Code No.	R – 2130

Entrance Examination for Admission to the M.Tech. Courses in the Teaching Departments, 2023

CSS

TECHNOLOGY MANAGEMENT

General Instructions

1. The Question Paper is having 100 Objective Questions, each carrying one mark.
2. The answers are to be (✓) 'tick marked' **only** in the "**Response Sheet**" provided.
3. **Negative marking** : **0.25 marks** will be deducted for each wrong answer .

Time : 2 Hours **Max. Marks : 100**

To be filled in by the Candidate									
Register Number	in Figures								
	in words								

Choose appropriate answer from the options in the questions.

(100 × 1 = 100 marks)

1. A single packet on a data link is known as
   a) Path
   b) Frame
   c) Block
   d) Group

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2. A system program that combines the separately compiled modules of a program into a form suitable for execution

   a) assembler
   b) linking loader
   c) cross compiler
   d) load and go

3. Multimedia system require hard real time scheduling

   a) to ensure critical tasks will be serviced within timing deadlines
   b) to deliver the media file to the client
   c) to minimize the delay
   d) for security

4. The remote method invocation

   a) allows a process to invoke memory on a remote object

   b) allows a thread to invoke a method on a remote object

   c) allows a thread to invoke memory on a remote object

   d) allows a process to invoke a method on a remote object

5. Which system call returns the process identifier of a terminated child?

   a) wait b) exit

   c) fork d) get

6. What is the time complexity to insert a node based on key in a priority queue?

   a) O(nlogn) b) O(logn)

   c) O(n) d) $O(n^2)$

7. What is the space complexity of searching in a heap?

   a) O(logn) b) O(n)

   c) O(1) d) O(nlogn)

8. What is the major drawback of using RAD Model?

   a) Highly specialized and skilled developers/designers are required

   b) Increases reusability of components

   c) Encourages customer/client feedback

   d) Increases reusability of components, Highly specialized and skilled developers/designers are required

9. An attempt to make a computer resource unavailable to its intended users is called

a) Denial-of-service attack
b) Virus attack
c) Worms attack
d) Botnet process

10. The complexity of Binary search algorithm is

a) O (n)
b) O (log n)
c) $O(n^2)$
d) O (n log n)

11. When does the waveform of the emf generated undergoes one complete cycle?

a) When conductors move past north pole
b) When conductors move past south pole
c) When conductors move past north and south poles
d) When conductors are stationary

12. Calculate the maximum emf when the velocity is 10 m/s, the length is 3m and the magnetic field density is 5T,

a) 150V
b) 100 V
c) 300 V
d) 0V

13. When inductances are connected in series, the equivalent inductance is ————— the largest individual inductance.

a) Greater than
b) Less than
c) Equal to
d) Not related to

14. The phenomenon due to which there is an induced current in one coil due to the current in a neighbouring coil is?

a) Electromagnetism
b) Susceptance
c) Mutual inductance
d) Steady current

15. What is Helmholtz equation?

a) $i = I\left(1 - e^{Rt/L}\right)$
b) $i = I\left(1 - e^{-Rt/L}\right)$
c) $i = I\left(1 + e^{-Rt/L}\right)$
d) $i = I\left(e^{-Rt/L}\right)$

16. Reactance is ————— to the length of the material and is ————— to the area of cross section the material.

a) Directly proportional, Directly proportional
b) Inversely proportional Inversely proportional
c) Directly proportional, Inversely proportional
d) Inversely proportional, Directly proportional

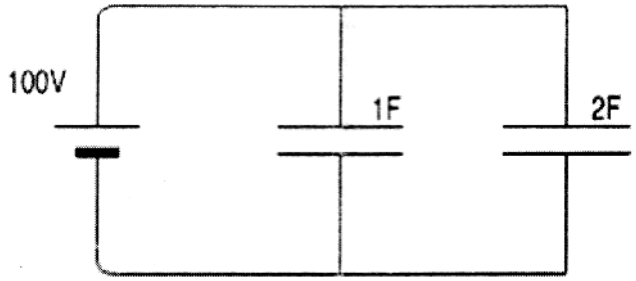
17. Under normal conditions capacitors have

a) Displacement current
b) Conduction current
c) Both conduction and displacement current
d) Neither conduction nor displacement current

