

BIS (CBRT)

PROVISIONAL ANSWER KEY

Name of the post	Assistant Research Officer, Class-2 (GWRDC)
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THE LINK FOR ONLINE OBJECTION SYSTEM WILL START FROM 18-10-2024; 04:00 PM ONWARDS

Instructions / સૂચના

Candidate must ensure compliance to the instructions mentioned below, else objections shall not be considered: -

- (1) All the suggestion should be submitted through **ONLINE OBJECTION SUBMISSION SYSTEM** only. Physical or submission through E- Mail of suggestions will not be considered.
- (2) Question wise suggestion to be submitted in the prescribed format (proforma) published on the website / online objection submission system.
- (3) All suggestions are to be submitted with reference to the Master Question Paper with provisional answer key (Master Question Paper), published herewith on the website / online objection submission system. Objections should be sent referring to the Question, Question No. & options of the Master Question Paper.
- (4) Suggestions regarding question nos. and options other than provisional answer key (Master Question Paper) shall not be considered.
- (5) Objections and answers suggested by the candidate should be in compliance with the responses given by him in his answer sheet. Objections shall not be considered, in case, if responses given in the answer sheet /response sheet and submitted suggestions are differed.
- (6) Objection for each question should be made on separate sheet. Objection for more than one question in single sheet shall not be considered.

ઉમેદવારે નીચેની સૂચનાઓનું પાલન કરવાની તકેદારી રાખવી, અન્યથા વાંધા-સૂચન અંગે કરેલ રજૂઆતો ધ્યાને લેવાશે નહીં

- (1) ઉમેદવારે વાંધા-સૂચનો ફક્ત **ઓનલાઇન ઓબ્જેક્શન સબમીશન સીસ્ટમ** દ્વારા જ સબમીટ કરવાના રહેશે. રૂબરૂ, ટપાલ અથવા ઈ-મેઇલ દ્વારા આયોગની કચેરીએ મોકલવામાં આવેલ વાંધા-સૂચનો ધ્યાને લેવામાં આવશે નહીં જેની ખાસ નોંધ લેવી.
- (2) ઉમેદવારે વાંધા-સૂચનો રજૂ કરવા વેબસાઇટ / ઓનલાઇન ઓબ્જેક્શન સબમીશન સીસ્ટમ પર પ્રસિધ્ધ થયેલ નિયત નમૂનાનો જ ઉપયોગ કરવો.
- (3) ઉમેદવારે પોતાને પરીક્ષામાં મળેલ પ્રશ્નપુસ્તિકામાં છપાયેલ પ્રશ્નક્રમાંક મુજબ વાંધા-સૂચનો રજૂ ન કરતા તમામ વાંધા-સૂચનો વેબસાઇટ પર પ્રસિધ્ધ થયેલ પ્રોવિઝનલ આન્સર કી (માસ્ટર પ્રશ્નપત્ર) ના પ્રશ્નક્રમાંક મુજબ અને તે સંદર્ભમાં રજૂ કરવા.
- (4) માસ્ટર પ્રશ્નપત્રમાં નિર્દિષ્ટ પ્રશ્ન અને વિકલ્પ સિવાયના વાંધા-સૂચનો ધ્યાને લેવામાં આવશે નહીં.
- (5) ઉમેદવારે પ્રશ્નના વિકલ્પ પર વાંધો રજૂ કરેલ છે અને વિકલ્પ રૂપે જે જવાબ સૂચવેલ છે એ જવાબ ઉમેદવારે પોતાની ઉત્તરવહીમાં આપેલ હોવો જોઈએ. ઉમેદવારે સૂચવેલ જવાબ અને ઉત્તરવહીનો જવાબ ભિન્ન હશે તો ઉમેદવારે રજૂ કરેલ વાંધા-સૂચનો ધ્યાને લેવાશે નહીં.
- (6) એક પ્રશ્ન માટે એક જ વાંધા-સૂચન પત્રક વાપરવું. એક જ વાંધા-સૂચનો પત્રકમાં એકથી વધારે પ્રશ્નોની રજૂઆત કરેલ હશે તો તે અંગેના વાંધા-સૂચનો ધ્યાને લેવાશે નહીં.

Website link for online objection submission system : <http://gpsc.safevaults.in/login/>

001. કયા નૃત્યમાં પ્રયોગ થતાં છંદ સંસ્કૃત નાટક 'ગીત ગોવિંદમ' માંથી લેવામાં આવ્યા છે?
- (A) મણિપુરી (B) કથકલી
(C) મોહિની અટ્ટમ (D) ઓડીસી
002. 'અંગીકાકલા' અને 'નાગ ચિત્રકળા' તરીકે ઓળખ પામેલ ચિત્રકળા કઈ છે?
- (A) વારલી ચિત્રકારી (B) મંજૂષા ચિત્રકારી
(C) ચેરિયાલ(સ્કોલ) ચિત્રકળા (D) પૈટકાર ચિત્રકારી
003. ભારતની પારંપારિક ક્ષેત્રિય સાડીઓ અને રાજ્યની જોડી પૈકી કઈ જોડી સાચી નથી?
- (A) પોચમપલ્લી – આન્ધ્ર પ્રદેશ (B) પટોળાં – પાટણ, ગુજરાત
(C) ચંદેરી – કર્ણાટક (D) નૌવારી – મહારાષ્ટ્ર
004. પ્રાચીન ભારતમાં પ્રસિદ્ધ રમત શતરંજ કયા નામથી ઓળખાતી ?
- (A) અષ્ટપદ (B) ચતુરંગ
(C) અટારિંડ પોંગ (D) સોગઠાબાજી
005. ચંદ્ર દિવસને અને સૌર દિવસને કહેવાય છે.
- (A) વાર અને દિવસ (B) તિથી અને નક્ષત્ર
(C) યોગ અને કરણ (D) તિથી અને દિવસ
006. ભગવાન જગન્નાથની રથયાત્રામાં ભગવાન જગન્નાથના રથનું નામ શું છે?
- (A) તાલધ્વજ (B) દેવદલન
(C) નંદીધોષ (D) શ્રીધ્વજ
007. ભાવનગર જિલ્લાના તળાજા નજીક આવેલી 30 ગુફાઓ કયા નામે ઓળખાય છે?
- (A) ખાપરા કોડિયાની ગુફા (B) મંડોવરની ગુફાઓ
(C) એભલ મંડપની ગુફાઓ (D) બાવાપ્યારાની ગુફાઓ
008. સલ્તનત યુગમાં વિજ્ઞાનેશ્વર નામના વિદ્વાને લખેલું 'મિતાક્ષર' નામે સુપ્રસિદ્ધ પુસ્તક કયા વિષયનું છે?
- (A) હિન્દી (B) હિન્દુ રીતિરિવાજો
(C) કાવ્ય શાસ્ત્ર (D) હિન્દુ ધર્મશાસ્ત્ર
009. રામશાસ્ત્રી નીચેના પૈકી કોના સમયના સુપ્રસિદ્ધ ન્યાયશાસ્ત્રી હતા ?
- (A) માધવરાવ (B) બાલાજી બાજીરાવ
(C) બાજીરાવ પહેલો (D) બાલાજી વિશ્વનાથ
010. પંઢરપૂરમાં વિઠોબાની સ્થાપના કોણે કરી હતી?
- (A) ભક્ત પુંડલિક (B) નિવૃત્તિનાથ
(C) ભક્ત ગોરાકુંભાર (D) સ્વામિ નામદેવ
011. 'છ વેદ સૂત્રો' અને 'ચાર મૂળસૂત્રો' નામે સાહિત્ય કયા ધર્મ સાથે સુસંગત છે?
- (A) જૈન ધર્મ (B) બ્રાહ્મણ ધર્મ
(C) ભાગવત ધર્મ (D) બોદ્ધ ધર્મ

001. The verses used in which dance are taken from the Sanskrit play 'Geet Govindam'?
- (A) Manipuri (B) Kathakali
(C) Mohini Attam (D) Odyschi
002. What are the forms of painting known as 'Angikakala' and 'Nag painting'?
- (A) Warli Painting (B) Manjusha Chitrakari
(C) Cherial (scroll) Painting (D) Paitakar Chitrakari
003. Which of the traditional field sarees and state pairs of India is not correct?
- (A) Pochampally - Andhra Pradesh (B) Patola - Patan, Gujarat
(C) Chanderi - Karnataka (D) Nauwari - Maharashtra
004. By which name was known the famous game 'Shataranj' in ancient India ?
- (A) Ashtapada (B) Chaturang
(C) Atarind Pong (D) Sogathabaji
005. Lunar day _____ and Solar day _____ are called.
- (A) Time (ଘର) and Day (B) Tithi and Nkashatra
(C) Yog and Karan (D) Tithi and day
006. What is the name of chariot of Lord Jagannath in the Rath yatra of Lord Jagannath?
- (A) Taldhwaja (ତାଳଦ୍ଵାଜ) (B) Devdalan (ଦେଘଡ଼ାଳା)
(C) Nandighosh (ନାନ୍ଦିଘୋଷ) (D) Shreedhwaja (ଶ୍ରୀଧ୍ଵାଜ)
007. By which name 30 caves near Talaja in Bhavnagar district are known?
- (A) Khapara Kodia caves (B) Caves of Mandovar
(C) Caves of Ebhal Mandap (D) Caves of Bavapyara
008. On which subject is the legendary book 'Mitakshara' written by a scholar named Vigyaneshwar during the Sultanate era ?
- (A) Hindi (B) Hindu customs
(C) Poetics (D) Hindu Theology
009. Rama Shastri was a legendary jurist of whose time among the following ?
- (A) Madhavrao (B) Balaji Bajirao
(C) Bajirao Initiative (D) Balaji Vishwanath
010. Who founded Vithoba in Pandharpur ?
- (A) Bhakta Pundalik (B) Nivrutti Nath
(C) Bhakt Gora kumbhar (D) Swami Namdev
011. Literature named 'Six Veda Sutras' and 'Char Mul Sutras' are compatible with which religion?
- (A) Jainism (B) Bhagavata Dharma
(C) Brahmanism (D) Buddhism

012. સુરતમાં વેપારી કોઠી સૌ પ્રથમ કયા અંગ્રેજે સ્થાપી હતી ?
 (A) સર ટોમસ રો (B) કેપ્ટન હોકિન્સ
 (C) ટોમસ એલ્ડવર્થ (D) એલ્ફિસ્ટન
013. ગુજરાતમાં પ્રથમ અંગ્રેજી શાળા સુરતમાં કોણે શરૂ કરી હતી?
 (A) જીજીભાઈ ઇપગર (B) દલપતરામ ભગુભાઈ
 (C) ફરદૂનજી મર્ઝબાન (D) દાદાભાઈ નવરોજજી
014. 1857 ના બળવામાં ગુજરાતના આણંદમાં આગેવાની કરનાર નેતા કોણ હતા?
 (A) મૌની બાવા (મોરેશ્વર રામચંદ્ર)
 (B) જયસિંહ ઠાકોર
 (C) ગરબડદાસ
 (D) તાત્યા ટોપે
015. ઈ.સ. 1917માં રાજકોટમાં 'કાઠિયાવાડી રાજકીય પરિષદની સ્થાપના' કોણે કરી હતી?
 (A) દલપતરામ ભગવાનદાસ શુક્લ (B) દીવાન પટ્ટણી
 (C) શ્રી કલ્યાણરાય બક્ષી (D) મનસુખભાઈ મહેતા
016. ભારતમાં સૌથી લાંબુ રેલ્વે પ્લેટફોર્મ કયું છે ?
 (A) હૂબલી, કર્ણાટક (B) ગોરખપુર, ઉત્તરપ્રદેશ
 (C) ખડગપુર, વેસ્ટ બંગાળ (D) બંસપાની, ઓડિશા
017. સતલુજ અને કાલી નદીઓ વચ્ચે આવેલો હિમાલયનો ભાગ કયા નામે ઓળખાય છે?
 (A) પંજાબ હિમાલય (B) નેપાળ હિમાલય
 (C) કુમાઉ હિમાલય (D) આસામ હિમાલય
018. 'મંગો શાવર' શું છે ?
 (A) કેરીનો વરસાદ
 (B) શિયાળાનો વરસાદ
 (C) કેરળ અને કર્ણાટક માં ચોમાસા પહેલાનો વરસાદ
 (D) ચોમાસાનો વરસાદ
019. ખેડૂતોને તેમની જમીનની ગુણવત્તા અંગે જાગૃત કરવા 19 ફેબ્રુઆરી 2015 થી શરૂ કરાયેલ કઈ યોજના છે ?
 (A) કૃષિ મહોત્સવ યોજના (B) સોઈલ હેલ્થ મેનેજમેન્ટ (SHM)
 (C) મૃદા સ્વાસ્થ્ય કાર્ડ યોજના (D) સોઈલ હેલ્થ કાર્ડ (SHC)
020. તાંબુ, જસત, સીસુ અને આરસ પથ્થર કઈ ટેકરીઓમાંથી મળી આવે છે?
 (A) છોટાઉદેપુરની ટેકરીઓ (B) રાજપીપળાની ટેકરીઓ
 (C) જેસોરની ટેકરીઓ (D) ગીરની ટેકરીઓ
021. ગુજરાતનાં કયા બંદરને "પેટ્રો રસાયણ બંદર" તરીકે પણ ઓળખવામાં આવે છે?
 (A) હજીરા (B) દહેજ
 (C) મુંદ્રા (D) પીપાવાવ

