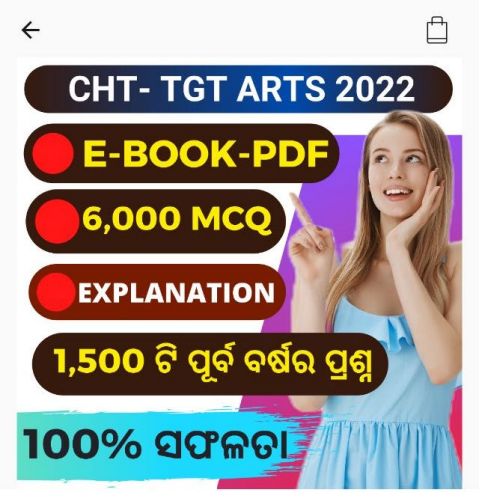

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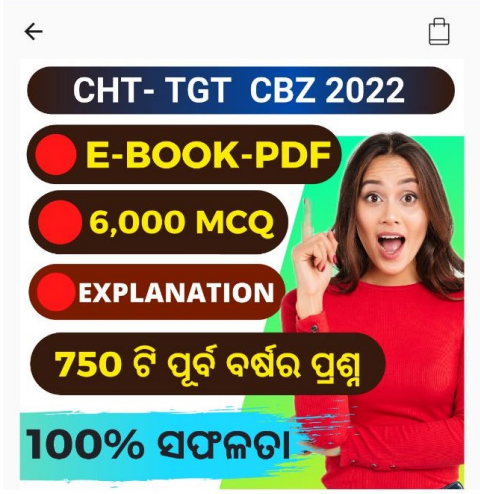

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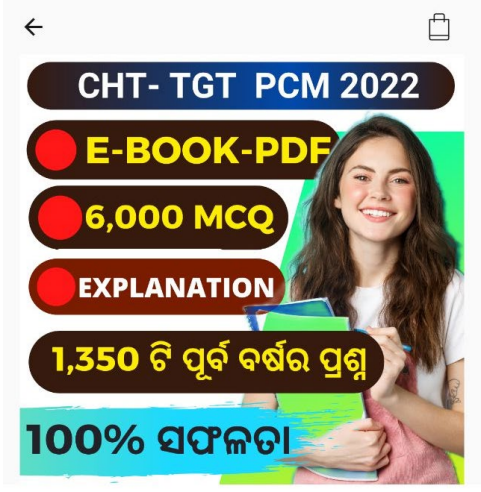

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Previous Year Question- 1,350 (2022, 2021 & 2019 Year)...

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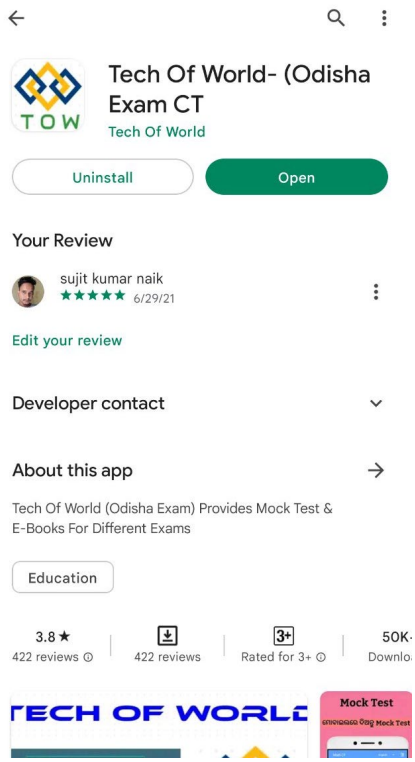

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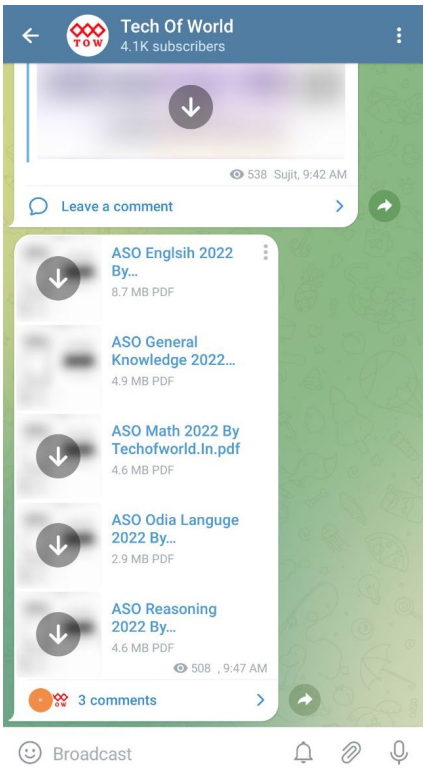

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Section 1 - Paper I General Knowledge and Current Affairs

No. of Questions: 20

---

1) In April 2021, the Ministry of Ports, Shipping & Waterways (MoPSW) has given the approval for developing an all-weather ROPAX jetty project under the 'Sagarmala' initiative on which of the following rivers in Odisha?

A) Brahmani
B) Subarnarekha
C) Dhamra
D) Vamsadhara

---

2) Read the following statements and choose the CORRECT answer.

(i)In 2020, Odisha government launched 'Balaram Yojana' to provide agricultural loan to landless farmers.
(ii) The scheme is designed in collaboration with the Life Insurance Corporation of India (LIC).

A) (i) is True and (ii) is False
B) (i) is False and (ii) is True
C) (i) is True and (ii) is True
D) (i) False and (ii) is False

---

3) In July 2020, Odisha Government has launched a web based solution that makes use of the space technology and Artificial Intelligence (AI) to prevent encroachments of government lands. Identify the name of this system.

