

Section 1 - Paper I-General English

1) Choose the correct form of the tense to complete the sentence. I _____ my lunch very late today, he told his wife.

- A) eats
- B) ate
- C) eating
- D) eat

Read the below passage and answer the questions that follows:

In today's fiercely competitive business environment, companies need to communicate information in a lucid and precise manner to their customers. This is particularly so in the case of companies which do business in areas such as manufacturing, information technology, engineering products and services which may not be understood by a customer not familiar with its technical aspects. These communication materials are prepared by 'technical writers' people who can effectively communicate to an intended audience. Their skills are increasingly sought for preparing marketing documents such as brochures, case studies, website content, media kits as well as manuals. Though technical writers in a company do a good portion of such work, the trend now is to outsource technical writing to freelancers. Technical writing, which is aimed at those who do not have an in-depth knowledge about a product, should be direct and lucid. An overdose of technical terms and jargon would only add to the confusion of the customer.

2) According to the passage, in which type of business is it likely that technical writers would be required?

- A) Fashion houses
- B) Publishing houses
- C) Engineering companies
- D) Event management companies

3) Why are technical writers required by companies?

- A) To help with public relations
- B) To prepare communication materials for an intended audience
- C) To guide the marketing department
- D) To write technical matter

4) What type of workers are called freelancers?

- A) Those who are not employed by the company
- B) Those who have better training
- C) Those who work without charging fees
- D) Those who work while they are travelling

5) Which of the following is not a marketing document?

- A) Brochures
- B) Pamphlets
- C) Website content
- D) Memorandum of understanding

6) Why is technical writing being outsourced?

- A) It would be more professionally done
- B) It is a trend now to give work to freelancers
- C) The work requires experts
- D) There are not enough qualified people

7) What does the underlined word in the given sentence mean?

It was a futile attempt.

- A) Easy
- B) Effortless
- C) Worthwhile
- D) Useless

8) Choose the correct sentence from the following.

- A) She brush up her hair in a good style.
- B) He brushed up on his teeth every night.
- C) I brushed up on my computer skills before joining the new job.
- D) They brushed up the language before visiting a foreign country.

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9) Choose the correct form of the tense to complete the sentence. I _____(sleep) before you arrive from the party.

- A) will have slept
 - B) will have sleep
 - C) sleeps
 - D) will be sleeping
-

10) Fill in the blank with an appropriate option.

When Mukesh's kidneys stopped functioning, his doctor said he would need a kidney.....to help him live.

- A) bandaging
- B) transplant
- C) transfusion
- D) stones



Section 2 - Paper I - Education and General Awareness

11) Identify an NGO from the following which recruits college graduates and working professionals to serve as full-time teachers in low-income schools.

- A) Learn India
 - B) Change India
 - C) Tuitions for India
 - D) Teach for India
-

12) The number of seats in Lok Sabha allotted to different states is determined based on the state's

- A) Mineral resources
 - B) Population
 - C) Area
 - D) Geographical location
-

13) Myopia is a disorder associated with which of the following sense organs?

- A) Eyes
 - B) Ears
 - C) Skin
 - D) Nose
-

14) What is the meaning of the term 'Shiksha' derived from the Sanskrit root word 'Shas'?

- A) To discipline
 - B) To study
 - C) To learn
 - D) To enlighten
-

15) As per the direction of the Supreme Court which committee was set up in the year 2005 to investigate the issue of student union elections in universities and colleges?

- A) Shah Committee
- B) Lyngdoh Committee
- C) Yashpal Committee
- D) Kelkar Committee

Section 3 - PaperI-Reasoning

16) If 'The King' is coded as 'kk ta', 'The Queen' is coded as 'ta ja', the which of the following can be the code for 'The Prince' ?

- A) ta ta
- B) ta op
- C) ja op
- D) kk op

17) If JOHN is coded as 6754, HORN is coded as 5784, then RON can be coded as

- A) 874
- B) 754
- C) 578
- D) 675

18) If SUN is coded as SVM, then TON will be coded as

- A) TPM
- B) TOM
- C) SON
- D) SOM

19) Harry's present age is $\frac{1}{3}$ rd of the age of his father. 3 years hence, his father will be 45 years old. What will be Harry's age after one year from now?