012. Which Englishman first established a trading centre (કલેલ) at Surat in Gujarat?
 (A) Sir Tomas roe (B) Captain Hawkins
 (C) Thomas Aldwort (D) Elphiston
013. Who started the first English school at Surat ?
 (A) Jijibhai Chhapagar (B) Dalpatram Bhagubhai
 (C) Fardunji Marzban (D) Dadabhai Navarajaji
014. Who was the leader who led the Anand of Gujarat in the rebellion of 1857 ?
 (A) Mouni Bawa (Moreshwar Ramachandra)
 (B) Jaisingh Thakor
 (C) Garbaddas
 (D) Tatyatope
015. Who founded the 'Kathiawadi Political Council' at Rajkot in 1917 AD?
 (A) Dalpatram Bhagavandas Shukla (B) Divan Pattani
 (C) Shri Kalyanrai Baxi (D) Mansukhbhai Mehta
016. Which is the longest railway platform in India?
 (A) Hubli, Karnataka (B) Gorakhpur, U.P.
 (C) Kharagpur, W.Bengal (D) Banspani, Odisha
017. The part of the Himalayas lying between Satluj and Kali rivers is known as _____
 (A) Punjab Himalaya (B) Nepal Himalayas
 (C) Kumaon Himalayas (D) Assam Himalayas
018. What is 'Mango shower' ?
 (A) Shower of mangoes
 (B) Winter rain
 (C) Pre-monsoon rain in Kerala and Karnataka
 (D) Monsoon rain
019. Which scheme was launched from 19 February, 2015 to make farmers aware about the quality of their soil?
 (A) Agricultural Festival Scheme (B) Soil Health Management (SHM)
 (C) Mruda Swasthya Card Scheme (D) Soil Health Card (SHC)
020. Copper, zinc, lead and marble are found in which hills ?
 (A) Hills of Chhotaudepur (B) Rajpipla Hills
 (C) Hills of Jessore (D) Hills of Gir
021. Which port in Gujarat is also known as 'petro chemical port' ?
 (A) Hajira (B) Dahej
 (C) Mundra (D) Pipavav

022. નીચેનામાંથી કઈ 'મિશ્રિત ખેતી'ની મુખ્ય વિશેષતા છે ?
- (A) રોકડિયા અને ખાદ્ય બંને પાકોની સાથે ખેતી
(B) બે અથવા બે થી વધારે પાકોને એક જ ખેતરમાં ઉઘાડવા
(C) પશુપાલન અને ખેત ઉત્પાદન એક સાથે કરવું
(D) ઉક્ત પૈકી એક પણ નહી
023. નીચેના પૈકી કયા કરને બદલે GST લાગુ પડે છે?
1. સેન્ટ્રલ એક્સાઈઝ 2. વ્યાવસાયિક વેરો 3. સર્વિસ ટેક્સ 4. વેટ
- (A) ફક્ત 1 અને 2 (B) ફક્ત 3 અને 4
(C) ફક્ત 1, 3 અને 4 (D) 1, 2, 3 અને 4
024. નીચેનામાંથી કઈ સેવા બેન્ક ચાલુ ના હોય તો પણ મેળવી શકાય છે ?
- (A) NEFT (B) RTGS
(C) IMPS (D) આપેલ તમામ
025. ગુજરાતનો પ્રથમ મેગા ફૂડ પાર્ક 'ધ ગુજરાત એગ્રો ઈન્ફ્રાસ્ટ્રક્ચર મેગા ફૂડ પાર્ક' ક્યાં શરૂ થયો?
- (A) અમદાવાદ (B) સુરત
(C) ગાંધીનગર (D) વડોદરા
026. મહત્વપૂર્ણ શહેરો અને ઉદ્યોગની જોડી પૈકી કઈ જોડી સાચી નથી ?
- (A) અલીગઢ - પિત્તળના તાળાં (B) પીલીભીત - લાકડાની મોજડી
(C) રાનીપેટ - ચામડું ઉદ્યોગ (D) અંબાલા - રમતનો સામાન
027. ગુજરાતમાં વિકસિત વિશેષ રોકાણ ક્ષેત્રો (SIR)માં નીચેના પૈકી કોનો સમાવેશ થાય છે?
1. અમદાવાદ - ધોલેરા 2. વલસાડ - અંબેરગાવ 3. વડોદરા - અંકલેશ્વર 4. સુરત - નવસારી 5. ભરુચ - દહેજ
- (A) માત્ર 1, 2 અને 5 (B) ફક્ત 1, 2 અને 3
(C) 1, 2, 3 અને 5 (D) આપેલ તમામ
028. ગુજરાતના નાગરિકો માટે "મહેસૂલમાં કાંતિ" કાર્યક્રમ અંતર્ગત મહેસૂલી સેવા સરળ અને ઝડપી બને તે માટે કઈ એપ્લિકેશન લોન્ચ કરવામાં આવેલ છે?
- (A) iORA-2.0 (B) FAME-2
(C) E-DHARA (D) BHU-Naksha
029. વૈશ્વિક નાણાકીય સ્થિરતા રિપોર્ટ કોના દ્વારા બહાર પાડવામાં આવે છે ?
- (A) યુરોપિય કેન્દ્રિય બેન્ક
(B) આંતરરાષ્ટ્રીય મુદ્રાકોષ
(C) આંતરરાષ્ટ્રીય પુનઃનિર્માણ અને વિકાસ બેન્ક
(D) આર્થિક સહયોગ તથા વિકાસ સંગઠન
030. નીચેનામાંથી કઈ સ્કોર્પિયન વર્ગની સભમરીન જાન્યુઆરી 2023માં ભારતીય નૌકાદળમાં સામેલ કરવામાં આવી હતી?
- (A) INS કરંજ (B) INS કલવરી
(C) INS વાગીર (D) INS વેલા

022. Which of the following is the main feature of 'mixed farming' ?
- (A) Agriculture with both cash and food crops
 (B) Cultivation of two or more crops in one field
 (C) Simultaneous animal husbandry and farm production
 (D) None of the above
023. GST is applicable instead of which of the following taxes?
1. Central Excise 2. Professional Tax 3. Service tax 4. Vat
- (A) Only 1 and 2 (B) Only 3 and 4
 (C) Only 1, 3 and 4 (D) 1, 2, 3 and 4
024. Which of the following services can be availed even if the bank is not open ?
- (A) NEFT (B) RTGS
 (C) IMPS (D) All of the above
025. Where was started the first Mega Food Park of Gujarat - The Gujarat Agro Infrastructure Mega Food Park ?
- (A) Amhedabad (B) Surat
 (C) Gandhinagar (D) Vadodara
026. Which of the following pairs of important cities and industries is not correct?
- (A) Aligarh - Brass locks (B) Pilibhit - Wooden wave
 (C) Ranipet - Leather industry (D) Ambala - Sporting goods
027. Which of the following is included in the Special Investment Regions (SIR) ?
1. Ahmedabad – Dholera 2. Valasad – Ambergeon 3. Vadodara – Ankleshwar
 4. Surat – Navasari 5. Bharuch – Dahej
- (A) only 1, 2 and 5 (B) only 1, 2 and 3
 (C) only 1, 2, 3 and 4 (D) all of the above
028. Which application has been launched to make revenue services easier and faster for the citizens of Gujarat under the "Revolution in Revenue" programme?
- (A) iORA-2.0 (B) FAME-2
 (C) E-DHARA (D) BHU-Naksha
029. Global Financial Stability Report is released by whom?
- (A) European Central Bank
 (B) International Monetary Fund
 (C) International Bank for Reconstruction and Development
 (D) Organization for Economoc Cooperation and Development
030. Which of the following scorpene class submarine was commissioned into Indian Navy in January, 2023 ?
- (A) INS Karanj (B) INS Kalavari
 (C) INS Vagir (D) INS Vela

031. 'પિનાક' વિશે નીચેનામાંથી કયું સાચું છે?
 (A) તે મલ્ટી બેરલ રોકેટ સિસ્ટમ છે.
 (B) તે એક પ્રકારની યુદ્ધ ટેન્ક છે.
 (C) તે સ્વદેશી રીતે વિકસિત ડ્રોન સિસ્ટમ છે.
 (D) તે એક અદ્યતન સબમરીન છે.
032. ચંદ્ર પર જવા માટે વિશ્વની પ્રથમ ખાનગી ફ્લાઈટ યોજનાનું નામ શું છે ?
 (A) મુન એક્સપ્રેસ (Moon Express) (B) મુન ફ્લાઈટ (Moon Flight)
 (C) ચન્દ્રયાન (Chandrayaan) (D) મુન મેઈલ (Moon Mail)
033. 'પ્રોબાયોટીક' શબ્દ માટે લાગુ પડે છે.
 (A) ઓર્ગેનિક ખોરાક (Organic food) (B) એન્ટિસાઈડ (Anticid)
 (C) જીવંત માઈક્રોબાયલ ખોરાક પૂરક (D) એન્ટિબાયોટીક (Antibiotic)
034. ગ્રીન હાઉસ અસર સંબંધિત છે...
 (A) ગ્રીન હાઉસ વાયુઓનો સંગ્રહ જે વાતાવરણના તાપમાનમાં વધારો કરે છે.
 (B) વધેલા/વધારે તાપમાનમાં ફૂલો અને શાકભાજીનું ઉત્પાદન
 (C) કાચના ઘરમાં પાકનું ઉત્પાદન
 (D) આમાંથી કોઈ નહીં.
035. એલિસા ટેસ્ટનો ઉપયોગ કયા રોગના નિદાન માટે થાય છે ?
 (A) કેન્સર (Cancer) (B) ટી.બી. (T.B.)
 (C) પોલિયો (Polio) (D) એડ્સ (AIDS)
036. નીચેનામાંથી કઈ જાણીતી DOS આધારિત સ્પ્રેડશીટ હતી?
 (A) Excel (B) Wrod
 (C) Smart Cell (D) Lotus 1-2-3
037. સુપ્રીમકોર્ટમાં ન્યાયાધીશોની સંખ્યા વધારવાની સત્તા કોની પાસે છે?
 (A) વડાપ્રધાન (B) રાષ્ટ્રપતિ
 (C) સંસદ (D) કાયદા મંત્રાલય
038. લોકસભામાં રાજકીય પક્ષને વિરોધ પક્ષનો દરજ્જો ત્યારેજ આપવામાં આવે છે જ્યારે તે ઓછામાં ઓછી મેળવે.
 (A) 5% બેઠકો (B) 10% બેઠકો
 (C) 15% બેઠકો (D) 20% બેઠકો
039. ભારતના ઉપરાષ્ટ્રપતિને દૂર કરવા માટેનો ઠરાવ કોણ પ્રસ્તાવિત કરી શકે છે?
 (A) માત્ર લોકસભા (B) માત્ર રાજ્ય સભા
 (C) સંસદનું સંયુક્ત સત્ર (D) સંસદનું કોઈ પણ ગૃહ
040. રાજ્યસભાને લોકસભાની સમાન કઈ સત્તા છે?
 (A) નવી અખિલ ભારતીય સેવા સર્જનની બાબત
 (B) બંધારણમાં સુધારો
 (C) સરકારને દૂર કરવી
 (D) કાપ દરખાસ્ત લાવવી

031. Which one of the following is correct about 'Pinaka'?
- (A) It is a multi - barrel rocket system
 (B) It is a type of battle tank
 (C) It is an indigenously developed drone system
 (D) It is an advanced submarine
032. What is the name of the world's first private flight plan to go on the moon ?
- (A) Moon Express (B) Moon Flight
 (C) Chandrayaan (D) Moon Mail
033. The term 'Probiotic' is applied to _____
- (A) Organic food (B) Antacid
 (C) Live microbial food supplements (D) Antibiotic
034. Green House effect is related to _____
- (A) Collection of greenhouse gases which rise the temperature of atmosphere
 (B) Production of flower and vegetables in increased temperature
 (C) Production of crop in glass house
 (D) None of these
035. ELISA test is used to detect _____
- (A) Cancer (B) T.B.
 (C) Polio (D) AIDS
036. Which of the following was a popular DOS based spreadsheet?
- (A) Excel (B) Word
 (C) Smart Cell (D) Lotus 1-2-3
037. Who holds the power to increase the number of judges in the Supreme Court ?
- (A) Prime Minister (B) President
 (C) Parliament (D) Ministry of law
038. The opposition party status is accorded to a political party in the Lok Sabha only if it gets at least _____
- (A) 5% seats (B) 10% seats
 (C) 15% seats (D) 20% seats
039. The resolution for the removal of the Vice-president of India can be proposed in
- (A) Lok Sabha only (B) Rajya Sabha only
 (C) Joint session of parliament (D) Any House of Parliament
040. Rajya Sabha has equal powers with Lok Sabha in -
- (A) The matter of creating new All India services
 (B) Amending the Constitution
 (C) The removal of the government
 (D) Making cut motions