A) Bhubaneswar Land Use Intelligence System
B) Odisha Land Preservation Intelligence Unit
C) Land Conservation and Preservation Unit of Bhubaneshwar
D) Skynet Land Preservation System of Odisha

---

4) Read the following statements and choose the CORRECT answer.

(i) The year 2016 marks the first year of the implementation of the Sustainable Development Goals.

(ii) Sustainable Development Goals are built on the principle of “leaving no one behind”.

A) (i) is True and (ii) is False
B) (i) is False and (ii) is True
C) (i) is True and (ii) is True
D) (i) is False and (ii) is False

5) Read the following statements and choose the CORRECT answer.

(i) Social development can be gauged by two parameters namely Social allocation ratio and Development expenditure indicator.

(ii) Social allocation ratio is defined as the ratio of Gross Domestic Product to social sector expenditure.

A) (i) is True and (ii) is False
B) (i) is False and (ii) is True
C) (i) is True and (ii) is True
D) (i) is False and (ii) is False

---

6) The Human Development Index (HDI) was developed by a group of economists in the year 1990. Which of the following economists played leading role in its development?

A) Dr. Mahbub ul Haq
B) Janet Yellen
C) Hernando de Soto
D) Esther Duflo

---

7) Identify the genus of bacteria that helps in curd formation from the options given below.

A) Rhizobium
B) Streptomyces
C) Lactobacillus
D) Mycobacterium

---

8) Read the following statements and choose the CORRECT answer.

(i) Rain water consists good quantity of salts and nitrogen dissolved from the atmosphere.

(ii) Rain water is less fertile as compared to the water from Tube well as it has consistent flow of salts and nitrogen.

A) (i) is True and (ii) is False
B) (i) is True and (ii) is True
C) (i) is False and (ii) is True
D) (i) is False and (ii) is False

---

9) Which of the following organs offers resistance to the air taken in or expelled while sleeping, and is the reason for snoring in some people?

A) Bronchioles
B) Alveoli

C) Sinuses
D) Windpipe

---

10) Which one of the following planets spins in clockwise direction?

A) Mars
B) Saturn
C) Venus
D) Jupiter

---

11) 'Rakta Tirtha' incident of Odisha is often compared in the history of India with which of the following violent tragedies?

A) Revolt of 1857
B) Chittagong Conspiracy
C) Quit India Movement
D) Jallianwala Bagh massacre

---

12) Chakhi Khuntia, also called Chandan Hajuri was the family Priest of which of the following great leaders from the Revolt of 1857?

A) Jhansirani Laxmibai
B) Mangal Pandey
C) Kunwar Singh
D) Peshwa Baji Rao II

---

13) Leelabati Devi, Annapurna Devi, Shrimati Panigrahi, Taramani Devi were leading women Satyagrahis from Bhela village. Presently Bhela Village is located in which of the following districts of Odisha?

A) Sundargarh
B) Naupada
C) Malkangiri
D) Kalahandi

---

14) Jordan, Tigris, and Euphrates Rivers are part of which of the following continents?

A) Asia
B) Europe
C) North America
D) Australia

15) Choose the CORRECT option for the given statements.
(i) Bara-lacha Pass is a high mountain pass in the Western Ghats mountain range.

(ii) Bara-lacha Pass connects Lahaul district in Himachal Pradesh to Leh district in Ladakh.

A) Statement (i) is True and (ii) is False
B) Statement (i) is False and (ii) is True
C) Both the statements (i) and (ii) are True
D) Both the statements (i) and (ii) are False

---

16) What is the CORRECT meaning of the term Lingua franca?

A) Language spoken by European People having french origin
B) The name of a tribe in southern Spain
C) Island located close to South America
D) Language used by a population as their common language

---

17) Which of the following island nations are called as 'peninsula of peninsulas'?

A) Great Britain, Ireland and Iceland
B) Australia and New Zealand
C) Indonesia, Borneo, New Guinea and Timor
D) Antigua and Barbuda

---

18) Which of the following is an INCORRECT option with respect to emergency provisions included in the Constitution of India?

A) National Emergency
B) Emergency in State (President's rule)
C) Financial Emergency
D) Deadlock Emergency

---

19) Which of the following Articles deals with 'Establishment of a common High Court for two or more States'?

A) Article 235
B) Article 233
C) Article 231
D) Article 230

20) The provisions related to Attorney-General of India are provided in which of the following articles of the Constitution of India?

A) Article 77
B) Article 78
C) Article 74
D) Article 76

Section 2 - Paper I Reasoning Ability

No. of Questions: 20

---

21) The ratio of the two scores is 5:11 and the difference between them is 114. The smaller of the two scores is

A) 92
B) 95
C) 102
D) 104

---

22) If Rohan builds a wall in 15 hours and Sohan builds a wall of same dimensions in 20 hours, then total time (approximately) taken by both of them to build a wall is

A) 8.5 Hours
B) 9 Hours
C) 9.5 Hours
D) 10 Hours

---

23) What is the value of x if 58, 62, 29 and x are in proportion?

A) 29
B) 31
C) 33
D) 39

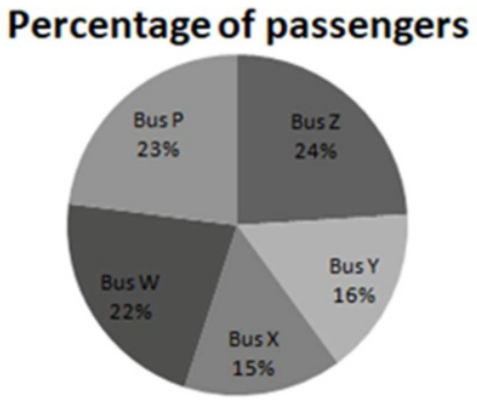
---

24) What is the average of the first 10 odd numbers?