18. What is the initial current while charging a capacitor?

a) High
b) Low
c) 0
d) Cannot be determined

19. Calculate the charge in the 2F capacitor.



a) 200 C
b) 100 C
c) 300 C
d) 400C

20. If a 1 oh`m 2 ohm and 32/3 ohm resistor is connected in star, find the equivalent delta connection.

a) 1ohm, 3ohm, 2ohm
b) 4ohm, 3ohm, 5ohm
c) 4ohm, 5ohm, 2ohm
d) 5ohm, 3ohm, 2ohm

21. An astable multivibrator is a circuit that :

a) has two stable states
b) is free-running
c) produces a continuous output signal
d) is free-running and produces a continuous output signal

22. The output will be a LOW for any case when one or more inputs are zero in

a) OR gate
b) NOT gate
c) AND gate
d) NAND gate

23. Ionization within a P-N junction causes a layer on each side of the barrier called the:

a) junction
b) depletion region
c) barrier voltage
d) forward voltage

24. The common-source JFET amplifier has :

a) a very high input impedance and a relatively low voltage gain

b) a high input impedance and a very high voltage gain

c) a high input impedance and a voltage gain less than 1

d) no voltage gain

25. Convert the decimal number 151.75 to binary

a) 10000111.11 b) 11010011.01

c) 00111100.00 d) 10010111.11

26. What is the decimal value of the hexadecimal number 777?

a) 191 b) 1911

c) 19 d) 19111

27. The valence electron of a conductor are also called as

a) Bound electron b) Free electron

c) Nucleus d) Proton

28. The fast carry or look-ahead carry circuits found in most 4-bit parallel-adder circuits:

a) increase ripple delay b) add a 1 to complemented inputs

c) reduce propagation delay d) determine sign and magnitude

29. The 1’s complement of binary number 101010 is

a) 010110 b) 010101

c) 110111 d) 101011

30. A full adder adds

a) two 2-bit binary numbers

b) two 4-bit binary numbers

c) two single bits and one carry bit

d) two 2-bit numbers and one carry bit

31. The sleeve or muff coupling is designed as a

a) dun cylinder

b) thick cylinder

c) solid shaft

d) hollow shaft

32. Which of the following statement is wrong?

a) The heat transfer in liquid and gases takes place according to convection

b) The amount of heat flow through a body is dependent upon the material of the body

c) The thermal conductivity of solid metals increases with rise in temperature

d) Logarithmic mean temperature difference is not equal to the arithmetic mean temperature difference

33. Which of the following statement is wrong?

a) The solid length of a spring is the product of total number of coils and the diameter of the wire

b) The spring index is the ratio of mean diameter of the coil to the diameter of the wire

c) The spring stiffness is the load required per unit deflection of the spring

d) The pitch of the coil is the axial distance between adjacent coils in the compressed state

34. The lower critical point for all steels is

a) 600°C
b) 700°C
c) 723°C
d) 913°C

35. If the rotating mass of a rim type flywheel is distributed on another rim type flywheel whose mean radius is half the mean radius of the former, then energy stored in the latter at the same speed will be

a) four times the first one
b) same as the first one
c) one fourth of the first one
d) one and a half times the first one

36. Thermoplastic materials are those materials which

a) are formed into shape under heat and pressure and results in a permanently hard product
b) do not become hard with the application of heat and pressure and no chemical change occurs
c) are flexible and can withstand considerable wear under suitable conditions
d) are used as a friction lining for clutches and brakes

37. Silicon when added to copper improves

a) machinability
b) hardness
c) hardness and strength
d) strength and ductility

38. The heat transfer takes placed according to

a) Zeroth law of thermodynamics
b) First law of thermodynamics
c) Second law of thermodynamics
d) Kirchhoff's law