041. ભારતીય પુરાતત્વ સર્વેક્ષણ એ કયા વિભાગ / મંત્રાલયની સંલગ્ન કચેરી છે?
- (A) સંસ્કૃતિ (Culture) (B) પ્રવાસન
(C) વિજ્ઞાન અને ટેકનોલોજી (D) માનવ સંશોધન વિકાસ
042. બંધારણસભાની પ્રાંતીય બંધારણ સમિતિના અધ્યક્ષ કોણ હતા?
- (A) ડૉ. બી.આર. આંબેડકર (B) પં. જવાહરલાલ નેહરુ
(C) ડૉ. રાજેન્દ્રપ્રસાદ (D) સરદાર વલ્લભાઈ પટેલ
043. ભારતના પ્રથમ કાયદા અધિકારી તરીકે કોણ ઓળખાય છે ?
- (A) ભારતના મુખ્ય ન્યાયાધીશ (B) ભારતના કાયદા પ્રધાન
(C) ભારતના એટર્ની જનરલ (D) ભારતના સોલિસિટર જનરલ
044. ICC Men's T20 વિશ્વકપ, 2024 માં નીચેના પૈકી કઈ ટીમો સૌ પ્રથમ વખત રમી હતી ?
1. અમેરીકા 2. કેનેડા 3. યુગાંડા 4. દક્ષિણ આફ્રિકા 5. બાંગ્લાદેશ
- (A) 1, 2 અને 3 (B) 1, 2 અને 5
(C) 1, 3 અને 5 (D) 1, 2 અને 4
045. 18મી લોકસભાના મંત્રી મંડળમાં પર્યાવરણ, વન અને આબોહવા પરીવર્તન મંત્રાલય કયા કેબિનેટ મંત્રીને ફાળવવામાં આવેલ છે?
- (A) પ્રહલાદ જોશી (B) કિર્તિવર્ધન સિંહ
(C) ભૂપેન્દ્ર યાદવ (D) રામનાથ ઠાકુર
046. તાજેતરમાં વિશ્વના સૌથી સુંદર મ્યુઝિયમની યાદીમાં ગુજરાતનાં કયા મ્યુઝિયમને વર્સેઇલ્સ એવોર્ડ અંતર્ગત સ્થાન મળ્યું છે?
- (A) લાલભાઈ દલપતભાઈ મ્યુઝિયમ, અમદાવાદ
(B) સરદાર વલ્લભભાઈ પટેલ રાષ્ટ્રીય સ્મારક, અમદાવાદ
(C) મહાત્મા ગાંધી મ્યુઝિયમ, રાજકોટ
(D) સ્મૃતિવન ભૂર્કપ સ્મારક, ભૂજ
047. UN દ્વારા વર્ષ 2025ને શેના માટેનું આંતરરાષ્ટ્રીય વર્ષ જાહેર કરવામાં આવ્યું છે ?
- (A) ક્વોન્ટમ સાયન્સ અને ટેકનોલોજી (B) ન્યૂરોસાયન્સ
(C) એસ્ટ્રોફિઝિક્સ (D) નેનોસાયન્સ
048. સિક્યોરિટીઝ એન્ડ એક્સચેન્જ બોર્ડ ઓફ ઈન્ડિયા (SEBI) દ્વારા રોકાણકારોને વિશ્વનીય માહિતી સાથે સશક્ત બનાવવા માટે કઈ મોબાઈલ એપ લોન્ચ કરવામાં આવી છે?
- (A) Upstox (B) સાથી 2.0
(C) સારથિ 2.0 (SaaRthi2.0) (D) Bloomberg
049. તાજેતરમાં કયા રાજ્યએ ધો. 7 ના વિદ્યાર્થીઓ માટે ઈન્ફોર્મેશન એન્ડ કમ્યુનિકેશન ટેકનોલોજીના પાઠ્ય પુસ્તકમાં આર્ટિફિશિયલ ઈન્ટેલિજન્સ (AI) લર્નિંગની શરૂઆત કરી છે?
- (A) કેરળ (B) કર્ણાટક
(C) આંધ્રપ્રદેશ (D) મહારાષ્ટ્ર
050. માર્કેટિંગ સિઝન 2024-25 માટે ખરીફ પાક માટે લઘુત્તમ ટેકાના ભાવમાં (MSP)માં કરવામાં આવેલ વધારા અંતર્ગત કયા તેલીબિયા પાકમાં સૌથી વધુ વૃદ્ધિ જોવા મળે છે?
- (A) સૂર્યમુખીના બીજ (B) મગફળી
(C) સોયાબીન (D) નાઈજર બીજ

041. Archaeological Survey of India is an attached office of the Department/Ministry of
 (A) Culture (B) Tourism
 (C) Science and Technology (D) Human Resource Development
042. Who was the Chairman of the Provincial Constitution committee of the Constituent Assembly ?
 (A) Dr. B.R Ambedkar (B) Pt. Jawaharlal Nehru
 (C) Dr. Rajendra Prasad (D) Sardar Patel
043. Who is known as the first Law Officer of India ?
 (A) Chief Justice of India (B) Law Minister of India
 (C) Attorney General of India (D) Solicitor General of India
044. Which of the following teams played for the first time in the ICC Men's T20 World cup 2024 ?
 1. America 2. Canada 3. Uganda 4. South Africa 5. Bangladesh
 (A) 1, 2 and 3 only (B) 1, 2 and 5 only
 (C) 1, 3 and 5 only (D) 1, 2 and 4 only
045. Ministry of Environment, Forest and Climate Change has been allotted to which Cabinet Minister in the Cabinet of the 18th Loksabha ?
 (A) Prahlad Joshi (B) Kirtivardhan Sinh
 (C) Bhupendra Yadav (D) Ramnath Thakur
046. Recently which museum in Gujarat has received a place in the list of the beautiful museums in the world under the Versailles award ?
 (A) Lalbhai Dalpatbhai Museum, AHMEDABAD
 (B) Sardar Vallabhabhai Patel National Memorial, AHMEDABAD
 (C) Mahatma Gandhi Museum, RAJKOT
 (D) Smritivan Earthquake Memorial, BHUJ
047. The year of 2025 has been declared by the UN as the International year for what ?
 (A) Quantum Science and Technology (B) Neuroscience
 (C) Astrophysics (D) Nanoscience
048. Which mobile application has been launched by the Securities and Exchange Board of India (SEBI) to empower investors with global information ?
 (A) Upstox (B) Saathi 2.0
 (C) SaaRthi 2.0 (D) Bloomberg
049. Which state has recently introduced Artificial Intelligence (AI) learning in the information and communication Technology text book for class 7 students ?
 (A) Kerala (B) Karanataka
 (C) Andhra Pradesh (D) Maharashtra
050. Which oil seeds crop has been the highest growth under the increase in Minimum Support Price for Kharif Crops for Marketing Season 2024-25 ?
 (A) Sunflower Seeds (B) Groundnut
 (C) Soyabeans (D) Niger seed

051. ★ નિર્દેશ : એક ખંડમાં ઉપસ્થિત વ્યક્તિઓમાંથી $\frac{10}{11}$ માં ભાગની વ્યક્તિઓ ખુરશીમાં બેઠી છે. જેને માટે કુલ હાજર ખુરશીઓમાંથી $\frac{5}{6}$ ભાગની ખુરશીઓ વપરાય છે.
- પ્રશ્ન : જો ખંડમાં 20 ખુરશીઓ ખાલી રહી હોય તો ખુરશીમાં બેઠેલ વ્યક્તિઓની સંખ્યા અને કુલ હાજર ખુરશીઓની સંખ્યા શોધો.
- (A) 80, 100 (B) 100, 120
(C) 220, 240 (D) 110, 120
052. ★ નિર્દેશ : એક ખંડમાં ઉપસ્થિત વ્યક્તિઓમાંથી $\frac{10}{11}$ માં ભાગની વ્યક્તિઓ ખુરશીમાં બેઠી છે. જેને માટે કુલ હાજર ખુરશીઓમાંથી $\frac{5}{6}$ ભાગની ખુરશીઓ વપરાય છે.
- પ્રશ્ન : આપેલ માહિતી પ્રમાણે ખંડમાં ઉપસ્થિત કુલ વ્યક્તિઓની સંખ્યા કેટલી હશે ?
- (A) 100 (B) 200
(C) 120 (D) 110
053. ★ નિર્દેશ : એક ખંડમાં ઉપસ્થિત વ્યક્તિઓમાંથી $\frac{10}{11}$ માં ભાગની વ્યક્તિઓ ખુરશીમાં બેઠી છે. જેને માટે કુલ હાજર ખુરશીઓમાંથી $\frac{5}{6}$ ભાગની ખુરશીઓ વપરાય છે.
- પ્રશ્ન : ખંડમાં ઉપસ્થિત બધી જ વ્યક્તિઓ ખુરશી પર બેઠાં હોય તો કેટલી ખુરશીઓ ખાલી રહે ?
- (A) 20 (B) 10
(C) 5 (D) એક પણ નહીં
054. ★ નિર્દેશ : એક ખંડમાં ઉપસ્થિત વ્યક્તિઓમાંથી $\frac{10}{11}$ માં ભાગની વ્યક્તિઓ ખુરશીમાં બેઠી છે. જેને માટે કુલ હાજર ખુરશીઓમાંથી $\frac{5}{6}$ ભાગની ખુરશીઓ વપરાય છે.
- પ્રશ્ન : આપેલ માહિતીમાં જો વધારે 30% વ્યક્તિઓ ઉમેરાય તો હવે કેટલી વ્યક્તિઓને બેસવા માટે ખુરશી નહીં મળે ?
- (A) 13 (B) 30
(C) 23 (D) 36
055. પ્રથમ 20 એકી સંખ્યાઓની શૃંખલા માટે તેની સરેરાશ અને છેલ્લા પદ વચ્ચેનો તફાવત શોધો.
- (A) 19 (B) 39
(C) 40 (D) 41
056. નીચે આપેલ પદાવલિમાં જો સંખ્યા '36' અને '72' ની અદલા બદલી કરવામાં આવે તો પદાવલિનું મૂલ્ય શોધો.
- $$372 \div 3 \times 36 \div 6 \times 5 + 72 + 9$$
- (A) 7485 (B) 6765
(C) 3801 (D) કોઈ પણ વિકલ્પ નહીં
057. $2 \frac{-31}{16} + \frac{+31^2}{512}$ આગળનું પદ શોધો.
- (A) $\frac{-31^3}{16384}$ (B) $\frac{31^3}{16384}$
(C) $\frac{31^3}{512}$ (D) કોઈ પણ વિકલ્પ નહીં

051. ★ Instructions : $\frac{10}{11}$ of the people in a hall are sitting in in $\frac{5}{6}$ of the chairs available and the rest are standing.

Question : If 20 chairs are vacant, find the number people sitting and the total available chairs.

- (A) 80, 100 (B) 100, 120
(C) 220, 240 (D) 110, 120

052. ★ Instructions : $\frac{10}{11}$ of the people in a hall are sitting in in $\frac{5}{6}$ of the chairs available and the rest are standing.

Question : Find the total number of people present in the hall.

- (A) 100 (B) 200
(C) 120 (D) 110

053. ★ Instructions : $\frac{10}{11}$ of the people in a hall are sitting in in $\frac{5}{6}$ of the chairs available and the rest are standing.

Question : All people in the hall have are setting, how many chairs would have been vacant?

- (A) 20 (B) 10
(C) 5 (D) None

054. ★ Instructions : $\frac{10}{11}$ of the people in a hall are sitting in in $\frac{5}{6}$ of the chairs available and the rest are standing.

Question : If 30% more people turn up, how many would have no chair to sit?

- (A) 13 (B) 30
(C) 23 (D) 36

055. What is the difference between the average of first twenty odd numbers and the last term in the list?

- (A) 19 (B) 39
(C) 40 (D) 41

056. What will be the value of the given expression if the numbers '36' and '72' are interchanged?

$$372 \div 3 \times 36 \div 6 \times 5 + 72 + 9$$

- (A) 7485 (B) 6765
(C) 3801 (D) None of these

057. Find the next term: $2 \frac{-31}{16} + \frac{+31^2}{512}$

- (A) $\frac{-31^3}{16384}$ (B) $\frac{31^3}{16384}$
(C) $\frac{31^3}{512}$ (D) None of these

058. નીચે આપેલ પદાવલિમાં જો નિશાની + ને - અને નિશાની + ને \times વડે બદલાવામાં આવે તો તે પદાવલિનું મૂલ્ય શું મળે ?
 $96 + 12 + 3 \times 12 - 4$
 (A) 3020 (B) -332
 (C) 284 (D) -340
059. જો આજે રવિવાર હોય તો 97 દિવસ પછી કયો વાર હશે ?
 (A) સોમવાર (B) મંગળવાર
 (C) શનિવાર (D) રવિવાર
060. નીચે આપેલ કોષ્ટકમાં ખૂટતો અંક શોધો.