A) 64
B) 68
C) 85
D) 100

---

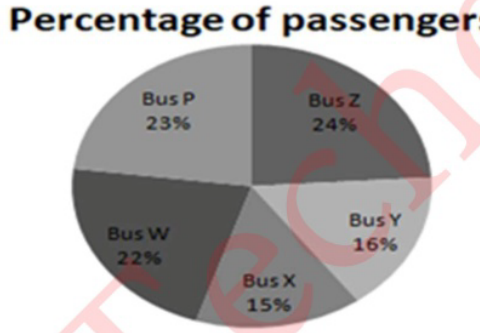
25) Study the following piechart carefully to answer the questions. The pie chart gives the percentage distribution of passengers travelling in different buses in city X.Total number of passengers in city X = 5500. The total number of passengers travelling by bus X is



A) 825
B) 850
C) 865
D) 890

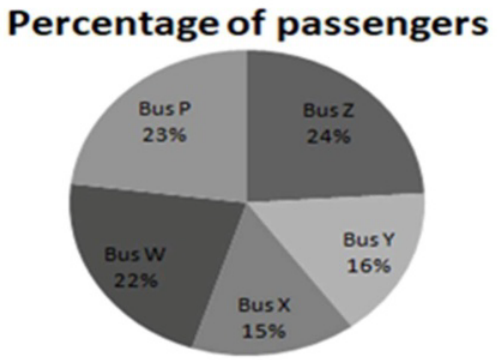
---

26) Study the following piechart carefully to answer the questions. The pie chart gives the percentage distribution of passengers travelling in different buses in city X. Total number of passengers in city X = 5500. The number of passengers travelling by bus W alone is



A) 1000
B) 1050
C) 1100
D) 1210

27) Study the following piechart carefully to answer the questions. The pie chart gives the percentage distribution of passengers travelling in different buses in city X.Total number of passengers in city X = 5500. The difference between the number of passengers travelling by bus Z and W, is



A) 100
B) 105
C) 110
D) 115

---

28) Study the following table carefully to answer the questions. The differences between the average number of flights flying from Moscow airport of airlines CC and DD airlines is

	AA	BB	CC	DD	EE	FF
FEBRUARY	120	84	50	95	110	80
MARCH	110	240	90	200	80	72
APRIL	80	56	300	105	80	68
MAY	64	96	324	150	40	56
JUNE	60	64	56	44	200	104

A) 45.2
B) 46.4
C) 48.2
D) 49.4

---

29) Given below a set of inequalities given as statements. Choose the conclusion(s) that logically follows the statements by selecting a relevant option.

Statement: U = D > E, W < A, E < T ≤ W.

Conclusion:

I. A > E

II. T < D

A) Only I follows
B) Only II follows
C) Neither I nor II follows
D) Both I and II follow

---

30) Select one of the following four options that will make the 2nd pair analogous to the 1st pair given

RAT : STBCUV : : MAC : ?

A) NOBCEF
B) NOBCDE
C) NOBDEF
D) NOBDEG

---

31) If X ≥ Y ≥ R > N, then which of the following options is correct?

A) X ≤ N
B) X > N
C) R ≤ N
D) Y < N

---

32) Given below a set of inequalities given as statements. Choose the conclusion(s) that logically follows the statements by selecting a relevant option.

Statement: Q < M ≥ T, J = M = K, Z > K

Conclusion:

I.T < Z

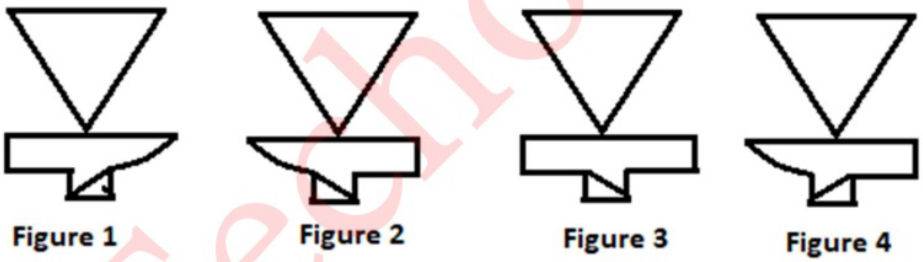
II.T ≤ Z

A) Only I follows
B) Only II follows
C) Neither I nor II follows
D) Both I and II follow

---

33)

Which of the answer figures is exactly the mirror image of the given figure?

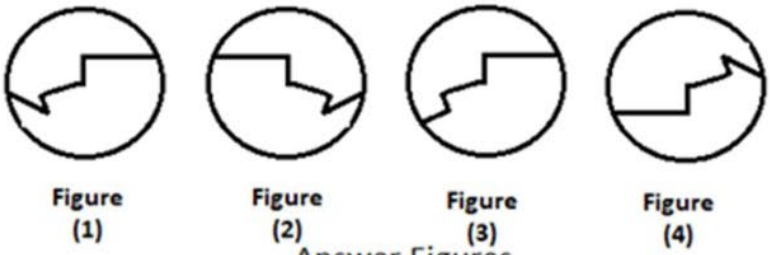


Answer Figures

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

34)

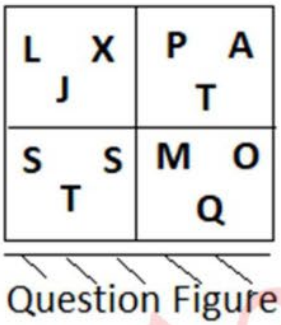
Which of the answer figures is exactly the water image of the given figure?