39. A cycle consisting of one constant pressure, one constant volume and two isentropic processes is known as

a) Carnot cycle
b) Stirling cycle
c) Otto cycle
d) Diesel cycle

40. In a four stroke cycle, the minimum temperature inside the engine cylinder occurs at the

a) beginning of suction stroke
b) end of suction stroke
c) beginning of exhaust stroke
d) end of exhaust stroke

41. To measure flood variability, ————— is used widely.

a) FFMI
b) FI
c) FMI
d) FFI

42. The headquarters of the Bureau of Indian Standards (BIS) is at:

a) Hyderabad
b) Agra
c) Delhi
d) Kolkata

43. A short-term environmental impact assessment (EIA) has a time period of:

a) 2-5 years
b) 10-15 years
c) 5-10 years
d) 5-7years

44. Which of the below is the earliest known dam?

a) Sadd-el-Kafara dam
b) Dam of Marib
c) Jawa Dam
d) Ha-ilar Dam

45. In case of drift method of tunnelling, the drift may be excavated at

a) the centre and the side
b) the bottom
c) the top
d) All of the above

46. Fertigation is a process in ————— irrigation,

a) Sprinkler
b) Surface
c) Centre pivot
d) Drip

47. _____ apparatus is used to test liquid limit of a soil.

a) Mohr
b) Casagrande
c) Otto
d) Terzaghi

48. In Geotechnical Engineering, soil is considered as a ————— phase material.

a) 3
b) 2
c) 1
d) 4

49. The activities of cultivation of land, timber harvesting is permitted in:

a) Sanctuaries
b) National Parks
c) Biosphere Reserves
d) Protected Areas

50. Carbon footprint can be measured by:

a) Carbon dating
b) Instruments
c) Carbon accounting
d) Formula

Questions 51-55 are based on the information from the table given below.

The table shows the percentage of teachers trained to teach using computers in India according to the Unified District Information system for Education (UDISE) 2019-20.

The data encompasses Pre-primary, Primary, Upper Primary, Secondary and Higher Secondary sections in Government, Government-Aided, Local body, Private unaided management schools.

Management	Pre-Primary	Primary	Upper primary	Secondary	Higher secondary
Government	5	9	15	26	25
Government aided	26	35	30	30	26
Local body	12	50	45	15	32
Private unaided	31	29	32	33	33

51. Which category of management has the highest percentage of trained teachers?

a) Government
b) Government-Aided
c) Local body
d) Private unaided

52. What percentage of trained teachers are there in the Upper Primary section?

a) 22
b) 26
c) 24
d) 28

53. Which two management categories have a consistent percentage of trained teachers in every section?

a) Government and Government-Aided
b) Government-Aided and Local body
c) Local body and Government
d) Private unaided and Government-Aided

54. Which section has the lowest number of trained teachers?

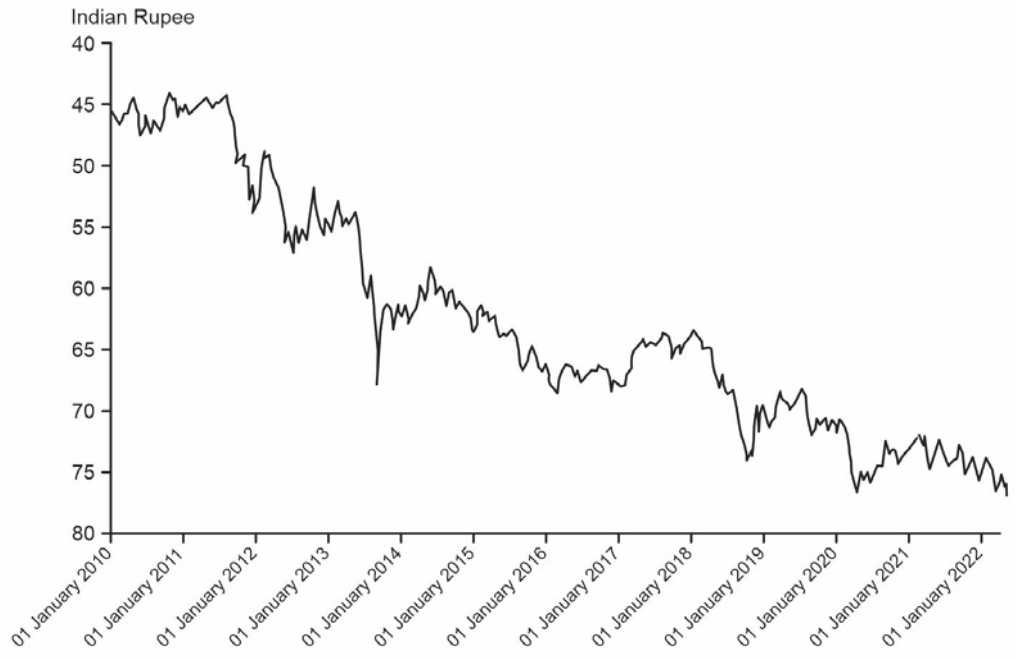
a) Pre-primary
b) Primary
c) Upper Primary
d) Secondary