- A) 13
- B) 15
- C) 16
- D) 14

20) If SUNDAY is coded as 5, then THURSDAY will be coded as

- A) 14
- B) 35
- C) 21
- D) 7

Section 4 - PaperI-Teaching Aptitude

21) Who among the following conducts two examinations, namely, Secondary Examination and Senior Secondary Examination (All India) and also some courses in Vocational Education?

- A) Technical board of education
- B) The National Institute of Open Schooling
- C) NCTE
- D) Intermediate Board of Education

22) While providing client centred help to a student the counsellor plays

- A) a passive role
- B) an active role
- C) An aggressive role
- D) an indifferent role

23) The concept of general and specific intelligence was given by

- A) Spearman
- B) Thorndike
- C) Thurstone
- D) Gardner

24) As per the NCTE norms, what should be the staff strength for a unit of 100 students at B.Ed. level?

- A) 1+9
- B) 1+12
- C) 1+10
- D) 1+11

25) Identify the advantage of team teaching from the following

- A) No personality conflict
- B) Improvement of quality teaching
- C) Lack of rigidity among teachers
- D) Good time management

26) Spiral curriculum emphasizes on the following fact

- A) Curriculum should gradually increase in difficulty
- B) Curriculum involves constant evolution
- C) Curriculum complexity remains uniform
- D) Curriculum is a very circular concept

27) Which of the following methods is also known as Discussion Method?

- A) Simple method
- B) Scientific method
- C) When it is beyond the capacity of the teacher to understand
- D) Socratic method

28) Which of the following becomes least effective learning when we guide verbally.

- A) Skills
- B) Attitude
- C) Approaches
- D) Concepts

29) "By education, I mean an all-round drawing out of the best in the child and man in body, mind and spirit." -- Who said these words?

- A) Ramakrishna paramahansa
- B) Vivekananda
- C) Mahatma Gandhi
- D) Aurobindo

30) Identify the advantages of the Observation method in education.

- A) One can study opinions
- B) Best for the study of human behavior
- C) Sampling cannot be brought into use
- D) Problems of the past can be studied

Section 5 - PaperII-Physical Science

31) An ion with mass number 56 posses 3 units of positive charge. If the ion contains 30.4% more neutrons than electrons, what will be its symbol?

- A) Cr^{3+}
- B) Mn^{3+}
- C) V^{3+}
- D) Fe^{3+}

32) Find the mass of iron which will be converted into its oxide Fe_3O_4 by the action of 18 gm of steam on it.

- A) 32 g
- B) 48 g
- C) 42 g
- D) 68 g

33) Which of the following statements is TRUE about Avogadro's hypothesis?

- A) Equal volumes of gases at the same temperature and pressure contain equal number of moles
- B) The values for all the four quantum numbers for two electrons residing in the same orbital cannot be the same.
- C) This principle gives us the sequence in which various orbitals are filled up with the electrons in the increasing order of energy.
- D) Each gas in a mixture of gases exerts a pressure, which is the same as if the gas occupied the container by itself.

34) When lead (II) nitrate is heated it decomposes into lead (II) oxide and two gases, Nitrogen dioxide gas and oxygen gas, are released. What is the coefficient of nitrogen dioxide upon balancing the chemical reaction?

- A) 3
- B) 2
- C) 4
- D) 1

35) The scale of a galvanometer of resistance 100 ohm contains 25 divisions. It gives a deflection of one division, when 4×10^{-4} A of current is passed through it. The

resistance in ohms to be connected in series to it, so that it becomes a voltmeter of range 2.5 volts is

- A) 150
- B) 100
- C) 300
- D) 250

36) A ball of mass 0.2 kg is is thrown vertically upward by applying a force by hand. The hand moves 0.2 m while applying the force and the ball goes up to 2 m height up. What is the force if the value of $G=10 \text{ m/s}^2$

- A) 22N
- B) 16 N
- C) 4 N
- D) 20 N

37) In which region of the electromagnetic spectrum does the Balmer series of hydrogen atom lie?