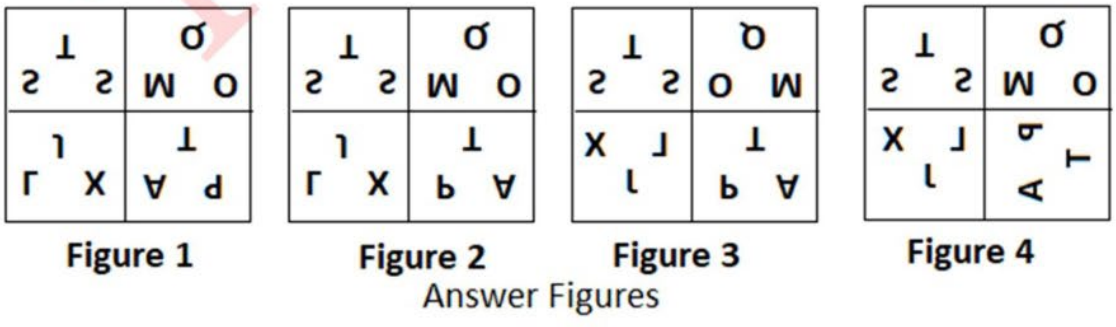
A) Figure 1
B) Figure 2
C) Figure 3
D) Figure 4

---

35)



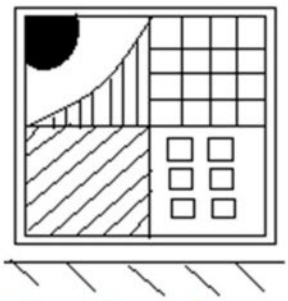
Choose the right water image of the question figure from the given answer figures.



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

---

36)



Question Figure

Choose the right water image of the question figure from the given answer figures.

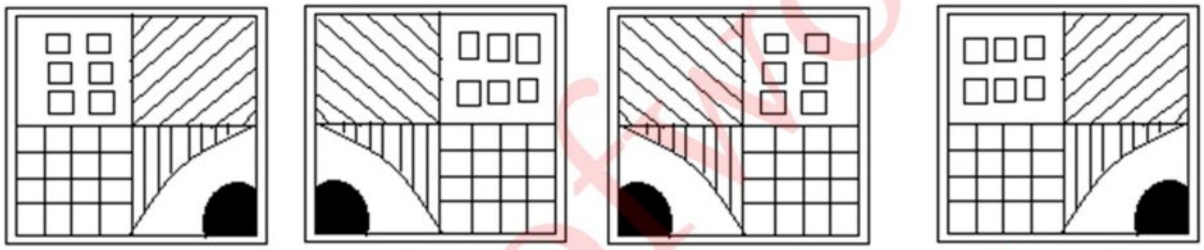


Figure 1 Figure 2 Figure 3 Figure 4

Answer Figures

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

---

37) In a certain code language, if NOBLE is coded as OPCMF, then REAGENTS will be coded as:

A) SFBIFOVT
B) SFBIFOUT
C) SFBHFOVT
D) SFBHFOUT

38) In a certain code language, if MATRIX is coded as TAMXIR, then PISTON will be coded as

A) SIPTON
B) SIPNOT
C) PSITON
D) PSINOT

---

39) In a certain code language,if RETIRING is coded as ERITIRGN, then CONSTRUCTION will be coded as

A) NOCRTSUCTION
B) NOCRTSCUTION
C) OCSNRTCUITNO
D) OCSNRTCUTINO

---

40) If M is coded as 13 and PALM is coded as 42, then LEAVE will be coded as

A) 44
B) 45
C) 46
D) 47

Section 3 - Paper I Computer Literacy

No. of Questions: 10

---

41) Which of the following devices help an user to draw a picture on the system in the same way as he can draw on a paper?

A) Scanner
B) Blue-ray disc
C) Digitizer
D) External Keyboard

---

42) Identify the input device from the following options.

A) Visual Display Unit
B) Plotter
C) MICR
D) Projector

---

43) Identify the device that is NOT directly connected to Motherboard.

A) Processor
B) RAM
C) Network Interface Card
D) Wireless keyboard

---

44) Which of the following is example of Operating System?

A) MS Office
B) Linux
C) Opera
D) All the options

---

45) Characteristics of an Operating System is/are:

i) Device Management
ii) Security
iii) Process Management
iv) Job Accounting

A) Only i ,ii and iii
B) Only ii,iii and iv
C) Only i, ii and iv
D) All i, ii, iii and iv

---

46) Which of the following is/are the benefit(s) of purchasing a product online?
i) It provides various options for selection

ii) It allows you to compare the price in different places just sitting in one place

iii) Easy to pick the item as many companies distribute the products under suitable categories

A) Only i and ii
B) Only ii and iii
C) Only i and iii
D) All i,ii and iii

---

47) An IP address is divided into:

A) Host id and domain id
B) Network id and host id
C) Organization id and network id
D) Protocol id and organization id

---

48) Which of the following options is an use of the hyperlink in any website?

A) It displays the web page content in the special way
B) It allows the user to display the table in the webpage
C) It allows the user to navigate from one web page to other
D) It displays the content as left aligned in the webpage

---

49) What does 'Handle' refer to in Twitter?

A) Number of people sent request to the user
B) User specific URL on twitter
C) Current topic to follow
D) User immediate attention is needed

50) Which of the following applications will allow an user to conduct group meetings?

i) ZOOM

ii) Microsoft Teams

iii) Google Meet

A) Only i and ii
B) Only ii and iii
C) Only i and iii
D) All i,ii and iii

Section 4 - Paper I Pedagogy Educational Management Policies and Evaluation

No. of Questions: 40

---

51) Which of the following is a co-scholastic area for assessment?