3	4	2	13
4	2	3	5
2	3	4	(?)

- (A) 12 (B) 62
 (C) 8 (D) 3
061. સ્તંભ X 8 મીટર ઊંચાઈ ધરાવે છે સ્તંભ Y સ્તંભ X કરતાં અડધી અને સ્તંભ Z સ્તંભ X કરતાં બમણી ઊંચાઈ ધરાવે છે. સ્તંભ P સ્તંભ Z કરતાં ઊંચો છે. પરંતુ સ્તંભ A અને સ્તંભ B કરતાં ઓછી ઊંચાઈ ધરાવે છે. નીચે આપેલ વિધાનોમાંથી કયું વિધાન ખરું હોઈ શકે ?
 (A) B સૌથી ઊંચો સ્તંભ છે.
 (B) સ્તંભ X, Y અને Z ઊંચાઈની સરેરાશ 9 મી થી વધારે છે.
 (C) સ્તંભ P, A અને B ની ઊંચાઈની સરેરાશ 15 મી થી ઓછી છે.
 (D) ઉપરોક્ત પૈકી એક પણ નહીં
062. એક દુકાને વસ્તુઓના વેચાણ માટે બે યોજના રજૂ કરી છે. દરેક યોજનામાં બધી વસ્તુઓની કિંમત સમાન રાખવામાં આવી છે. બંને યોજના ધ્યાનથી વાંચીને સાચો વિકલ્પ પસંદ કરો.
 યોજના A : એક વસ્તુ રૂા. 3500/- માં ખરીદો તો બીજી વસ્તુ પર $\frac{2}{7}$ % અને ત્રીજી વસ્તુની ખીરીદી પર $\frac{3}{7}$ % ની છૂટ મળશે.
 યોજના B : એક વસ્તુ રૂા. 3600/- માં ખરીદો તો બીજી વસ્તુ પર 25%, ત્રીજી વસ્તુ પર 50% અને ચોથી વસ્તુ પર 75% છૂટ મળશે.
 (A) A અને B બંને યોજનામાં કિંમત સરખી રહેશે. (B) A યોજના B યોજના કરતાં સસ્તી છે.
 (C) B યોજના A યોજના કરતાં સસ્તી છે. (D) બંને યોજનાની સરખામણી શક્ય નથી.
063. C A કરતાં બમણી ઝડપથી કામ કરે છે અને B A કરતાં ત્રણ ગણી ઝડપથી કામ કરે છે. B એક નિયત કાર્ય A કરતા 20 દિવસ વહેલું પૂર્ણ કરી શકે છે. જો તે ત્રણેય સાથે કામ કરે તો આવી બે નિયત કાર્ય પૂર્ણ કરતાં કેટલા દિવસ લાગે ?
 (A) 5 (B) 2.5
 (C) 10 (D) 20
064. -10 થી 9 સુધીની બધી પૂર્ણાંક સંખ્યાનો મધ્યક
 (A) 0.5 (B) 0
 (C) -0.5 (D) -0.1

058. If is '+' is '-', and '-' is '×', What is the value of $96 \div 12 + 3 \times 12 - 4$?

- (A) 3020 (B) -332
(C) 284 (D) -340

059. Today is Sunday. After 97 days it would be:

- (A) Monday (B) Tuesday
(C) Saturday (D) Sunday

060. Find the missing number in the following table

3	4	2	13
4	2	3	5
2	3	4	(?)

- (A) 12 (B) 62
(C) 8 (D) 3

061. Pillar X is 8 m tall Y is half of X and Z is twice of X. P is taller than Z but shorter than A and B. Which of the following statements is true?

- (A) B is the tallest
(B) The average height of X, Y, Z is greater than 9 m
(C) The average height of P, A, B is less than 15 m
(D) None of these

062. A shop offers two deals; each deal having items of equal cost. Read the deals carefully and choose the correct option:

Deal-A: Buy one item for Rs. 3500/-, second item at a discount of $\frac{2}{7}$ % and the third one at a discount of $\frac{3}{7}$ %.

Deal-B: Buy one item for Rs. 3600/-, the second, third and fourth items at discount of 25%, 50% and 75% respectively.

- (A) A and B have the same cost. (B) Deal-A is cheaper than Deal-B
(C) Deal-B is cheaper than Deal-A (D) The deals are not comparable

063. C is twice as fast as A and B is thrice as fast as A and takes 20 days less than A in doing a work. If all three of them work together how many days will they take to complete two such tasks?

- (A) 5 (B) 2.5
(C) 10 (D) 20

064. The mean of all integers from -10 to 9

- (A) 0.5 (B) 0
(C) -0.5 (D) -0.1

065. સ્મિતાએ એક ચોક્કસ રકમ સાદા વ્યાજ પર પહેલાં બે વર્ષ માટે વાર્ષિક 6% ના વ્યાજ દરે ત્યાર બાદ 4 વર્ષ માટે વાર્ષિક 9% ના વ્યાજ દરે અને આ 6 વર્ષના સમય ગાળા બાદના સમયમાં વાર્ષિક 12% વ્યાજના દરે ઉછીના લીધા. જો સાત વર્ષના અંતે તેણે કુલ રૂ. 9600/- વ્યાજ પેટે ચૂકવ્યા હોય તો તેણે કેટલી રકમ ઉધાર લીધી હશે ?
- (A) 12,000/- (B) 16,000/-
(C) 15,360/- (D) 18,000/-
066. જો એક ચોક્કસ અપૂર્ણાંક સંખ્યાના અંશમાં 150% નો વધારો કરવામાં આવે અને છેદમાં 75% નો વધારો કરવામાં આવે તો પરિણામે મળતી નવી અપૂર્ણાંક સંખ્યા $\frac{4}{17}$ છે. તે મૂળ અપૂર્ણાંક સંખ્યા શોધો.
- (A) $\frac{12}{17}$ (B) $\frac{8}{17}$
(C) $\frac{14}{85}$ (D) $\frac{3}{34}$
067. એક સંખ્યાના 65% અને 12% ની કિંમતનો તફાવત 16960 છે. તો તે સંખ્યાના 72% ની કિંમત શું થાય ?
- (A) 23040 (B) 32000
(C) 24000 (D) 38160
068. કુલ 1080 ગુણની પરીક્ષામાં વિદ્યાર્થીએ સર્ટીફિકેટ મેળવવા માટે ઓછામાં ઓછા 648 ગુણ મેળવ્યા હોય તો તેને સર્ટીફિકેટ મેળવવા કેટલા ટકા ઓછા મેળવ્યા કહેવાય ?
- (A) 4% (B) 6%
(C) 8% (D) 5%
069. નીચે આપેલ પદાવલિનું મૂલ્ય શોધો.
- $\frac{1}{8} (9.5^2 - 6.5^2)$
- (A) $\sqrt{16}$ (B) $\sqrt[3]{216}$
(C) 2^3 (D) $\sqrt{256}$
070. નીરજા 75 શબ્દ / મિનિટની ઝડપે 3000 શબ્દોનો નિબંધ ટાઈપ કરે છે. મહાવરાથી તેની ઝડપમાં 20% નો વધારો થાય તો હવે પહેલાં જેટલા જ સમયમાં કેટલા શબ્દોનો નિબંધ ટાઈપ કરી શકશે ?
- (A) 3300 (B) 3200
(C) 3750 (D) 3600
071. એક સાયકલિસ્ટ 21.6 કિમી પ્રતિ કલાકની ઝડપે સાયકલ ચલાવી એક ચોરસ બગીચાને ફરતો આંટો 1 મિનિટ 20 સે.માં ફરે છે. તે બગીચાનું ક્ષેત્રફળ શોધો.
- (A) 12000 ચો.મી. (B) 10800 ચો.મી.
(C) 14400 ચો.મી. (D) 13200 ચો.મી.
072. અજીત 186 કિમી ના અંતરની મુસાફરી કરે છે. જેમાંથી થોડા અંતરની મુસાફરી સાયકલ દ્વારા 12 કિમી પ્રતિ કલાકની ઝડપે અને બાકીના અંતરની મુસાફરી બસ દ્વારા 72 કિમી પ્રતિ કલાકની ઝડપે કરે છે. અજીતે બસ દ્વારા કેટલું અંતર કાપ્યું હશે ?
- (A) 174 કિમી (B) 120 કિમી
(C) 150 કિમી (D) 180 કિમી

065. Smita borrows some amount on simple interest at the rate of 6% per annum for the first two years, 9% per annum for the next four years and 12% per annum for the period beyond six years. If she pays a total interest of Rs. 9600/- at the end of 7 years. What amount she would have borrowed?
- (A) Rs. 12,000/- (B) Rs. 16,000/-
 (C) Rs. 15,360/- (D) Rs. 18,000/-
066. If the numerator of a certain fraction is increased by 150% and the denominator is increased by 75%, the resultant fraction is $\frac{4}{17}$. Find the original fraction.
- (A) $\frac{12}{17}$ (B) $\frac{8}{17}$
 (C) $\frac{14}{85}$ (D) $\frac{3}{34}$
067. The difference between 65% of a number and 12% of the same number is 16960. What is 72% of that number?
- (A) 23040 (B) 32000
 (C) 24000 (D) 38160
068. In an examination of 1080 marks a student is supposed to score at least 648 marks to earn a certificate. If Reema scored 604.8 marks, by what percentage did she lose the certificate?
- (A) 4% (B) 6%
 (C) 8% (D) 5%
069. The value of the expression $\frac{1}{8}$ of $(9.5^2 - 6.5^2)$ is
- (A) $\sqrt{16}$ (B) $\sqrt[3]{216}$
 (C) 2^3 (D) $\sqrt{256}$
070. Nirja types an essay of 3000 words at the speed of 75 words per minute. With practice her speed enhances by 20%. Find the number of words she would be able to type in the same time as before.
- (A) 3300 (B) 3200
 (C) 3750 (D) 3600
071. A cyclist riding at the rate of 21.6 km/hr takes 1 min 20 sec to move around a square garden. Find the area of this garden.
- (A) 12000 m² (B) 10800 m²
 (C) 14400 m² (D) 13200 m²
072. Ajit travelled a distance of 186 km in 3 hours. He travelled partly by a bicycle with a speed of 12 km/hr and partly by a bus with a speed of 72 km/hr. The distance Ajit travelled by bus is:
- (A) 174 km (B) 120 km
 (C) 150 km (D) 180 km

073. તીર્થે રૂા. 45,000/- ની રકમ 5% ના સાદા વાર્ષિક વ્યાજ દરે બે વર્ષ માટે ઉછીની લીધી તેમાંથી તેણે ચિરાગને રૂા. 20,000/- 4% ના સાદા વાર્ષિક વ્યાજ દરે અને બાકીની રકમ અતીતને 7% ના સાદા વાર્ષિક વ્યાજ દરે બે વર્ષ માટે ઉછીના આપ્યા. આ લેવડ-દેવડના વ્યવહારમાં તીર્થને થયેલ નફો અથવા ખોટ શોધો.
- (A) નફો રૂા. 600/- (B) ખોટ રૂા. 600/-
(C) નફો રૂા. 900/- (D) નફો રૂા. 450/-
074. ★ નિર્દેશ : એક ચોક્કસ રકમનું ચક્રવૃદ્ધિ વ્યાજ સાથે રોકાણ કરવાથી બે વર્ષમાં રૂા. 8,820/- અને ત્રણ વર્ષમાં રૂા. 9,261 મળે છે.
પ્રશ્ન : વાર્ષિક વ્યાજનો દર શોધો.
- (A) 5% (B) 7.5%
(C) 2.5% (D) 6%
075. ★ નિર્દેશ : એક ચોક્કસ રકમનું ચક્રવૃદ્ધિ વ્યાજ સાથે રોકાણ કરવાથી બે વર્ષમાં રૂા. 8,820/- અને ત્રણ વર્ષમાં રૂા. 9,261 મળે છે.
પ્રશ્ન : ઉપરોક્ત સવાલમાં આપેલ માહિતી પ્રમાણે રોકાણ કરેલ મૂળ રકમ શોધો.
- (A) રૂા. 7,500/- (B) રૂા. 7,800/-
(C) રૂા. 8,000/- (D) રૂા. 8,100/-
076. ★ નિર્દેશ : એક સમાંતર શ્રેણીના પહેલા સાત પદના સરવાળા અને પહેલા બાર પદના સરવાળાનો ગુણોત્તર 7:20 છે.
પ્રશ્ન : જો ત્રીજું પદ 11 હોય તો સામાન્ય તફાવત શોધો.
- (A) 3 (B) 4
(C) 5 (D) 2
077. ★ નિર્દેશ : એક સમાંતર શ્રેણીના પહેલા સાત પદના સરવાળા અને પહેલા બાર પદના સરવાળાનો ગુણોત્તર 7:20 છે.
પ્રશ્ન : માહિતીનો ઉપયોગ કરીને ઓગણીસમાં પદ અને નવમાં પદનો ગુણોત્તર શોધો.
- (A) 7:15 (B) 15:7
(C) 3:1 (D) 5:3
078. એક ગુણોત્તર શ્રેણીનું પાચમું પદ 625 છે. તેના પહેલા 9 પદોનો ગુણાકાર થાય.
- (A) 5⁹ (B) 5³⁶
(C) 5⁴ (D) 5¹³
079. એક પૂર્ણ સંખ્યાના વર્ગને સાત વડે ગુણાકાર કરવાથી જે પરિણામ મળે તે અને તે જ પૂર્ણ સંખ્યાના ત્રણ ગણામાંથી 4 બાદ કરતાં જે પરિણામ મળે તે બંને સમાન છે. તે પૂર્ણ સંખ્યા શોધો.
- (A) 1 (B) -1
(C) 2 (D) ઉકેલ શક્ય નથી.
080. 60 વિદ્યાર્થીઓના વર્ગમાં વિદ્યાર્થીઓને 1 થી 60 ક્રમાંક આપવામાં આવ્યા છે. જે વિદ્યાર્થીઓનો ક્રમાંક બેક્રી સંખ્યા છે તેઓ અંગ્રેજીનો અભ્યાસ કરે છે, જેમના ક્રમાંક ત્રણના ગુણાંકમાં છે તેઓ ગણિતનો અભ્યાસ કરે છે અને જેમના ક્રમાંક ચારના ગુણાંકમાં છે તેઓ અર્થશાસ્ત્રનો અભ્યાસ કરે છે. કુલ વિદ્યાર્થીઓમાંથી કેટલા ભાગના વિદ્યાર્થીઓ ત્રણેય વિષયનો અભ્યાસ કરતાં હશે ?
- (A) $\frac{1}{12}$ (B) $\frac{1}{6}$
(C) $\frac{4}{15}$ (D) $\frac{2}{15}$

