton
c) Bohr
d) Thompson

MATHEMATICS

81. 0.003 x 0.02 = ?

a) 0.06
b) 0.006
c) 0.0006
d) 0.00006

82. What is the average of the numbers: 0, 0, 4, 10, 5, and 5?

a) 2
b) 3
c) 4
d) 5

83. What is the rate of discount if a bicycle which cost Rs.4,000 is sold for Rs.3,200?

a) 14%
b) 16%
c) 18%
d) 20%

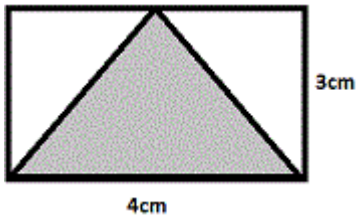
84. |-4| + |4| - 4 + 4 = ?

a) 0
b) 2
c) 4
d) 8

85. What is the value of x in $3x - 15 - 6 = 0$?

a) 7
b) 8
c) 9
d) -9

86. What is the area in cm^2 of the shaded region in the diagram below?



a) 6
b) 7
c) 8
d) 9

87. If A completes a particular work in 8 days and B the same work in 24 days. How many days will it take if they work together?

a) 4
b) 5
c) 6
d) 7

88. What comes next in the sequence: 1, 3, 11, 43, _____?

a) 161
b) 171
c) 181
d) 191

89. What is the distance travelled by a car which travelled at a speed of 80km/hr for 3 hours and 30 minutes?

a) 275km
b) 280km
c) 285km
d) 290km

90. In a class of 40 students 20% are girls. How many boys are there in the class?

a) 26
b) 28
c) 30
d) 32