A) Art education
B) Lab practicals
C) Mother tongue
D) Geometry

---

52) The strategy adopted by elementary teachers to assess performance of their students is to

A) Observe how the children get along with others
B) Rely heavily on actual samples of student work
C) Use commercially prepared tests like olympiads
D) Observe and make subjective notes

---

53) In order to reduce subjectivity and increase transparency in scoring oral presentations and speeches, it's best to use

A) Criteria
B) Multiple evaluations
C) Rubrics
D) Compiled scores

---

54) A questionnaire seeking students reflection on their progress in their lesson including on how they feel is a

A) Standard assessment
B) Diagnostic assessment
C) Constructed assessment
D) Self-assessment

---

55) In order to correlate test scores with teacher's estimates a teacher could

A) Correlate with other test scores and classroom observations
B) Conduct tests under strict vigilance and mark stringently
C) Ask parents to validate the scores in tests
D) Allow for multiple choice questions to be answered

56) Assessments woven into the learning process, is ongoing, frequently paced and connected to the class work that provides feedback to both the student and teacher is

A) Formative
B) Summative
C) Unit test
D) Holistic

---

57) The biggest problem with examination system is that it makes

A) The student anxious
B) The teacher anxious
C) Both the teacher and student anxious
D) Wastes time

---

58) Testing co-scholastic areas becomes important because

A) They add value in terms of the selection process that certain agencies look for
B) It develops morality in students and a sense of togetherness with others
C) It draws from varied cultures and establishes the cultural and societal values
D) They add value to the student in terms of value it adds to a student life in the long run

---

59) The skills of collaboration, problem-solving, decision-making, and communication are assessed by learning that occurs

A) during project work
B) during college education
C) only while inventing a new concept
D) only while one is solving international concerns

---

60) 'Weighing doesn't make the cattle fatter', a statement on testing by an educator implies that

A) Testing doesn't reflect the actual ability and hence is waste of time
B) It's important to measure what can be defined and improved on
C) There's no pint in any measurement as it leads to comparison and low esteem
D) It's good to measure objective things only like goods in a shop

61) Alternative assessment strategies are increasingly being employed as

A) It is a comprehensive evaluation and is free from test-anxiety
B) It allocates equal importance to oral as well as written forms
C) the set criteria for education can be easily assessed in the alternative systems
D) It is much easier and reduces the burden on teachers

---

62) The three fundamental intertwined elements that form the basis of effective schooling are

A) Motivation, cognition and emotions elements
B) Intellectual, physical and emotional elements
C) Social, spiritual and emotional elements
D) Physical, cognitive and intellectual elements

---

63) As per Kohlberg moral development happens at

A) 6 levels
B) 4 levels
C) 3 levels
D) 8 levels

---

64) "Physical Education is that field of education which deals with big muscle activities and their related responses." Who said this?

A) J.B Nash
B) Charles A. Bucher
C) Edward F. Voltmer
D) JP Thomas

---

65) Rahul is very afraid of school, malls, and other places where there are people. He might be suffering from:

A) group tension
B) seperation anxiety
C) social anxiety
D) panic disorder

---

66) Which of the following is NOT a true statement about development?

A) Development takes places only upto a certain age
B) Development is an internal process
C) Development modifies the character of a person
D) Development does not depend upon growth

---

67) Which of the following aids and promotes development ?

A) Social interaction
B) Excess textbook learning
C) Religious influence
D) Rigid focus on academics

---

68) Daisy acts as if she has a physical or a mental illness. She does this as she enjoys the attention and treatment she receives in the hospital. She might be suffering from:

A) Motivation disorder
B) Depression
C) Somatization disorder
D) Factitious Disorder

---

69) The child first gains control of the head, then the arms, then the legs. This refers to

A) Proximo-distal development
B) Cognitive development
C) Cephalo-caudal development
D) Perception development

---

70) Evaluating and reporting on the work of teachers and on the progress of the teaching of the subject/area in schools is done by

A) Education Officer curriculum
B) Director of Technical Education
C) Block Education Officer
D) Head, DIET

---

71) Sarma Shiksha Abhiyan mandates

A) University in each district
B) Establishing coeducational institutions
C) Universal elementary education
D) Appointment of BEO's

---

72) Which of the following isn't a function of educational management?

A) Judgement
B) Planning
C) Directing
D) Controlling

---

73) All of the following are objectives of Sarva Shiksha Abhyan EXCEPT

A) make English the medium of education at primary and secondary levels
B) bridge social, regional and gender gaps
C) provide useful and relevant elementary education for all children in the 6 to 14 age group by 2010
D) allow children to learn about and master their natural environment

---

74) The importance of the practice of 'bag-less-days' is to

A) Promote vocation
B) Make learning burden less
C) create space for thinking
D) Reduce teacher stress

---

75) The new structure of schooling proposed by New Education Policy 2020 is

A) 10+2 structure
B) 10+2+3 structure
C) 5+3+3+4 structure
D) 3+5+5+2 structure

---

76) The Proposed New Education Policy, 2020 uniquely differentiates itself from other policies till now. Which of the followingis a clear departure in NEP 2020, among others?

A) Excluding the pre-primary years from policy considerations
B) Including the pre-primary years within policy considerations
C) Focus on critical thinking and creativity
D) Inclusion of the tertiary levels of education within its ambit

77) One of the criticisms levelled on RTE, 2009 was that it

A) Held elaborate consultations to draft it
B) Included orphans in its implementation
C) Stands for the state's duty to its citizens
D) Was an infringement on the rights of private schools

---

78) In a classroom all the girls choose art and all the boys choose basketball for an activity class. This is an example for

A) Gender stereotype
B) Gender preferences
C) Gender equality
D) Gender perception

---

79) Which of the following questions on 'Romeo and Juliet' focuses on the analytical skills of the student?

A) Write a TV ad for the play
B) Develop an alternative ending to the play
C) Portray the characters in the play
D) Argue for or against - 'Romeo and Juliet' is a tragedy

---

80) While grouping children as per their learning, what's the precaution to be exercised in an inclusive classroom?

A) Have a clear demarcation of activities
B) Abide strictly by the test scores meticulously
C) Be flexible, and reassign based on progress
D) Provide clear privileges for the higher performing groups

---

81) What does ADHD stand for?