073. Tirth borrows Rs. 45,000/- at 5% simple interest for two years and lends Rs. 20,000 to Chirag at 4% simple interest and remaining to Atit at 7% simple interest for 2 years. Find his profit / loss in this transaction.
- (A) Profit, Rs. 600/- (B) Loss, Rs. 600/-
 (C) Profit, Rs. 900/- (D) Profit, Rs. 450/-
074. ★ Directions : A certain sum when invested on compound interest grows to Rs. 8,820/- in 2 years and to Rs. 9,261 in 3 years.
 Question : Find the rate of interest per annum.
- (A) 5% (B) 7.5%
 (C) 2.5% (D) 6%
075. ★ Directions : A certain sum when invested on compound interest grows to Rs. 8,820/- in 2 years and to Rs. 9,261 in 3 years.
 Question : Find the principal invested
- (A) Rs. 7,500/- (B) Rs. 7,800/-
 (C) Rs. 8,000/- (D) Rs. 8,100/-
076. ★ Directions : The ratio of the sum of first seven terms of an arithmetic progression to that of the first twelve terms of the same progression is 7:20.
 Question : If the third term is 11, the common difference is :
- (A) 3 (B) 4
 (C) 5 (D) 2
077. ★ Directions : The ratio of the sum of first seven terms of an arithmetic progression to that of the first twelve terms of the same progression is 7:20.
 Question : The ratio of nineteenth to ninth term is :
- (A) 7:15 (B) 15:7
 (C) 3:1 (D) 5:3
078. The fifth term a geometric progression terms 625. The product of its first nine term is:
- (A) 5^9 (B) 5^{36}
 (C) 5^4 (D) 5^{13}
079. Multiplying the square of an integer by 7 gives the same result as subtracting thrice the integer from 4. Find the integer.
- (A) 1 (B) -1
 (C) 2 (D) Doesn't exist
080. In a class of 60 students, numbered from 1 to 60, those with even numbers studied English, those with multiple of 3 studied Mathematics and those with multiple of 4 studied Economics. What fraction of students studied all three subjects?
- (A) $\frac{1}{12}$ (B) $\frac{1}{6}$
 (C) $\frac{4}{15}$ (D) $\frac{2}{15}$

081. નીચે આપેલાં જૂથ ધ્યાને લઈ બધી જોડણી સાચી હોય તેવો વિકલ્પ પસંદ કરો.
1. જિગીષા, વિજિગીષા, જિજીવિષા, અભીપ્સા
 2. રુરુદિષા, મુમૂર્ષા, મુમુક્ષા, શુશ્રૂષા
 3. કનિષ્ઠ, અનિષ્ઠ, જ્યેષ્ઠ, વિશિષ્ઠ
 4. અગાશી, અગાસી, ઉજાશ, ઉજાસ
- (A) 1, 2, 3 અને 4 બધાં જ સાચાં છે. (B) ફક્ત 1, 2 અને 3 સાચાં છે.
(C) ફક્ત 1 અને 2 સાચાં છે. (D) ફક્ત 1 સાચું છે.
082. નીચે આપેલાં જૂથ ધ્યાને લઈ સમાનાર્થી શબ્દો વિશે યોગ્ય વિકલ્પ પસંદ કરો.
1. મઘવા, શગ, શચીશ, ઈશ
 2. ઈંદીવર, કેરવ, ઉત્પલ, પુંડરીક
 3. દરિયો, વારિધિ, શાયર, મહેરામણ
 4. સાપ, ચક્ષુઃશ્રવા, ઉરગ, પન્નગ
- (A) ફક્ત 1, 2 અને 3 યોગ્ય છે. (B) ફક્ત 1, 3 અને 4 યોગ્ય છે.
(C) ફક્ત 2 અને 4 યોગ્ય છે. (D) 1, 2, 3 અને 4 બધાં જ યોગ્ય છે.
083. નીચે આપેલાં જૂથ ધ્યાને લઈ વિરુદ્ધાર્થી શબ્દો વિશે યોગ્ય વિકલ્પ પસંદ કરો.
1. તાણો × માણો
 2. રચનાત્મક × ખંડનાત્મક
 3. આવિર્ભાવ × તિરોભાવ
 4. વક્રીલ × આરોપી
- (A) ફક્ત 1 અને 3 યોગ્ય છે. (B) ફક્ત 2 અને 4 યોગ્ય છે.
(C) ફક્ત 1 અને 2 યોગ્ય છે. (D) ફક્ત 2 અને 3 બધાં જ યોગ્ય છે.
084. નીચે આપેલા રૂઢિપ્રયોગ અને તેના અર્થ માટે યોગ્ય વિકલ્પ પસંદ કરો.
- | રૂઢિપ્રયોગ | અર્થ |
|------------------------|-----------------------------------|
| 1. ગગનમાં ગાજવું | - મોટેથી બોલવું |
| 2. ગગને ચડવું | - ફુલાવું |
| 3. ગગનમાં કુસુમ વીણવાં | - અસંભવિત કામ કરવાનો પ્રયત્ન કરવો |
| 4. ગગન સાથે વાતો કરવી | - બડાઈ મારવી |
- (A) ફક્ત 1 અને 4 યોગ્ય છે. (B) ફક્ત 1, 2 અને 3 યોગ્ય છે.
(C) ફક્ત 2, 3 અને 4 યોગ્ય છે. (D) 1, 2, 3 અને 4 બધા જ યોગ્ય છે.
085. નીચે આપેલી કહેવતો અને તેના અર્થ ધ્યાને લઈ તેના વિશે યોગ્ય વિકલ્પ પસંદ કરો.
1. બાવો ઊઠ્યો બગલમાં હાથ = સંન્યાસીએ સવારમાં પ્રાણાયામ કરવા
 2. ઘાલે દાઢમાં તો આવે હાડમાં = દાંત કચકચાવીને મહેનત કરો તો શરીર સુધરે
 3. ઘાસ કાપવા જવું ને ગોળપાપડીનું ભાતું = મામૂલી કામનો મોટો પગાર
 4. તળાવે તરસ્યો ને વેળાએ ભૂખ્યો = દરેક પરિસ્થિતિમાં લાભ લેવાની વૃત્તિ
- (A) 1, 2, 3 અને 4 બધાં જ સાચાં છે. (B) ફક્ત 2, 3 અને 4 સાચાં છે.
(C) ફક્ત 3 અને 4 સાચાં છે. (D) ફક્ત 4 સાચું છે.

086. નીચે આપેલા સામાસિક શબ્દ અને તેના પ્રકાર વિશે યોગ્ય વિકલ્પ પસંદ કરો.

સામાસિક શબ્દ	પ્રકાર
1. ચોરનજર	- બહુવ્રીહિ સમાસ
2. નવચેતન	- દ્વિગુ સમાસ
3. આગબેલ	- મધ્યમપદલોપી સમાસ
4. નદીનાળું	- તત્પુરુષ સમાસ

(A) ફક્ત 1 અને 3 યોગ્ય છે.

(B) ફક્ત 2 અને 3 યોગ્ય છે.

(C) 1, 2, 3 અને 4 બધા જ યોગ્ય છે.

(D) 1, 2, 3 અને 4 બધા જ અયોગ્ય છે.

087. નીચે આપેલી સંધિ વિશે યોગ્ય વિકલ્પ પસંદ કરો.

1. ત્રિ + અંબક = ત્ર્યંબક
2. શ્રી + ઈશ = શ્રીઈશ
3. ઉપરિ + ઉક્ત = ઉપર્યુક્ત
4. મુચ્ + ત = મુક્ત

(A) ફક્ત 1 અને 2 સાચા છે.

(B) ફક્ત 2 અને 3 સાચા છે.

(C) ફક્ત 1, 3 અને 4 સાચા છે.

(D) 1, 2, 3 અને 4 બધા જ ખોટા છે.

088. નીચે આપેલી કાવ્ય-પંક્તિને ધ્યાને લઈ એના અલંકાર અને છંદના પ્રકારનો યોગ્ય વિકલ્પ પસંદ કરો.

‘છાયા તો વડના જેવી, ભાવ તો નદના સમ,
દેવોના ધામ જેવુ, હેડું જાણે હિમાલય’

(A) ઉત્પ્રેક્ષા – અનુષ્ટુપ

(B) ઉપમા – મનહર

(C) ઉત્પ્રેક્ષા – મનહર

(D) ઉપમા – ગુલબંકી

089. નીચે આપેલી કાવ્ય-પંક્તિને ધ્યાને લઈ એના અલંકાર અને છંદના પ્રકારનો યોગ્ય વિકલ્પ પસંદ કરો.

‘ફાગણ આવ્યો હે સખી, કેશુ ફૂલ્યાં રસાળ,
હદે ન ફૂલી રાધિકા ભમર કનૈયોલાલ.’

(A) વર્ણાનુપ્રાસ – રોળા

(B) રૂપક – દોહરો

(C) રૂપક – રોળા

(D) વર્ણાનુપ્રાસ – હરિગીત

090. નીચેની વિગતોને ધ્યાને લઈ યોગ્ય વિકલ્પ પસંદ કરો.