55. Two among the different sections has an equal number of trained teachers. Which are they?

a) Pre-primary and Primary
b) Primary and Upper Primary
c) Upper Primary and Secondary
d) Secondary and Higher Secondary

Questions 56-60 are based on the information from the chart given below.

The chart shows the Indian rupee exchange rate vis-a-vis the U.S. dollar between January 2010 and May 2022. (In this graph, the value of the rupee is plotted between 80 (lowest) and 40 (highest))



56. In which two years did the value of the rupee reach an all-time low?

a) 2020 & 2021
b) 2020 & 2022
c) 2015 & 2019
d) 2018 & 2019

57. Find the approximate average value of the rupee between 2010 and 2012?

a) 75

b) 70

c) 65

d) 50

58. During which year was the value of the rupee highest?

a) 2010-11

b) 2011-12

c) 2012-13

d) 2013-14

59. What is the average ratio of the value of the rupee in January 2010 to the value of the rupee in May 2022?

a) 0.1

b) 0.4

c) 0.2

d) 0.6

60. During which year was the value of the rupee higher than that in the year 2011?

a) 2019

b) 2020

c) 2021

d) 2015

Questions 61-65 are based on the passage given below:

"OpenAI is committed to keeping powerful AI safe and broadly beneficial. We know our AI tools provide many benefits to people today. Our users around the world have told us that ChatGPT helps to increase their productivity, enhance their creativity, and offer tailored learning experiences. We also recognize that, like any technology, these tools come with real risks-so we work to ensure safety is built into our system at all levels.

We work hard to prevent foreseeable risks before deployment, however, there is a limit to what we can learn in a lab. Despite extensive research and testing, we cannot predict all of the beneficial ways people will use our technology, nor all the ways people will abuse it. That's why we believe that learning from real-world use is a critical component of creating and releasing increasingly safe AI systems over time.

We cautiously and gradually release new AI systems- with substantial safeguards in place—to a steadily broadening group of people and make continuous improvements based on the lessons we learn.

We make our most capable models available through our own services and through an API so developers can build this technology directly into their apps. This allows us to monitor for and take action on misuse, and continually build mitigations that respond to the real ways people misuse our systems—not just theories about what misuse might took like.

Real-world use has also led us to develop increasingly nuanced policies against behaviour that represents a genuine risk to people while still allowing for the many beneficial uses of our technology.