- A) Infrared
- B) Visible
- C) Microwave
- D) Ultraviolet

38) An elevator is moving vertically up with an acceleration "g". What is the force exerted on the floor by a passenger of mass "m" ?

- A) mg
- B) zero
- C) 2mg
- D) $\frac{1}{2} \text{ mg}$

39) Which of the following is the condition for orbit stability of a Bohr atom? (Given λ = de Broglie wavelength; r_n = radius of the circular orbit that contains n wavelengths; n = quantum number of the orbit = 1, 2, 3,.....)

- A) $(n + \frac{1}{2})\pi\lambda = r_n$
- B) $n\lambda = 2\pi r_n$

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C) $\frac{n}{2}\pi\lambda = r_n$

D) $(n + \frac{1}{2})\lambda = 2\pi r_n$

40) What happens to the internal energy during the adiabatic expansion of an ideal gas against atmospheric pressure?

- A) Decreases
- B) Increases
- C) Either increases or decreases
- D) Remains constant

41) Specific heat of a substance depends on

- A) Lustre of the substance
- B) Mass of substance
- C) Density of the substance
- D) Nature of material of the substance

42) The orbitals with quantum numbers $n = 3$; $l = 2$ can be written as _____.

- A) 3d
- B) 3s
- C) 2s
- D) 3p

43) Disinfectants like chlorine are strong

- A) oxidizing agents
- B) acids
- C) reducing agents
- D) salts

44) To which group do the alkaline earth metals belong to in the periodic table?

- A) IV
- B) I
- C) II
- D) III

45) "n" resistances each of resistance R are connected in such a way to get minimum effective resistance. Those "n" resistances, then connected in such a way to get maximum effective resistance. What will be the ratio of minimum effective resistance to maximum effective resistance?

- A) n^2
- B) $1/n$
- C) n
- D) $1/n^2$

46) The instruments such as Mandolin are the examples of

- A) Percussion instrument
- B) Wind instrument
- C) Plucked strings instrument
- D) Keyboard instruments

47) What is the ratio of the time taken by an electron to complete one revolution around the nucleus in circular orbits of radius R and 4R?

- A) 1 : 3
- B) 1 : 4
- C) 1 : 2
- D) 1 : 8

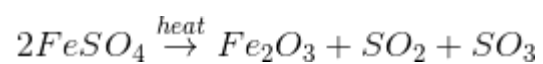
48) A compound contains C = 72%, H = 13% and O = 16%. What is the empirical formula of the compound?

- A) $C_6H_{12}O_6$
- B) $C_2H_4O_2$
- C) $C_6H_{13}O$
- D) C_6H_6O

49) Find the ratio of the masses, if a light string passing over a smooth light pulley connects two blocks of masses m_1 and m_2 , vertically. Given that acceleration of the system is $g/8$.

- A) 9:7
- B) 1:8
- C) 7:4
- D) 3:5

50) What type of reaction is the following?



- A) Combustion reaction
- B) Combination reaction
- C) Displacement reaction
- D) Decomposition reaction



Section 6 - PaperII-Biological Science

51) In an ecosystem, which of the following is a biotic factor?

- A) Sunlight
- B) Bacteria
- C) Temperature
- D) Water

52) Which of the following occurs when one population produces a substance inhibitory to other populations?

- A) Commensalism
- B) Amensalism
- C) Neutralism
- D) Mutualism

53) Which of the following Plants produces flowers?

- A) Liverworts
- B) Ferns
- C) Palm
- D) Mosses

54) Which of the following organelle is known as the 'Suicide bag' of the cell?

- A) Mitochondria
- B) Lysosomes
- C) Protoplasm
- D) Ribosomes

55) Which of the following is used as a primary stain in the Gram's staining technique?

- A) Gram's iodine
- B) Alcohol
- C) Crystal violet
- D) Safranin

56) Which of the following is an example of Bryophytes?

- A) Yews
- B) Ginkgo
- C) Conifers
- D) Hornworts

57) A process in which nitrogen in the atmosphere is converted into ammonia is known as

- A) denitrification
- B) nitrification
- C) ammonification
- D) nitrogen fixation

58) Which of the following plants is NOT an example of cryptogams?