(A) યથાશક્તિ – કર્મધારય સમાસ

(B) ભાષ્ + અન = ભાષણ

(C) હરખ ને શોકની ના’વે જેને હેડકી – શ્લેષ અલંકાર

(D) ‘સરલ હૃદય ઈચ્છે પાપીને પ્રેમ પાવા’. – વસંતતિલકા છંદ

091. I rested my arms _____ the walls.
(A) on (B) at
(C) against (D) in
092. I shall ring him tomorrow in the afternoon. (Spot the error)
(A) I shall (B) ring him
(C) tomorrow (D) in the afternoon
093. He is _____ than I expected.
(A) later (B) Latter
(C) letter (D) None
094. It _____ rain tomorrow.
(A) will (B) should
(C) can (D) may
095. He said, "The horse died in the night" (Turn into indirect speech)
(A) He said the horse died in the night
(B) He said that the horse had died in the night
(C) He said the horse had been died in the night
(D) He said that the horse died in the night
096. Can you find _____ one-rupee note today?
(A) a (B) an
(C) the (D) that
097. The hand has fingers. (Rewrite the sentence with an adjective of quantity)
(A) The hand has good fingers (B) The hand has small fingers
(C) The hand has five fingers (D) The hand has unequal fingers
098. I have been staying at Gandhinagar _____ 1999.
(A) for (B) since
(C) from (D) in
099. There is _____ sugar in the house. I can't make tea.
(A) a little (B) little
(C) few (D) a few
100. There are _____ cows grazing in the field.
(A) any (B) many
(C) the (D) little

101. Which one of the following anion is most commonly found in ground water as a result of anthropogenic activities such as use of Fertilizer?
 (A) Sulfate (SO_4^{2-}) (B) Chloride (Cl^-)
 (C) Nitrate (NO_3^-) (D) Phosphate (PO_4^{3-})
102. What is the typical range of Total Dissolved Solids (TDS) in fresh ground water?
 (A) 2000-5000 mg/L (B) 1000-2000 mg/L
 (C) 0-500 mg/L (D) 500-1000 mg/L
103. Which one of the following dissolved gas is most critical for assessing the redox conditions in ground water?
 (A) Methane (B) Nitrogen
 (C) Oxygen (D) Carbon dioxide
104. The presence of dissolved manganese (Mn^{2+}) in ground water is typically indicative of _____ kind of environment.
 (A) Oxidizing (B) Reducing
 (C) Alkaline (D) Neutral
105. High levels of Dissolved Organic Carbon (DOC) in ground water can enhance the mobility of _____ type of contaminants.
 (A) Halides (B) Sulfates
 (C) Nitrates (D) Heavy metals
106. Which one of the following type of water has the highest concentration of dissolved oxygen?
 (A) Ground water (B) Surface water
 (C) Sea water (D) Rain water
107. Which one of the following factor is most influential in determining the pH of natural water bodies?
 (A) Temperature (B) Carbonate equilibrium
 (C) Dissolved oxygen (D) Salinity
108. Which of the following isotope ratio is commonly used to trace the source and age of nitrate contamination in ground water?
 (A) $\delta^{15}\text{N}/^{14}\text{N}$ (B) $\delta^{13}\text{C}/^{12}\text{C}$
 (C) $\delta^{34}\text{S}/^{32}\text{S}$ (D) $\delta^2\text{H}/^1\text{H}$
109. Dominant form of nitrogen found in anaerobic, eutrophic bottom waters of lakes is _____
 (A) Nitrate (NO_3^-) (B) Nitrite (NO_2^-)
 (C) Ammonium (NH_4^+) (D) Nitrogen gas (N_2)
110. Which one of the following isotope is commonly used as a tracer to study the origin and age of ground water?
 (A) Carbon-14 (B) Tritium
 (C) Oxygen-18 (D) Deuterium
111. Which geochemical modeling approach is typically employed to predict the saturation index of minerals in ground water systems?
 (A) SWAT (B) PHREEQC
 (C) MODFLOW (D) HYDRUS
112. What is the significance of the Sodium Absorption Ratio (SAR) in evaluating ground water quality for agricultural purposes?
 (A) It measures the total salt content
 (B) It indicates the potential for soil salinization
 (C) It assesses the toxicity of sodium ions
 (D) It predicts the impact on soil structure

113. Which analytical technique is preferred for measuring low concentration of radon in ground water?
 (A) Liquid scintillation counting (B) Alpha spectrometry
 (C) Mass spectrometry (D) Gas phase scintillation counting
114. Which one of the following mineral dissolution process primarily controls the concentration of strontium in ground water?
 (A) Celestite dissolution (B) Halite dissolution
 (C) Gypsum dissolution (D) Dolomite dissolution
115. Dominant process leading to the formation of high arsenic concentrations in ground water in certain region is _____ of the following.
 (A) Oxidation of arsenic-bearing sulfides (B) Reductive dissolution of iron oxides
 (C) Evaporation of arsenic-rich water (D) Precipitation of arsenic minerals
116. In context to ground water quality assessment, the term specific conductance refers to _____ of the following.
 (A) Electrical conductivity standardized to room temperature
 (B) Electrical conductivity standardized to atmospheric pressure
 (C) Electrical conductivity standardized to 25°C
 (D) Total dissolved solids concentration
117. Which geochemical indicator is used to assess the extent of mixing between different ground water sources?
 (A) Chloride concentration (B) Alkalinity
 (C) Redox potential (D) Deuterium ($\delta^2\text{H}$) content
118. Which parameter is used to evaluate the corrosiveness of ground water for industrial applications?
 (A) Hardness (B) Alkalinity
 (C) Langelier Saturation Index (D) pH
119. Which one of following ion is commonly used as a tracer for understanding ground water flow paths in Karst aquifers?
 (A) Bromide (B) Chloride
 (C) Nitrate (D) Fluoride
120. What is the primary purpose of using stable isotopes in ground water quality studies?
 (A) Identifying sources of contamination (B) Tracing water-rock interactions
 (C) Only (A) (D) Both (A) and (B)
121. For assessing the suitability of ground water for livestock, which one of the contaminant is considered most harmful?
 (A) Nitrate (B) Fluoride
 (C) Sulfate (D) Chloride
122. _____ is the permissible limit of nitrate in drinking water as per IS 10500:2012 to avoid methemoglobinemia.
 (A) 45 mg/L (B) 50 mg/L
 (C) 10 mg/L (D) 20 mg/L
123. The main purpose of normalizing water quality parameters before calculating the WQI is _____.
 (A) To reduce the data size
 (B) To eliminate data redundancy
 (C) To bring all parameters to a common scale
 (D) To increase the accuracy of measurements

124. In the water quality Index, what is the significance of weighting factor assigned to each parameter?
- (A) It standardizes the unit of measurement
(B) It adjusts for the relative importance of each parameter
 (C) It converts values in to a common scale
 (D) It reflects the cost of parameter analysis
125. For irrigation water, what is the recommended maximum sodium adsorption ratio to avoid soil permeability issues as per IS standards?
- (A) 15** (B) 6
 (C) 9 (D) 18
126. The standard recommended preservation method for samples to be analyzed for nitrate concentration is _____.
- (A) Addition of sulfuric acid to pH < 2 **(B) Refrigeration at 4°C**
 (C) Freezing at -20°C (D) Addition of mercury chloride
127. _____ is the most typically usual methods for the analysis of Total Organic Carbon (TOC) in water samples?
- (A) Gravimetric analysis (B) Titration
(C) High temperature combustion (D) Ion chromatography
128. What is the purpose of field blanks in water quality sampling?
- (A) To assess contamination during sampling**
 (B) To calibrate analytical instruments
 (C) To determine back ground levels
 (D) To validate analytical methods
129. The standard procedure among the following for preserving samples of volatile organic compound analysis is _____.
- (A) Addition of formaldehyde
 (B) Freezing at -20°C
 (C) Acidification to pH < 2
(D) Storing in dark glass battles with no headspace
130. Which one of the following method is used to transform individual water quality parameter values in to sub-index values for WQI calculation?
- (A) Logarithmic scaling **(B) Exponential scaling**
 (C) Linear scaling (D) Polynomial scaling
131. In water quality data analysis, what is the primary purpose of using a Piper diagram?
- (A) To depict the concentration of true metals
 (B) To show seasonal variations in water quality
 (C) To correlate water quality parameters with land use
(D) To represent the relative abundance of major cations and anions
132. Which one among the following is specifically used to evaluate the suitability of water for irrigation, based on sodium hazard and salinity hazard?
- (A) Durov plot (B) Gibbs diagram
(C) Wilcox diagram (D) Piper diagram
133. In a Durov plot, the diamond-shaped field represents _____.
- (A) The concentration of major nutrient
 (B) The overall chemical composition of water samples
 (C) The relationship between pH and alkalinity
(D) The mixing between two different water types

134. Match the following key components of Water Quality Index with their primary functions

List I

List II

- | | |
|------------------------------------|---|
| (a) Weighing Factors | (i) Converts raw parameters into standardized values |
| (b) Sub-index calculations | (ii) Combines sub indices to compute the overall WQI |
| (c) Aggregation formulae | (iii) Represents for the importance of individual WQ parameters |
| (d) WQ parameters | (iv) Specific measurable elements used to assess water quality |
| (A) a - iii, b - i, c - iv, d - ii | (B) a - i, b - ii, c - iii, d - iv |
| (C) a - iii, b - i, c - ii, d - iv | (D) a - i, b - iii, c - iv, d - ii |

135. What is the primary purpose of representing water quality data using a Schoeller diagram?

- (A) To compare the ionic composition of different water samples
- (B) To show the temporal variation of a single parameter
- (C) To depict the concentration of nutrients in water
- (D) To assess the risk of metal contamination

136. In geochemical water studies, the main advantage of using a Durov plot over a Piper diagram is _____ of the following.

- (A) It includes both major cations and anions as well as additional parameters like pH
- (B) It is easier to interpret for non-specialists
- (C) It can display temporal changes more effectively
- (D) It is more commonly used in environmental regulations

137. What is the purpose of an Internal Quality Control (IQC) procedure in the laboratory?

- (A) To monitor the accuracy of test results within the laboratory
- (B) To validate test methods and test results
- (C) To verify compliance with external standards
- (D) To provide training for laboratory personnel

138. In context to QC, the term analytical bias means _____.

- (A) An error that can be corrected by recalibration
- (B) A temporary error caused by external factors
- (C) A consistent deviation from the true value due to systematic errors
- (D) A random error affecting the reproducibility of results

139. What is the meaning of “degrees of freedom” in context to the measurement of uncertainty?

- (A) The precision of measurement instruments
- (B) The range of possible measurement values
- (C) The flexibility of measurement instruments
- (D) The number of independent values in a calculation

140. Which of the following method is used to estimate uncertainty when only a single observation is available?

- (A) Type A evaluation
- (B) Type B evaluation
- (C) Bootstrap method
- (D) Monte Carlo simulation

141. A1 score represents _____ in proficiency testing.

- (A) The number of standard deviations a result is from the mean
- (B) The mean value of test results
- (C) The standard deviation of test results
- (D) The absolute error of test results

142. Which one of the following ISO standard is typically used as a basis for NABL accreditation of testing and calibration laboratories?
- (A) ISO 14001 (B) ISO 45001
(C) ISO/IEC 17025 (D) ISO 9001
143. What is a major challenge faced by water quality testing laboratories in achieving NABL accreditation?
- (A) Large documentation
(B) High cost of accreditation process
(C) Rapidly changing regulatory requirements
(D) All of the above
144. Which one of the following document is critical for demonstrating compliance with NABL accreditation criteria?
- (A) Quality manual (B) Financial statements
(C) Employee training manuals (D) Marketing brochures
145. What is the main purpose of regular internal audits in a NABL-accredited laboratory?
- (A) To increase the number of test methods used
(B) To identify and rectify non-conformities in the quality management system
(C) To promote the laboratory in international forums
(D) To continuously train and assess the personnel
146. How does continuous improvement of the quality management system benefit a NABL-accredited laboratory?
- (A) It allows the laboratory to reduce the operational costs
(B) It increases the speed of sample analysis
(C) It reduces the number of required audits
(D) It helps in maintaining accreditation status and enhancing laboratory performance
147. What is the principle of operation for a Gas Chromatograph (GC) in water quality analysis?
- (A) Absorption of light by analytes
(B) Separation of compounds based on their volatility
(C) Emission of light by analytes
(D) Separation of compounds based on their molecular weight
148. What type of detector is commonly used in High-Performance Liquid chromatography (HPLC) for water quality analysis?
- (A) Flame Ionization Detector (FID) (B) Thermal Conductivity Detector (TCD)
(C) Nephelometric Detector (ND) (D) Photoiodide Array Detector (PDA)
149. In the determination of total phosphorus in water, potassium dihydrogen phosphate (KH_2PO_4) is used to prepare the standard solution for the _____ method.
- (A) Ascorbic acid (B) Phosphoric acid
(C) Both (A) and (B) (D) None of the above
150. A standard $\text{K}_2\text{Cr}_2\text{O}_7$ solution is used as _____ in the determination of chemical oxygen demand in water.
- (A) pH buffer (B) Reducing agent
(C) Oxidizing agent (D) Indicator
151. In the determination of DO in water by the Winkler method, what is the purpose of using manganese sulfate solution?
- (A) To precipitate manganese dioxide for the titration
(B) To buffer the solution to a neutral pH
(C) To reduce the dissolved oxygen to water
(D) To oxidize organic matter in the sample

152. Following which one is the function of the glucose-glutamic acid standard solution in the determination of biological oxygen demand (BOD) in water sample:
- (A) To inhibit microbial activity
 - (B) To serve as a seed material
 - (C) To neutralize acidic compounds
 - (D) To act as a positive control for BOD measurement**
153. Which one of the following standard solutions is essential for the spectrophotometric determination of nitrate using the cadmium reduction method?
- (A) Sodium nitrite
 - (B) Sodium nitrate
 - (C) Potassium nitrate**
 - (D) Ammonium nitrate
154. In the analysis of chlorophyll in water, which standard solution is used for the extraction and quantification?
- (A) Methanol
 - (B) Acetone**
 - (C) Ethanol
 - (D) Chloroform
155. Which standard solution is used to determine the total phenol concentration in water using the 4-aminoantiggrine method?
- (A) Resorcinol
 - (B) Catechol
 - (C) Phenol**
 - (D) P-Nitro phenol
156. Under which principle the National Environment Policy (2006) emphasizes the need for integrating environmental concerns in to sectoral policies?
- (A) Precautionary Principle
 - (B) Polluter Pays Principle
 - (C) Inter-generational equity**
 - (D) Intra-generational equity
157. The National Environmental Policy (2006) introduces the concept of Environmental Impact Assessment (EIA) with primary focus on _____.
- (A) To delay industrial projects
 - (B) To last-track project approvals
 - (C) To minimize the role of public consultations
 - (D) To ensure that all environmental concerns are addressed in the planning and decision making stages of projects**
158. The National Environmental Policy (2006) highlights the importance of _____ in promoting sustainable development.
- (A) Market liberalization
 - (B) Polluter pays principle**
 - (C) Deregulation of environmental standards
 - (D) Minimization of public participation
159. Under the Water (Prevention and Control) of Pollution Act, 1974, which authority is responsible for the establishment of standards for streams or wells?
- (A) Central Pollution Control Board (CPCB)**
 - (B) State Pollution Control Board (SPCB)
 - (C) National Green Tribunal (NGT)
 - (D) Ministry of Environment, Forest and Climate Change (MoEFCC)
160. According to Water (Prevention and Control of Pollution Act, 1974, the primary function of the State Pollution Control Board is _____.
- (A) Regulation of air pollution levels
 - (B) Issuing licenses for water use
 - (C) Advising the Central Government on matters concerning water pollution
 - (D) Planning comprehensive programmes for the Prevention, Control and Abatement of Pollution of streams and wells**