Crucially, we believe that society must have time to update and adjust to increasingly capable AI, and that everyone who is affected by this technology should have a significant say in how AI develops further. Iterative deployment has helped us bring various stakeholders into the conversation about the adoption of AI technology more effectively than if they hadn't had first-hand experience with these tools" — Open AI

61. The passage implies the need of

a) Artificial Intelligence
b) Responsible AI
c) Capable AI
d) AI deployment

62. Which of the following is critical in creating safe AI systems?

a) Learning in lab

b) Learning from experts

c) Learning from real-world use

d) Learning from stakeholders

63. Iterative release of new AI systems has the following benefits

a) Safer AI systems over time

b) Continuously mitigate misuse of the systems

c) Society will get enough time to adjust to increasingly capable AI

d) All of the above

64. This passage describes the Open AI's approach to AI safety which was released on 5 April 2023. Following the success of which product, did they publish this?

a) DALL-E

b) ChatGPT

c) Whisper

d) AI

65. Choose a suitable title for the passage

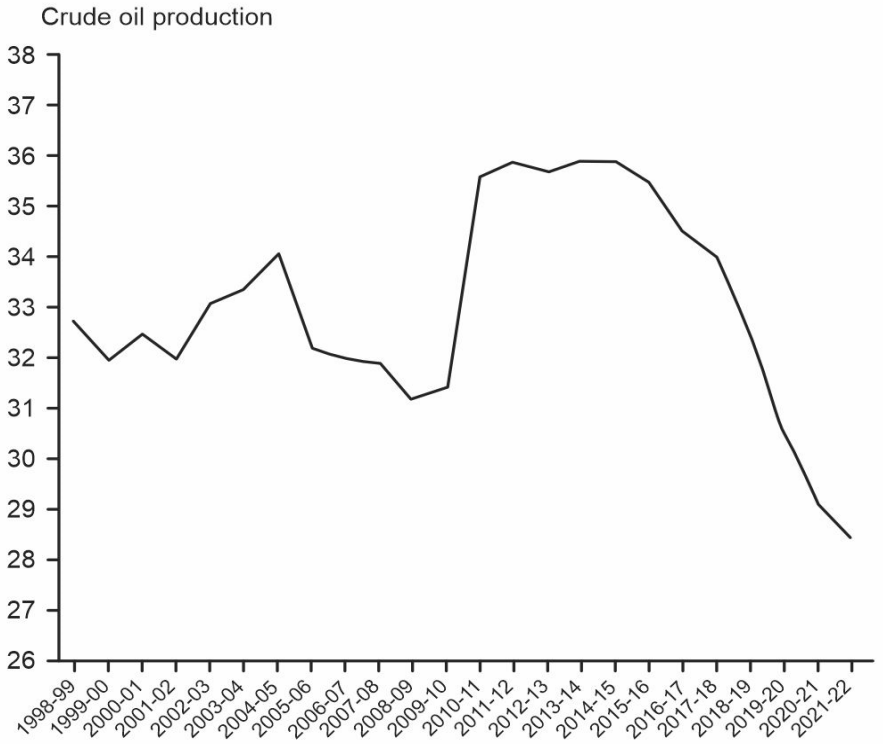
a) Need of AI in real-world

b) Need of Capable AI

c) Need of Safe AI

d) An iterative approach to safe and capable AI

Questions 66-68 are based on the chart given below. The chart shows India's year-wise domestic crude oil production