- A) Liverworts
- B) Mosses
- C) Ferns
- D) Apple

59) Bacteria comes under which of the following biotic factors of ecosystem?

- A) Micro-consumer
- B) Macro-consumer
- C) Primary producer
- D) Secondary consumer

60) Which of the following is the largest organ of the body?

- A) Skull
- B) Skin
- C) Muscles
- D) Stomach

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61) Which of the following vitamins is a synthetic form of vitamin B-12?

- A) Cyanocobalamin
- B) Riboflavin
- C) Thiamine
- D) Niacin

62) Which of the following is known as total organic matter present in an ecosystem?

- A) Biofuel
- B) Biogas
- C) Biome
- D) Biomass

63) Which of the following measures the amount of carbon dioxide released from the soil?

- A) Soil respiration
- B) Soil infiltration
- C) Soil electrical conductivity
- D) Soil bulk density

64) By which of the following way soil erosion can be prevented?

- A) Excessive ploughing of the soil
- B) Overgrazing
- C) Planting vegetation
- D) Deforestation

65) Who among the following proposed the sandwich model of plasma membranes?

- A) Davson and Danielli
- B) Gorter and Grendel
- C) Singer and Nicholson
- D) Hershey and Chase

66) Of the following parts of a cell listed below, name the part that is common to plant cell, animal cell and a bacterial cell

- A) Mitochondria
- B) Chloroplast
- C) Cell wall
- D) Ribosomes

67) Which of the following is NOT a functional aspects of an ecosystem?

- A) Decomposition
- B) Enumeration
- C) Productivity
- D) Nutrient cycling

68) Which of the following is NOT a measures to control the acid rain?

- A) Flue gas desulphurisation
- B) Liming the soil and water
- C) Solid waste management
- D) Usage of Cleaner fuels

69) Anthoceros is a bryophyte harbouring which of the following nitrogen fixing blue-green algae in its thallus?

- A) Oscillatoria
- B) Microcystis
- C) Nostoc
- D) Spirulina

70) Biogas typically refers to a mixture of different gases produced by the breakdown of organic matter in the absence of

- A) oxygen
- B) hydrogen
- C) carbon monoxide
- D) nitrogen

Section 7 - PaperII-Mathematics

71) Instruction: Decide which of the statements from (I) and (II) is/are sufficient to answer the question given below by selecting an option.

Question: What is the two-digit number?

- I. The difference between the two digits is 9.
II. The sum of the digits is equal to the difference between the two digits.

- A) I alone sufficient while II alone not sufficient to answer.
B) II alone sufficient while I alone not sufficient to answer.
C) Neither I nor II are sufficient to answer.
D) Both I and II are necessary to answer.

72) If $\log 4 = 0.6020$ and $\log 3 = 0.4771$, the value of $\log_5 512$ is

- A) 2.967
B) 3.912
C) 3.876
D) 2.870

73) If A and B are two finite sets with cardinalities $|B| = 3$ and $|A| = 4$, then the number of relations from A to B is

- A) 2048
B) 4100
C) 1024
D) 4096

74) If $\sin \theta + \operatorname{cosec} \theta = 2$, then $\sin^2 \theta + \operatorname{cosec}^2 \theta$ is equal to

- A) 2
B) 3
C) 1
D) 4

75) If $\sec \theta + \tan \theta = p$, then $\sin \theta =$

- A) $(p^2 + 1)/(p^2 - 1)$
B) $(p - 1)/(p^2 + 1)$
C) $(p^2 + 1)/(p + 1)$

D) $(p^2 - 1)/(p^2 + 1)$

76) The side of a square measures as 2.5 ft. If three of these squares fit perfectly side by side in one rectangle, then what are the minimum dimensions of the rectangle?

- A) 6.5 ft and 2.5 ft
B) 7.5 ft and 3.5 ft
C) 5.5 ft and 2.5 ft
D) 7.5 ft and 2.5 ft

77) The pair of equations $2x + 3y = 6$, $4x + 6y = 18$ yields

- A) a pair of solutions.
B) NO solution.
C) infinitely many solutions.
D) unique solution.