161. Under which section of The Water (Prevention and Control) of Pollution Act, 1974, can the State Pollution Central Board take emergency measures in case of pollution of water in any stream or well?
 (A) Section 24 (B) Section 32
 (C) Section 42 (D) Section 52
162. Which one of the following penalties are prescribed under “The Water (Prevention and Control) of Pollution Act, 1974” for non-compliance with the directions issued by the Pollution Central Boards?
 (A) Imprisonment for a term which may extend to one year and a fine
 (B) Imprisonment for a term which may extend to two year and a fine
 (C) Imprisonment for a term which may extend to three year and a fine
 (D) Imprisonment for a term which may extend to five year and a fine
163. Under the Air (Prevention and Control of Pollution) Act 1981, which section empowers the Central Government to direct the closure, prohibition or regulation of any industry?
 (A) Section 18 (B) Section 31A
 (C) Section 22A (D) Section 24
164. Which one of the following pollutants is NOT specifically mentioned under the definition of “Air pollutant” in the Air (Prevention and Control of pollution) Act, 1981?
 (A) Oxides of nitrogen (B) Chlorofluorocarbons
 (C) Lead compounds (D) Particulate matter
165. Which section of the Air (Prevention and Control of Pollution) Act, 1981 authorizes the State Government to declare air pollution control areas?
 (A) Section 19 (B) Section 15
 (C) Section 28 (D) Section 22
166. Which section of the Air (Prevention and Control of Pollution) Act, 1981 deals with the establishment of a central fund for the control of air pollution?
 (A) Section 33 (B) Section 26
 (C) Section 21 (D) Section 17
167. Which section of the Environment Protection Act, 1986 gives the Central Government, the authority to issue directions for the closure, prohibition or regulation of any industry, operation or process?
 (A) Five (B) Seven
 (C) Nine (D) Three
168. In the Environment Protection Act, 1986, which section deals with the constitution of authorities for the prevention and environmental pollution?
 (A) Section 7 (B) Section 11
 (C) Section 3(3) (D) Section 10
169. Which one of the schedule of the Environment Protection Act, 1986 lists the various standards for emission or discharge of environmental pollutants?
 (A) Fourth schedule (B) Third schedule
 (C) Second schedule (D) First schedule
170. Under the Environment Protection Provision Act 1986, which allows for the right to access information about environmental impact assessments?
 (A) Section 12 (B) Section 14
 (C) Section 10 (D) Section 8
171. The most appropriate soil sampling depth for assessing the nutrient status of a soil intended for deep-rooted perennial crops is in the range of _____.
 (A) 0-15 cm (B) 15-30 cm
 (C) 60-90 cm (D) 30-60 cm

172. Which one of the following method is considered most accurate for determining soil bulk density in soils with a high gravel content?
 (A) Core method (B) Clod method
 (C) Water displacement method (D) Sand replacement method
173. Which among the following is the most appropriate method for preserving a soil sample intended for microbial biomass analysis?
 (A) Freezing the sample at -20°C
 (B) Storing the sample at 4°C
 (C) Air drying the sample
 (D) Adding a chemical preservative like formaldehyde
174. Which method of estimating the projects is most suitable, where detailed drawings and specifications are not available, but a rough idea of the cost is required?
 (A) Plinth Area Method (B) Unit Rate Method
 (C) Cubic Content Method (D) Detailed Estimate Method
175. In laboratory "cost of estimation factor" is considered most critical when calculating the quantities of consumables required for a one year period which is _____ of the following.
 (A) Rate of consumption per experiment (B) Number of working days in a year
 (C) Cost fluctuation of consumables (D) Shelf life of consumables
176. Which one of the following best describes the significance of the Schedule of Rates (SoR) in laboratory equipment procurement?
 (A) It ensures that all purchases are within the budget
 (B) It outlines the procurement process for equipment
 (C) It provides a list of pre-approved suppliers
 (D) It sets the benchmark price for all laboratory items
177. Which one of the following method ensures the highest accuracy while calculating the quantities of various laboratory items for cost estimation?
 (A) Statistical method (B) Empirical method
 (C) Analytical method (D) Approximate method
178. In which of the following scenario, a Measurement Book (MB) most likely to be audited for discrepancies in laboratory project estimation?
 (A) When the project is ahead of schedule
 (B) When the estimated and actual costs align perfectly
 (C) When new equipment is added to the scope
 (D) When there is a significant budget overrun
179. Which one of the following is most critical, while determining the specifications for a high-precision laboratory instrument?
 (A) Power consumption
 (B) Weight of instrument
 (C) Tolerance limits for measurements
 (D) Tolerance limit for measurement supplier's reputation
180. The most appropriate methodology for determining the manpower requirement for a complex laboratory project involving high-precision equipment is _____ of the following.
 (A) Work breakdown structure (B) Resource leveling
 (C) Critical path method (D) Time and motion study
181. When calculating the rate of different laboratory items, which of the following is most critical to consider for ensuring accuracy?
 (A) Market price fluctuations (B) Historical cost data
 (C) Labour efficiency (D) Supplier reliability

182. Which rate analysis methodology is best suited for a laboratory project with multiple phases and varying material requirements?
(A) Cost-plus method (B) Unit rate method
(C) Resource based casting (D) Activity-based casting
183. In context to laboratory consumables procurement, the main purpose of the "two-envelope" tendering system is _____.
(A) To allow bidders to submit two different bids
(B) To increase transparency by having two copies of the tender
(C) To separate technical and financial proposal to avoid bias
(D) To ensure compliance with environmental standards
184. Which legal principle applies when a tender notice does not specify the acceptance of alternative proposals from suppliers?
(A) Rule of Non-Estoppel (B) Implied Invitation to Treat
(C) Doctrine of Equitable Estoppel (D) Principle of Contra Proferentem
185. For procuring specialized laboratory equipment with stringent technical specifications, _____ type of the tender is most appropriate.
(A) Single tender (B) Open tender
(C) Selective tender (D) Negotiated tender
186. The significance of a 'tender fund' in context to large-scale Procurement of laboratory consumables is related to _____.
(A) It serves as financial guarantee for the performance of the contract
(B) It ensures the supplier's ability to deliver within the specified time
(C) It is a non-refundable fee paid by the bidder to participate in the tender
(D) It protects against price fluctuations during the tendering process
187. Monument in Gujarat was built by Sultan Mahmud Begada and is known for its grand structure and fortified walls, is correct for which of the following.
(A) Jain temples (B) Buddhist stupas
(C) Prehistoric cave paintings (D) Fortified city and Islamic architecture
188. Which one of the following legal issue arises, if a procurement contract for laboratory items is awarded without proper tendering as per statutory requirements?
(A) Contractual breach (B) Administrative oversight
(C) Ultra vires act (D) Force majeure
189. In laboratory procurement, what is the key factor, which determines the lowest responsive and responsible bidder?
(A) The bidder with the lowest price
(B) The bidder with the shortest delivery time
(C) The bidder with the highest financial stability
(D) The bidder that meets all technical specifications and offers the lowest price
190. The importance among the following of specifying "incoterms" in the tender document for the supply of laboratory consumables is _____.
(A) To specify the currency of payment
(B) To define the delivery time and location
(C) To allocate risks and responsibilities between buyer and seller
(D) To determine the quality standards of the consumables

191. Which one of the following is the correct sequence of processes in the hydrological cycle as described by Ward and Robinson?
- (A) Precipitation → Evaporation → Runoff → Infiltration
(B) Evaporation → Precipitation → Runoff → Infiltration
(C) Infiltration → Evaporation → Runoff → Precipitation
(D) Runoff → Evaporation → Precipitation → Infiltration
192. The critical threshold of hydraulic conductivity below which an aquifer is considered semi-permeable is _____ of the following.
- (A) 10^{-2} m/s (B) 10^{-4} m/s
(C) 10^{-6} m/s (D) 10^{-8} m/s
193. Which one of the following is most likely to occur in a perched aquifer as opposed to a main aquifer?
- (A) Limited lateral water flow (B) Extensive artesian conditions
(C) Higher water pressure (D) Direct connection to surface water bodies
194. The acceptable concentration of nitrate in ground water for drinking purposes as per WHO guidelines is _____.
- (A) 50 mg/L** (B) 100 mg/L
(C) 10 mg/L (D) 150 mg/L
195. When evaluating groundwater quality for irrigation, which one of the following is used to assess the potential for soil permeability reduction?
- (A) Sodium Adsorption Ratio (SAR) **(B) Magnesium Adsorption Ratio (MAR)**
(C) Electrical Conductivity (EC) (D) Total Dissolved Solids (TDS)
196. Under the Environment Protection Act 1986, the term “environment” includes, which of the following components?
- (A) Water, air and soil
(B) Flora, fauna and micro-organisms
(C) Water, air, land and the interrelationships among them
(D) Air, soil and waste
197. The Environment Protection Act, 1986 provides for the establishment of which one of the followings?
- (A) Environmental laboratories** (B) National Green Tribunal
(C) State Pollution Control Boards (D) Biodiversity Management Committees
198. When performing the rate analysis for consumables like filter paper, the key parameter influencing the cost is _____ of the following.
- (A) Pore size and diameter of the filter paper
(B) Type of material (cellulose, glass fibre)
(C) Pore size and filtration rate
(D) Number of sheets per pack
199. In rate analysis to laboratory equipment, the depreciation of equipment is typically calculated by _____ of the following method.
- (A) Straight line method (B) Sum of the years digits method
(C) Reducing balance method (D) Units of production method
200. Which one of the following method is commonly used to estimate the lifecycle cost of laboratory consumables in the rate analysis?
- (A) Net Present value method (B) Payback period method
(C) Present value method (D) Internal rate of return method

201. Quantum number responsible for determining the shape of an atomic orbital is _____.
 (A) Azimuthal quantum number (l) (B) Magnetic quantum number (m_l)
 (C) Spin quantum number (m_s) (D) Principal quantum number (n)
202. In the Bohr model of hydrogen atom, which one of the following transition will emit the photon with the shortest wavelength?
 (A) n = 4 to n = 3 (B) n = -3 to n = 2
 (C) n = 2 to n = 1 (D) n = 5 to n = 4
203. The concept of hybridization in chemical bonding is most closely associated with _____ of the following principles?
 (A) VSEPR Theory (B) Lewis Structure Theory
 (C) Valence Bond Theory (D) Molecular Orbital Theory
204. The covalent character of an ionic bond can be predicted using _____ rule?
 (A) Wade's Rule (B) Bent's Rule
 (C) Fajan's Rule (D) VSEPR Rule
205. Which type of filter is used in Laminar Air Flow cabinets to achieve sterile conditions?
 (A) Carbon filter (B) UV filter
 (C) Electrostatic filter (D) HEPA filter
206. Calibration of a Laminar Air Flow cabinet typically involves checking of _____ parameters.
 (A) Noise level (B) UV light intensity
 (C) Air velocity and filter integrity (D) Air temperature and humidity
207. Which one of the following methods is most commonly used to verify the uniformity of temperature distribution within an incubator?
 (A) Measuring the temperature with an IR sensor
 (B) Placing multiple thermocouples of different locations
 (C) Visual inspection of temperature display
 (D) Using single thermometer
208. The isoelectric point in context to pH measurement is _____ of the following.
 (A) The pH at which an acid fully dissociates
 (B) The pH at which maximum conductivity is observed
 (C) The pH where a buffer solution is most effective
 (D) The pH at which a molecule carries no net electric charge
209. Which type of electrode is typically used in a conductivity meter for measuring the conductivity of high resistance solutions?
 (A) Mercury electrodes (B) Silver/Silver chloride electrodes
 (C) Platinum black coated electrodes (D) Graphite electrodes
210. The baseline correction in UV-visible spectroscopy is essential for _____ of the following.
 (A) Aligning the light source (B) Enhancing absorbance peaks
 (C) Compensating the instrument drift (D) Adjusting the path length
211. Which one of the following detector in Gas Chromatography (GC) is most sensitive to organic compounds which contains halogen, sulfur or nitrogen?
 (A) Flame Ionization Detector (FID) (B) Electron Capture Detector (ECD)
 (C) Thermal Conductivity Detector (TCD) (D) Photo Ionization Detector (PID)
212. The split injection technique in Gas Chromatography (GC) is used to _____ of the following.
 (A) Reduce the retention time
 (B) Improve the resolution of closely eluting compounds
 (C) Introduce a small fraction of the sample into the column to prevent overloading
 (D) Increase the sensitivity of the detector