A) All District Hockey Division
B) Awareness on Drinking Habit Disorder
C) Andhra division and Hyderabad Division
D) Attention Deficit Hyperactivity Disorder

---

82) Task teaching is sometimes called as

A) Station teaching
B) Work teaching
C) Practice teaching
D) Individualized teaching

---

83) Which practice according to many educationists is counter to the learning process?

A) Time table and usage of textbooks
B) Creative expression of answers
C) Distraction due to projects and activities
D) Offering knowledge in disconnected chunks

---

84) Activities provided to the students for learning comes under the category of

A) Learning experiences
B) Emotional experiences
C) Conditioning experiences
D) Operant conditioning experiences

---

85) In the classroom space, organised for learning, which of the following characteristics is recognised as true about transactions in classrooms?

A) That classrooms are private spaces for learning
B) Events occur as per teacher's plan and execution
C) Classrooms are multidimensional and simultaneous
D) There's structure and predictability to classrooms

---

86) After the phase of early childhood acquiring a foreign language without accent becomes progressively more difficult. Because early childhood is

A) Critical for language acquisition
B) Where the child is least distracted
C) Free from other academic burden
D) Maximum attention can be given

---

87) Equilibrium' can be defined as

A) Mental growth that matches child's age
B) A state of balance between rest and activity
C) Making sense of the experiences by understanding it
D) A drive that compels individuals to excel

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88) An English teacher projects children's essays and discusses ways of improving, continually emphasising how the writing has been improving. The teacher has adopted

A) Expectancy and value theory of motivation
B) Goals and goal-orientation theory of motivation
C) Attribution Theory of motivation
D) Cognitive theory of motivation

---

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

A) Louis LeonThurstone
B) Edward Thorndike
C) Howard Gardner
D) Charles Spearman

---

90) The concept of 'Emotional intelligence' was developed by

A) Robert Mills Gagné
B) Daniel Golman
C) Jerome Bruner
D) Lev Vygotsky

Section 5 - Paper II Physics

No. of Questions: 20

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91) At what deflection (q) the sensitiveness of a tangent galvanometer is maximum?

A) 0°
B) 30°
C) 45°
D) 90°

---

92) An electric kettle has two heating coils A and B. The kettle operates at a fixed potential of 220 V. However, there are provisions to use either one coil at a time or both coils at the same time in series or parallel configuration. When operated with coil A alone, the kettle boils 1 litre of water in 6 min while with B alone it takes 8 min to boil 1 litre of water. In which configuration will the kettle take minimum time to heat 1 litre of water?

A) Coil A alone
B) Coil B alone
C) Coil A and coil B in series
D) Coil A and coil B in parallel

---

93) What is the full form of the electrical device called MCCB used to provide protection against short circuit or overload conditions?

A) Molded Case Circuit Breaker
B) Miniature Complete Circuit Breaker
C) Multi Circuit Current Breaker
D) Miniature Case Circuit Breaker

---

94) The capacitor of an LCR circuit having L = 10 mH; C = 1 mF and R = 200 Ohm is completely charged and is then allowed to discharge. How will the charged capacitor discharges in the circuit?

A) Oscillatory
B) Dead beat
C) Critically damped
D) Linear

---

95) Find the ratio of the magnetic field inside a long solenoid at the centre and at an axial end point.

A) 1 : 1
B) 1 : 2
C) 2 : 1
D) 3 : 1

---

96) What happens to the force between two charged particles when the distance between the charged particles is doubled?

A) It becomes one-fourth
B) It doubles
C) It becomes four times
D) It becomes halved

---

97) Air undergoes breakdown at an electric field strength of 3×10^6 V/m. What maximum charge can be put on a sphere of radius 2m to avoid breakdown of air?

A) 1/3 mC
B) 2/3 mC
C) 4/3 mC
D) 2 mC

---

98) If, at a certain height from the surface of earth, the weight of a body becomes 1/9 th of its weight on the surface of earth, then find the height. Consider R as radius of earth.

A) 9 R
B) 3 R
C) R
D) 2 R

---

99) A rocket is fired from the earth towards the sun. The gravitational force on the rocket zeros out at what distance from the earth's centre? Mass of the sun = 2×10^{30} kg, mass of the earth = 6×10^{24} kg. Neglect the effect of other planets etc. (orbital radius = 1.5×10^{11} m).

A) 6.5×10^8 m
B) 2.6×10^8 m
C) 5.2×10^8 m
D) 1.3×10^8 m

100) What will be the apparent weight of a body of mass 50 kg when it is travelling upwards with acceleration of 2.5 m/s^2?

A) 715 N
B) 615 N
C) 115 N
D) 415 N

---

101) The bob of a pendulum is released from a horizontal position. What is the speed with which the bob reaches at the lowermost point if the pendulum's length is 1.5 m and it dissipated 5% of its initial energy against air resistance?

A) 5.3 m/s
B) 10.2 m/s
C) 4.6 m/s
D) 2.3 m/s

---

102) A rod of mass M and length L is bent in the form of an equilateral triangle. Find the moment of inertia of the triangle about an axis passing through its centroid and perpendicular to the plane containing it.

A) $ML^2/2$
B) $ML^2/9$
C) $ML^2/27$
D) $ML^2/54$

---

103) MgF_2 (refractive index = 1.38) is often used as an anti-reflection coating over eye glasses. What is the minimum thickness of MgF_2 layer to be coated onto the glass surface to have no reflection at the centre of the visible spectrum (λ = 550 nm)

A) 0.1 μm
B) 0.2 μm
C) 0.4 μm
D) 0.55 μm

---

104) By what distance two thin lenses of same material and of focal length f_1 and f_2 be separated so as to achieve minimum chromatic aberration?