78) The angle which is less than 360° and greater than 180° is called as

- A) acute angle
B) reflex angle
C) obtuse angle
D) full angle

79) If the HCF of the polynomials $f(x) = (x+3)(2x^2-3x+a)$ and $g(x) = (x-2)(3x^2+10x-b)$ is $(x+3)(x-2)$, then the values of a and b are respectively

- A) 3 and 4
B) 2 and -3
C) -2 and 3
D) -2 and -3

80) Let $U = \{1, 2, 3, \dots, 8\}$ be a universal set and $A = \{1, 2, 3, 4\}$ and $B = \{2, 4, 5, 7\}$ are two subsets of U. If A' denotes the complement of a set A, then $A' \cup B'$ is

- A) $\{1, 3, 5, 6, 8\}$
B) $\{1, 3, 4, 6, 7, 8\}$
C) $\{1, 2, 3, 5, 6, 7, 8\}$
D) $\{1, 3, 5, 6, 7, 8\}$

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81) If a set A contains 5 elements, then the number of subsets of A is

- A) 32
- B) 25
- C) 20
- D) 5

82) A number consists of two digits and the digit in the ten's place exceeds that in the unit's place by 5. If 5 times the sum of the digits be subtracted from the number, the digits of the number are reversed. The number is

- A) 52
- B) 35
- C) 72
- D) 27

83) If $\log 27 = 1.431$, then the value of $\log 9$ is

- A) 0.954
- B) 0.477
- C) 0.72
- D) 1.908

84) If $A:B = 2:3$, $B:C = 4:5$ and $C:D = 6:7$, then the ratio $A:B:C:D$ is

- A) 16:24:30:35
- B) 15:24:30:35
- C) 12:24:30:35
- D) 16:14:30:35

85) If $\sin \theta = -4/5$ and θ lies in the third quadrant, then the value of $\cos \theta/2$ is

- A) $1/5$
- B) $1/\sqrt{5}$
- C) $1/2$
- D) $-1/2$

86) Two ships are sailing in the sea on the same side of a lighthouse. The angle of elevation of the top of the lighthouse as observed from the ships are 30° and 45° respectively. The lighthouse is 100 m high. If the two ships

and the light house stay by a straight line, the approximate distance between the two ships is

- A) 300 m
- B) 273 m
- C) 173 m
- D) 73 m

87) The remainder when 4^{14} divided by 3 is

- A) 3
- B) 2
- C) 1
- D) 0

88) If $a^2 + 4b^2 = 12ab$, then $\log(a+2b)$ is equal to

- A) $(1/2) (\log a + \log b - \log 2)$
- B) $(1/2) (\log a + \log b + 4 \log 2)$
- C) $(1/2) (\log a - \log b + \log 2)$
- D) $(1/2) (\log a + \log b - 4 \log 2)$

89) In a right angled triangle the median drawn to the hypotenuse

- A) always bisects the right angle.
- B) is half the hypotenuse in length.
- C) is always perpendicular to the hypotenuse
- D) is equal to the base of the triangle.

90) The value of $\log_b a \log_c b \log_d c \log_a d$ is equal to

- A) 1
- B) 0
- C) abcd
- D) -1

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Answer Key

1. B 31. D 61. A
2. C 32. C 62. D
3. B 33. A 63. A
4. A 34. C 64. C
5. D 35. A 65. A
6. B 36. A 66. D
7. D 37. B 67. B
8. C 38. C 68. C
9. A 39. B 69. C
10. B 40. A 70. A
11. D 41. D 71. D
12. B 42. A 72. C
13. A 43. A 73. D
14. A 44. C 74. A
15. B 45. D 75. D
16. B 46. C 76. D
17. A 47. D 77. B
18. A 48. C 78. B
19. B 49. A 79. D
20. D 50. D 80. D
21. B 51. B 81. A
22. A 52. B 82. C
23. A 53. C 83. A
24. C 54. B 84. A
25. B 55. C 85. B
26. A 56. D 86. D
27. D 57. D 87. C
28. A 58. D 88. B
29. C 59. A 89. B
30. B 60. B 90. A