66. Which financial year onwards the value has been consistently falling?

a) 1998-99 b) 2001-02

c) 2008-09 d) 2015-16

67. What was the highest crude oil production as per chart?

a) 38 b) 37

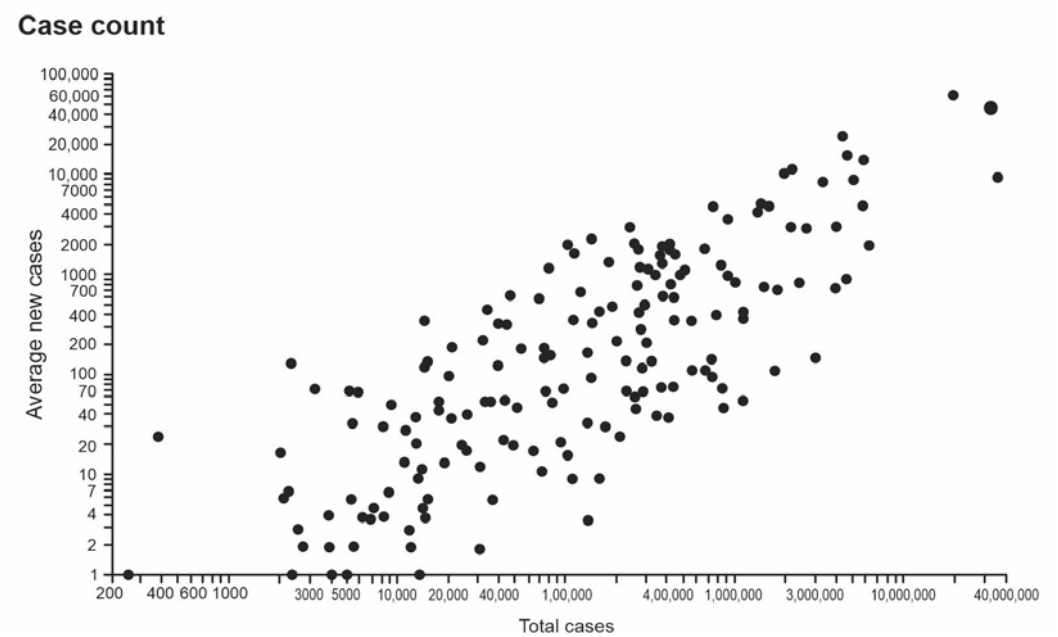
c) 36 d) 35

68. What is the latest trend of crude oil production as per the chart?

a) Consistently growing b) Consistently falling

c) Constant d) Fluctuating

Questions 69 -72 are based on the following chart. The chart shows the cumulative cases recorded by a country against the seven-day rolling average of daily cases on June 22. The red dot refers to the status of India.



69. What is the position of India in average daily cases?
    a) First
    b) Second
    c) Third
    d) Fourth

70. How many countries have total cases less than 1000?
    a) Zero
    b) One
    c) Two
    d) Three

71. How many countries are not reporting new daily cases?
    a) Five
    b) Ten
    c) Fifteen
    d) Twenty

72. How many countries reported total cases approximately equal to 4 crores?
    a) Zero
    b) One
    c) Two
    d) Three

Questions 73-76 are based on the following passage.

Futures studies is the systematic study of possible, probable and preferable futures including the worldviews and myths that underlie each future. In the last fifty or so years, the study of the future has moved from predicting the future to mapping alternative futures to shaping desired futures, both at external collective levels and inner individual levels (Masini 1993: Bell 1996; Amara 1981; Sardar 1999; Inayatullah 2000; Saul 2001).

During this period, futures studies has moved from focusing on the external objective world to a layered approach where in how one sees the world actually shapes the future one sees (Inayatullah 2002). In this critical futures approach — the post structural turn— the external world is informed by the inner and, crucially, a person's inner world is informed by the reality of the external. While many embrace futures studies so as to reduce risk, to avoid negative futures, particularly the worst case, others actively move to creating desired futures, positive visions of the future (Masini 1983). The identification of alternative futures is thus a fluid dance of structure (the weights of history) and agency (the capacity to influence the world and create desired futures).

73. What is this passage about?
    a) Alternative futures
    b) Critical futures approach
    c) Futures studies
    d) History

74. Futures studies focus on
    a) External objective world
    b) Layered approach to how future is shaped
    c) Preferable futures
    d) Perceptions

75. Why futures studies is important?
    a) To reduce risks
    b) To avoid negative futures
    c) To create desired futures
    d) To create positive vision of futures

76. Choose a suitable title to the passage

a) Futures Studies
b) Alternative Futures
c) Futures Framework
d) World View

77. Find the next number in the sequence: 190, 94, 46, 22, 10,4

a) 1.5
b) 1
c) 0.5
d) 2

78. Tanuj is older than Eina. Chetan is older than Tanuj. Eina is older than Chetan. If the first 2 statements are true, the 3rd statement is

a) True
b) False
c) Uncertain

79. Which of the following is the contrapositive of "If two triangles are identical, then these are similar"?

a) If two triangles are not similar, they are not identical
b) If two triangles are not identical, then these are not similar
c) If two triangles are not identical, then these are similar
d) If two triangles are not similar, then these are identical