A) $|f_1 - f_2|/2$
B) $(f_1+f_2)/2$
C) $|1/f_1 - 1/f_2|$
D) $1/f_1 + 1/f_2$

105) What is the relation between the wave velocity (v) and group velocity (v_g) of white light travelling in free space?

A) $v > v_g$
B) $v < v_g$
C) $v = v_g$
D) $v = c, v_g = 0$

---

106) What is the ability of a material to absorb energy upto fracture called?

A) Yield strength
B) Resilience
C) Toughness
D) Ultimate tensile strength

---

107) What is the excess pressure inside a bubble of soap solution of radius 5 mm, given that the surface tension of soap solution at the temperature (20°C) is 2.50×10^{-2} N/m?

A) 10 Pa
B) 20 Pa
C) 40 Pa
D) 15 Pa

---

108) A ski area chairlift is supported by a steel cable with a radius of 1.5 cm. What is the maximum load the cable can handle if the highest stress is not to exceed 10^8 Nm^{-2}?

A) 7.07×10^8 N
B) 14.14×10^4 N
C) 14.14×10^8 N
D) 7.07×10^4 N

---

109) What is the wavelength of a sound note of frequency 200 Hz produced in a hydrogen gas environment?
(velocity of sound in air = 330 ms^{-1}, density of air = 14.4 ´ density of hydrogen)

A) 23.76 m
B) 6.25 m
C) 1.65 m
D) 0.44 m

110) The frequencies of the fundamental note of an open and a closed organ pipe of same length are f_1 and f_2, respectively. Find the relation between them.

A) $f_1 = f_2$
B) $f_1.f_2=1$
C) $f_1=2f_2$
D) $f_1=f_2/2$

Section 6 - Paper II Chemistry

No. of Questions: 20

111) A container contains 5L of water. What is its volume in m^3?

A) $0.0005m^3$
B) $0.005m^3$
C) $0.05m^3$
D) $0.5m^3$

112) What is the value of 65 degree centigrade temperature in degree Fahrenheit?

A) 85°F
B) 149°F
C) 89°F
D) 189°F

113) Identify the compound which possess hydrogen bonding in its structure?

A) AlH_3
B) H_2Te
C) LiH
D) BH_3

114) The bond energy of the hydrogen bond is the highest in which of the following compounds?

A) H....F
B) H....Cl
C) H.....O
D) H.....S

115) A compound which is a base is having a Kb value of $2x10^{-5}$ at 298K. Calculate Ka value for its conjugate acid?

A) 2×10^{-9}
B) 2×10^{-7}
C) 0.5×10^{-9}
D) 5×10^{-9}

116) Which among the following is a Lewis Acid?

A) Hydrochloric acid
B) Carboxylic acid anhydride
C) Ammonia
D) Boron trifluoride

---

117) When silver chloride is exposed to sunlight for some time, then white colour turns grey. This is an example of

A) Combination reaction
B) Displacement reaction
C) Decomposition reaction
D) Oxidation reaction

---

118) When Lead nitrate is heated in a test tube, which gas is emitted as brown fumes?

A) O_2
B) NO
C) N_2O
D) NO_2

---

119) Calculate the internuclear distance between 2 atoms in Cl_2 molecule if atomic radius of chlorine atom is 100pm?

A) 0.5°A
B) 2°A
C) 5°A
D) 20°A

---

120) Identify the statement that is NOT correct?

A) % of s-character in hybridised orbitals of acetylene molecule is same as that of ethyne molecule.
B) As % of s-character in hybridised orbitals increases, the C-C bond length decreases.
C) % of s-character in hybridised orbitals of ethane molecule is 25.
D) The type of hybridisation in ethyne molecule is sp^2.

121) Which of the following steps is NOT involved in the extraction of metals from their ores?

A) Crushing & Pulverization
B) Roasting of ore
C) Dressing of ore
D) Oxidation of metals to metal oxides

---

122) Which method is used for the concentration of heavier metallic oxide ores by washing with water?

A) Gravity separation method
B) Magnetic separation method
C) Froth floatation method
D) Chemical method

---

123) Which of the following statements is correct?

A) Wurtz reaction is used for the preparation of higher alkanes. In this reaction, alkylhalides react with 'Na' metal in wet ether to give corresponding alkanes.
B) One of the following methods used for the preparation of methane is Kolbe's electrolytic method.
C) Almost all alkanes are non-polar molecules.
D) Alkanes containing more than 18 carbon atoms are liquids in nature.

---

124)

$CH_3COONa + NaOH \xrightarrow{CaO,\ Heat,\ -Na_2CO_3} A + O_2 \xrightarrow{Mo_2O_3} B + H_2O$. What are A and B products in the

A) Methane and Methanal
B) Methane and Methanol
C) Ethane and Acetaldehyde
D) Ethane and Ethanol

---

125) Among the following compounds, which pair of compounds are non-benzenoid aromatic compounds?

A) Indole and Phenanthrene
B) Tropolone and Naphthalene
C) Naphthalene and Pyridine
D) Azulene and Tropolone

126) Determine the percentage composition of carbon and hydrogen in an organic compound of weight 0.3g which on complete combustion gave 0.22g of carbondioxide and 0.09g of water?

A) 40% of carbon and 4.88% of hydrogen
B) 20% of carbon and 3.33% of hydrogen
C) 33.33% of carbon and 1.66% of hydrogen
D) 15% of carbon and 1.66% of hydrogen

---

127) Identify the pair of compounds which have cubic crystal systems?

A) NaCl and $CaCO_3$
B) $CaCO_3$ and SiO_2
C) NaCl and CsCl
D) CsCl and $NaHCO_3$

---

128) Among the following liquids, which liquid has high surface tension at 293K?

A) Carbontetrachloride
B) Chloroform
C) Water
D) Mercury

---

129) Which series of hydrogen spectrum is produced when an electron jumps from 7th energy level to 2nd energy level in an atom?

A) Lyman series
B) Paschen series
C) Balmer series
D) Pfund series

---

130) Among the following set of quantum numbers, which set of quantum numbers is possible for an electron?

A) n= 4, l= 4, m= -4, m_s= +1/2
B) n= 4, l= 0, m= -1, m_s= +1/2
C) n= 4, l= 3, m= -3, m_s= +1/2
D) n= 4, l= 2, m= -3, m_s= +1/2

Section 7 - Paper II Mathematics

No. of Questions: 20

131) The surface area of a spherical marble of 5 cm radius is approximately

A) 314 cm^2
B) 364 cm^2
C) 414 cm^2
D) 524 cm^2

132) If $e^x + e^y = e^{x+y}$ then dy/dx=

A) $-e^{(y-x)}$
B) $e^{(y-x)}$
C) $e^{(y+x)}$
D) $-e^{(y+x)}$

133) If $x^3 y^2 = (x + y)^5$ then dy/dx=

A) xy
B) x/y
C) y/x
D) x+y

134) Distance of the point (a, b, c) from yz- plane is

A) a
B) |a|
C) b
D) |b|

135) The area of isosceles right-angled triangle is 36cm^2. Then its perimeter is approximately

A) 29 cm
B) 35 cm
C) 46 cm
D) 15 cm

136) The area of the triangle whose sides are 20 cm, 48 cm and 52 cm

A) 480 cm^2
B) 430cm^2
C) 425 cm^2
D) 520 cm^2

---

137) The total surface area of a cuboid whose length is 15cms, breadth is 10 cms and height is 8cms is

A) 700cm^2
B) 800cm^2
C) 500cm^2
D) 600cm^2

---

138) A circular patch of land of radius 21 feet must be ploughed. If a labourer ploughs 21 square feet area of land per hour. How many hours does he take to plough whole land?

A) 66 hours
B) 56 hours
C) 62hours
D) 72 hours

---

139) We can express $0.\overline{78}$ as a rational number as

A) 26/33
B) 25/33
C) 29/33
D) 31/33

---

140) If A and B are mutually exclusive events and p(A)=0.5 $p(B') = 0.6$ then $p(A \cup B)$ is

A) 0.9
B) 0.8
C) 0.7
D) 0.6

146) If p, 2p+2 and 3p+3 are the first three terms of a geometric sequence, then what is the fifth term?

A) -9/2
B) -81/4
C) -18/5
D) 18/4

---

147) Let A and B be two sets such that n(A) = 20, n(AUB) = 42 and n(A∩B) = 4, then n(B-A) =

A) 28
B) 27
C) 26
D) 22

---

148) The mean of the cubes of the first n natural numbers is

A) $n(n+1)^2/4$
B) $(n+1)^2/4$
C) $(n+1)/4$
D) $(n+1)^2/16$

---

149) $\tan75° - \tan30° - \tan75°\tan30°$=

A) 2
B) 1
C) 5
D) 0

---

150) Value of [sin 690° cos 930°] + [tan (-765°) cosec (-1170°)] is

A) $(\sqrt{3} + 1)/4$
B) $\sqrt{3}/4$
C) $(\sqrt{3}+4)/4$
D) $\sqrt{3}/5$

141) To complete a job, five workers get paid at a rate of ₹ 200 per hour. If the total pay for the job was ₹ 18,000, then how many hours each did the five workers spend on the job?

A) 18 hours
B) 12 hours
C) 15 hours
D) 16 hours

---

142) If α and β are roots of the equation $3x^2-6x+4=0$, then find the value of $\alpha^2\beta + \beta^2\alpha$ is

A) 11/3
B) 16/3
C) 8/3
D) 7/3

---

143) If f(x) = x/(x-1) = 1/y, then f(y)=

A) x
B) 1 – x
C) 1 + x
D) 1/x

---

144) The range of the function 12 cosx + 5 sinx + 5 is

A) (7,15)
B) (-8, 18)
C) (-4, 15)
D) (6, -7)

---

145) In an increasing GP, the sum of the first and the last term is 66. The product of the second and the last but one is 128 and the sum of all the terms is 126. The number of terms in the progression is

A) 6
B) 7
C) 5
D) 2

Question Paper No:	72621_6
Answer Key	

1	C	31	B	61	A	91	C	121	D
2	A	32	A	62	A	92	D	122	A
3	A	33	D	63	C	93	A	123	C
4	C	34	C	64	A	94	C	124	A
5	A	35	B	65	C	95	C	125	D
6	A	36	C	66	A	96	A	126	B
7	C	37	D	67	A	97	C	127	C
8	A	38	B	68	D	98	D	128	D
9	D	39	C	69	C	99	B	129	C
10	C	40	B	70	A	100	B	130	C
11	D	41	C	71	C	101	A	131	A
12	A	42	C	72	A	102	D	132	A
13	B	43	D	73	A	103	A	133	C
14	A	44	B	74	A	104	B	134	B
15	B	45	D	75	C	105	C	135	A
16	D	46	D	76	B	106	C	136	A
17	A	47	B	77	D	107	B	137	A
18	D	48	C	78	A	108	D	138	A
19	C	49	B	79	D	109	B	139	A
20	D	50	D	80	C	110	C	140	A
21	B	51	A	81	D	111	B	141	A
22	A	52	B	82	A	112	B	142	C
23	B	53	C	83	D	113	B	143	B
24	D	54	D	84	A	114	A	144	B
25	A	55	A	85	C	115	C	145	A
26	D	56	A	86	A	116	D	146	B
27	C	57	C	87	C	117	C	147	D
28	A	58	D	88	A	118	D	148	A
29	A	59	A	89	D	119	B	149	B
30	B	60	B	90	B	120	D	150	C