80. If *p* is true and *q* is false, then which of the following statements is not true?

a) $p \vee q$
b) $p \Rightarrow q$
c) $p \wedge (\sim p)$
d) $q \Rightarrow p$

81. If+ means $\div$, $\times$ means –, – means $\times$ & $\div$ means +, then 38 + 19 –16 $\times$ 17 ÷ 3 = ?

a) 16
b) 19
c) 18
d) 12

82. RQP, ONM, __, IHG, FED, find the missing letters.

a) CDE
b) LKI
c) LKJ
d) BAC

83. Pointing to a photograph, a man said, “I have no brother and that man’s father is my father’s son.” Whose photograph was it?

a) His son
b) His own
c) His father
d) His nephew

84. What is Geeta’s rank in the class?

I. There are 30 students in the class.

II. There are 10 students who scored less than Geeta.

a) Statement I alone is sufficient, but statement II alone is not sufficient

b) Statement II alone is sufficient, but statement I alone is not sufficient

c) Either I or II is sufficient

d) Neither I nor II is sufficient

85. Peter is in the East of Tom and Tom is in the North of John. Mike is in the South of John then in which direction of Peter is Mike?

a) South-East
b) South-West
c) South
d) North-East

86. In a certain code language, “DESTINY” is written as ‘WVHGRMB” How is “MATH” written in that code?

a) NZGS
b) GVYH
c) AMCY
d) PXEN

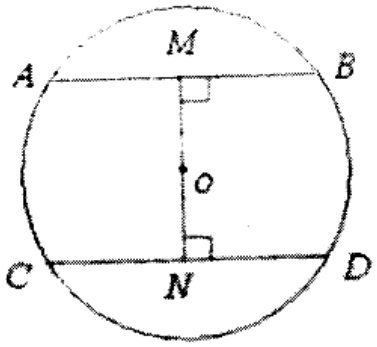
87. Find odd man out: 30,68,130,100,222

a) 68
b) 130
c) 100
d) 222

88. If there are 14 boys in between Sam and Vishal. Sam is 9th from left and Vishal is 11^{th} from right end in a row of boys. Then the number of boys in a row is?

a) 37
b) 35
c) 35
d) 32

89. A, B, C, D, E, F, G and H are sitting around a circular table facing the center. B sits second to the right of D. who does not sit adjacent to E. A is seated third to the left of C and second to right of E. H is seated second to the left of F. G and D are not immediate neighbors of each other. Who among the following sits exactly between G and the one who sits to the left of A?



a) E
b) B
c) F
d) None of these

90. Sharvari introduced a person as her mother's father's wife's son-in-law's daughter. How are they related?

a) Herself
b) Mother
c) Maternal aunt
d) Paternal aunt

91. A and B are two events such that $P(A)=0.4$ and $P(A\cap B)=0.2$ Then $P(A\cap B)$ is equal to

a) 0.4
b) 0.2
c) 0.6
d) 0.8

92. Which of the following mentioned standard Probability density functions is applicable to discrete Random Variables?

a) Gaussian Distribution
b) Poisson Distribution
c) Rayleigh Distribution
d) Exponential Distribution

93. Normal Distribution is symmetric is about

a) Variance
b) Mean
c) Standard deviation
d) Covariance

94. Dot product of two vectors a and b is termed as

a) Outer product
b) Inner product
c) Cartesian Product
d) Vector product

95. Consider the vertical cone. The minimum value of the function in the region $f(x,y)=c$ is

a) Constant
b) 1
c) 0
d) –1

96. The first and second derivatives of a quadratic polynomial at $x=1$ are 1 and 2 respectively. Then the value of $f(1)=f(0)$ is given by

a) 3/2
b) 1/2
c) 1
d) 0

97. Let A and B be two events such that occurrence of A implies occurrence of B, But not vice-versa, then the correct relation between $P(A)$ and $P(B)$ is

a) $P(A)<P(B)$
b) $P(B)\geq P(A)$
c) $P(A)=P(B)$
d) $P(A)\geq P(B)$

98. Give the kinetic energy of body is $T=\frac{1}{2}mv^2$. If the mass of body changes from 100 kg to and 500 gm and velocity of a body changes from 1600 mt/sec to 1590 mt/sec. Then find the approximate change in T.

a) 960000 J decrease in value
b) 960000 J increase in value
c) 450000 J decrease in value
d) 450000 J increase in value

99. If in a frequently distribution, the mean and median are 21 and 22 respectively, then its mode is approximately

a) 22.0
b) 20.5
c) 25.5
d) 24.0

100. If in a triangle ABC, the altitudes from the vertices A, B,C on opposite sides are in H.P., then sin A, sin B, sin C are in

a) G.P.
b) A.P.
c) Arithmetic-Geometric progression
d) H.P.

ANSWER SHEET

1	A	B	C	D	E	26	A	B	C	D	E	51	A	B	C	D	E	76	A	B	C	D	E
2	A	B	C	D	E	27	A	B	C	D	E	52	A	B	C	D	E	77	A	B	C	D	E
3	A	B	C	D	E	28	A	B	C	D	E	53	A	B	C	D	E	78	A	B	C	D	E
4	A	B	C	D	E	29	A	B	C	D	E	54	A	B	C	D	E	79	A	B	C	D	E
5	A	B	C	D	E	30	A	B	C	D	E	55	A	B	C	D	E	80	A	B	C	D	E
6	A	B	C	D	E	31	A	B	C	D	E	56	A	B	C	D	E	81	A	B	C	D	E
7	A	B	C	D	E	32	A	B	C	D	E	57	A	B	C	D	E	82	A	B	C	D	E
8	A	B	C	D	E	33	A	B	C	D	E	58	A	B	C	D	E	83	A	B	C	D	E
9	A	B	C	D	E	34	A	B	C	D	E	59	A	B	C	D	E	84	A	B	C	D	E
10	A	B	C	D	E	35	A	B	C	D	E	60	A	B	C	D	E	85	A	B	C	D	E
11	A	B	C	D	E	36	A	B	C	D	E	61	A	B	C	D	E	86	A	B	C	D	E
12	A	B	C	D	E	37	A	B	C	D	E	62	A	B	C	D	E	87	A	B	C	D	E
13	A	B	C	D	E	38	A	B	C	D	E	63	A	B	C	D	E	88	A	B	C	D	E
14	A	B	C	D	E	39	A	B	C	D	E	64	A	B	C	D	E	89	A	B	C	D	E
15	A	B	C	D	E	40	A	B	C	D	E	65	A	B	C	D	E	90	A	B	C	D	E
16	A	B	C	D	E	41	A	B	C	D	E	66	A	B	C	D	E	91	A	B	C	D	E
17	A	B	C	D	E	42	A	B	C	D	E	67	A	B	C	D	E	92	A	B	C	D	E
18	A	B	C	D	E	43	A	B	C	D	E	68	A	B	C	D	E	93	A	B	C	D	E
19	A	B	C	D	E	44	A	B	C	D	E	69	A	B	C	D	E	94	A	B	C	D	E
20	A	B	C	D	E	45	A	B	C	D	E	70	A	B	C	D	E	95	A	B	C	D	E
21	A	B	C	D	E	46	A	B	C	D	E	71	A	B	C	D	E	96	A	B	C	D	E
22	A	B	C	D	E	47	A	B	C	D	E	72	A	B	C	D	E	97	A	B	C	D	E
23	A	B	C	D	E	48	A	B	C	D	E	73	A	B	C	D	E	98	A	B	C	D	E
24	A	B	C	D	E	49	A	B	C	D	E	74	A	B	C	D	E	99	A	B	C	D	E
25	A	B	C	D	E	50	A	B	C	D	E	75	A	B	C	D	E	100	A	B	C	D	E

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