213. In a reversed-phase - High Performance Liquid Chromatography (HPLC), the stationary phase is typically _____ of the following
 (A) Hydrophilic (B) Hydrophobic
 (C) Ionic (D) Polar
214. The efficiency of High-Performance Liquid Chromatography (HPLC) column is measured in terms of _____
 (A) Retention factor (K') (B) Capacity factor (K)
 (C) Theoretical plate number (N) (D) Separation factor (α)
215. Which one among the following is the main applications of eluent suppressor in ion chromatography?
 (A) Stabilize the pH of eluent
 (B) Enhance the detection of neutral molecules
 (C) Reduce the background conductivity of the eluent
 (D) Increase the conductivity of the eluent
216. In polarographic analysis, the half-wave potential ($E_{1/2}$) is indicative of _____ of the following.
 (A) The electrode surface area (B) The diffusion coefficient
 (C) The viscosity of the solution (D) The identity of the analyte
217. Calibration of the chemical shift in NMR is typically done using _____ of internal standard.
 (A) Deuterated Chloroform ($CDCl_3$) (B) Deuterium Oxide (D_2O)
 (C) Tetramethyl Silane (TMS) (D) Sodium Chloride (NaCl)
218. The spin-spin coupling constant in NMR provides information about _____ of the following.
 (A) The resonance frequency of the nuclei
 (B) The symmetry of the molecule
 (C) The number as neighboring nuclei
 (D) The strength of interaction between neighboring nuclei
219. The g-factor is a measurement of _____ in ESR spectroscopy.
 (A) The magnetic moment of the electron
 (B) The electron density in sample
 (C) The external magnetic field strength
 (D) The electron's environment within the sample
220. Calibration of the magnetic field in ESR spectroscopy is often performed using _____ of the following.
 (A) DPPH (Diphenyl Picryl Hydrazyl)
 (B) Mn^{2+} doped in MgO
 (C) Tetramethyl Silane
 (D) A known paramagnetic metal ion
221. Which one of the following ionization technique is most suitable for analyzing large biomolecular in mass spectrometry?
 (A) Electron Impact (EI)
 (B) Chemical Ionization (CI)
 (C) Matrix-Assisted Laser Description Ionization (MALDI)
 (D) Fast Atom Bombardment (FAB)
222. Which one of the following detectors is commonly used in mass spectrometry for its high sensitivity and fast response?
 (A) Electron multiplier (B) Faraday cup
 (C) Charge - coupled device (D) Photodiode array

223. Which type of polarography error involves the use of staircase waveform applied to the working electrode?
 (A) Stripping Voltammetry (B) Normal Pulse Polarography
 (C) Differential Pulse Polarography (D) Cyclic Voltammetry
224. In cyclic voltammetry, the Randles-Sevcik equation is used to _____ of the following.
 (A) Estimate the double layer capacitance
 (B) Determine the electrode surface area
 (C) Calculate the solution resistance
 (D) Relate peak current to analyze concentration
225. Which type of membrane is commonly used in a fluoride ion-selective electrode?
 (A) Glass membrane (B) Polymeric membrane
 (C) LaF₃ crystal membrane (D) Liquid membrane
226. Ion selective electrodes are particularly useful in _____ of the following.
 (A) High-temperature gas analysis
 (B) Conductivity measurements
 (C) Environmental monitoring of water quality
 (D) pH - independent solutions
227. In DSC, the typical method for calibrating the temperature axis is _____ of the following.
 (A) Using a reference material with constant heat capacity
 (B) Using standard materials with known melting points
 (C) Using an internal reference thermometer
 (D) By adjusting the heating rate
228. Which one of the following parameter is most crucial while calibrating Differential Thermal Analysis (DTA) instrument?
 (A) Sample mass (B) The furnace atmosphere
 (C) The heating rate (D) Temperature sensitivity and time constant
229. In Dynamic Mechanical Analysis (DMA), which one of the following parameters is analyzed to study viscoelastic properties?
 (A) Mass loss and temperature (B) Heat flow and heat capacity
 (C) Storage modulus and loss modulus (D) Thermal expansion and thermal conductivity
230. The calibration of Thermo Mechanical Analyzer (TMA) is typically performed using _____ of the following.
 (A) A standard temperature probe
 (B) A reference mass
 (C) A standard material with a known thermal expansion coefficient
 (D) A reference gas with a known thermal conductivity
231. Which one of the following parameters is critical in the calibration of Thermogravimetric Analysis (TGA) for accuracy in mass loss determination?
 (A) Buoyancy effect correction
 (B) Gas flow rate
 (C) Sample geometry
 (D) Furnace temperature uniformity
232. Which factor is most important while selecting a purge gas for TGA analysis?
 (A) Its thermal conductivity (B) Its molecular weight
 (C) Its inertness and purity (D) Its reactivity with the sample

233. According to APHA Standards, the recommended procedure for calibrating a thermometer used for temperature measurement in water analysis is _____.
- (A) Using a certified reference material
 - (B) Comparing against a standard platinum resistance thermometer**
 - (C) Calibrating against a mercury-in-glass thermometer
 - (D) Using a traceable ice-point calibration method
234. Which of the following method is considered the most accurate for measuring the temperature of a water sample?
- (A) Mercury-on-glass thermometer
 - (B) Bimetallic strip thermometer
 - (C) Digital thermometer with NIST traceability**
 - (D) Alcohol-in-glass thermometer
235. During pH measurement, why is it important to stir the sample gently?
- (A) To avoid introducing CO₂, which can alter the pH**
 - (B) To homogenize the sample
 - (C) To increase the response time of the electrode
 - (D) To eliminate temperature gradients in the sample
236. According to APHA guidelines, the recommended preservation method for water samples intended for color analysis?
- (A) Addition of chemical preservatives
 - (B) Refrigeration at 4°C**
 - (C) Immediate filtration
 - (D) Acidification with sulfuric acid
237. Which one of the following can lead to erroneous color readings in water sample analysis?
- (A) Sample turbidity
 - (B) Presence of suspended solids
 - (C) Presence of air bubbles in the sample**
 - (D) High ionic strength
238. Which type of conductivity cell is recommended for high-purity water analysis to ensure accuracy?
- (A) Two-electrode cell
 - (B) Four-electrode cell**
 - (C) Mercury electrode
 - (D) Platinum resistance cell
239. Which one of the following method is recommended by APHA for the calibration of nephelometers used in turbidity measurement?
- (A) Calibration with known turbidity standards prepared from Kaolin
 - (B) Calibration with synthetic polymer microspheres
 - (C) Using formazin polymer suspensions**
 - (D) Using distilled water as a reference
240. According to the APHA guidelines, the recommended maximum holding time for a water sample before alkalinity analysis is _____.
- (A) 6 hours
 - (B) 12 hours
 - (C) 24 hours
 - (D) 48 hours**
241. Which of the following filtration methods is used to separate total suspended solids (TSS) from Total Dissolved Solids (TDS) in a water sample?
- (A) Filtration through a glass fiber filter (GF/C)**
 - (B) Filtration through a 0.45 µm membrane filter
 - (C) Filtration through a Whatman No 1 filter paper
 - (D) Centrifugation at 10,000 rpm

242. The purpose of igniting the filter and residue at 550°C during the analysis of total suspended solids (TSS) is _____ of the following.
- (A) To remove any trace moisture from the filter
(B) To differentiate between organic and inorganic suspended solids
 (C) To measure volatile suspended solids
 (D) To enhance the sensitivity of the measurement
243. What is the significance of drying filtrate at 180°C, while measuring total dissolved solids (TDS)?
- (A) To evaporate water and ensure accurate determination of volatile solids
(B) To evaporate water and ensure accurate determination of non-volatile solids
 (C) To remove volatile organic compounds
 (D) To evaporate water only
244. In context to solid analysis, the impact of sample turbidity on the determination of total solids is _____ of the following
- (A) Turbidity affects only the measurement of volatile solids
 (B) Turbidity has no effect on total solid measurement
(C) High turbidity can lead to due overestimation of total solids unfiltered particulates
 (D) High turbidity ensures accurate total solids measurements by providing sufficient mass
245. For the extraction of oil and grease from water samples _____ solvent is most commonly recommended by the APHA due to its effectiveness and lower toxicity.
- (A) Chloroform (B) Carbon tetrachloride
 (C) Benzene **(D) η-Hexane**
246. According to the Winkler method, _____ chemical is used to fix dissolved oxygen in water samples before analysis.
- (A) Sodium thiosulfate **(B) Manganese sulfate**
 (C) Ferric chloride (D) Potassium dichromate
247. The correct sample preservation method for dissolved oxygen analysis is _____, it immediate analysis is not possible.
- (A) Fixation of the sample using potassium dichromate and alkaline iodide-azide
 (B) Fixation of the sample using potassium and alkaline iodide-azide
(C) Fixation of the sample using manganese sulfate and alkaline iodide-azide
 (D) Fixation of the sample using ferric chloride and alkaline iodide-azide
248. For a given waste water sample, the initial DO is 9.0 mg/L and the final DO after 5 days is 2.0 mg/L. If 50 ml at the sample was diluted to 300 ml, the BOD in mg/L cell be
- (A) 120 mg/L **(B) 102 mg/L**
 (C) 84 mg/L (D) 105 mg/L
249. Which of the following methods is used to correct for interference from metals like iron and manganese during the EDTA titration for hardness?
- (A) Oxidation of metals with potassium permanganate
(B) Addition of cyanide to mask the metals
 (C) Metal precipitation with sodium sulfide
 (D) Filtration of metals through activated carbon
250. Which among the following is the formulae for calculating total hardness in terms of mg/L as CaCO₃ from the concentrations of calcium and magnesium in a water sample?
- (A) Total hardness = (Ca) + (Mg) (B) Total hardness = (Ca)² + (Mg)²
 (C) Total hardness = 1.5 (Ca) + 2.5 (Mg) **(D) Total hardness = 2.5 (Ca) + 4.1 (Mg)**

251. A 50 mL waste water sample was analysed for COD, and the titration required 22.5 mL of 0.1 N FAS (Ferrous Ammonium Sulfate). Its COD in mg/L will be _____.
- (A) 180 (B) 230
(C) 2250 (D) 1800
252. _____ is considered as one at the most accurate method for the determination of sodium in water samples that have a high concentration of Total Dissolved Solids (TDS).
- (A) Flame photometry
(B) Ion chromatography
(C) Atomic absorption Spectroscopy
(D) Inductively coupled plasma mass in spectrometry
253. For accurate fluoride analysis, which of the following material should be avoided for storage and why?
- (A) Glass, because fluoride can etch glass and lead to loss of analyte
(B) Stainless steel, because it can catalyse fluoride decomposition
(C) Polyethylene, because it can absorb fluoride
(D) Teflon, because it reacts with fluoride
254. For the accurate quantification of Potassium in water _____ method is used.
- (A) Atomic absorption spectroscopy (B) Ion selective electrode
(C) Flame emission spectroscopy (D) Colorimetric method
255. Which of the following analytical method is considered most suitable for the determination of Ammonical Nitrogen in samples with high concentrations of organic matter?
- (A) Nesslerization method (B) Ion chromatography
(C) Phenate method (D) Flow injection analysis
256. In Kjeldahl method for determining Total Kjeldahl Nitrogen (TKN), the purpose of adding potassium sulfate during the digestion process is
- (A) To neutralize the acid during digestion
(B) To act as a catalyst for the digestion reaction
(C) To precipitate proteins in the sample
(D) To increase the boiling point at the acid
257. Which of the following reagent is used during the determination of Ammonical Nitrogen to develop the characteristic blue color?
- (A) Hypochlorite (B) Sodium phenate
(C) Sodium nitropruside (D) Ammonium molybdate
258. Immediate filtration of the water sample upon collection is required for _____ heavy metal to avoid Particulate setting before analysis?
- (A) Cadmium (B) Arsenic
(C) Mercury (D) Chromium
259. While analyzing mercury in water samples, which method is preferred for low-level detection?
- (A) Graphite furnace atomic absorption spectroscopy
(B) Flame atomic absorption spectrometry
(C) Inductively coupled plasma optical emission spectrometry
(D) Cold vapour atomic absorption spectrometry
260. The recommended sample volume for the determination of trace metals in water using atomic absorption spectrophotometry is _____.
- (A) 50 mL (B) 250 mL
(C) 500 mL (D) 1000 mL

261. Which of the following preservation technique is critical for ensuring results in the analysis of arsenic in ground water samples?
- (A) Acidification with HNO_3 and storage in glass containers
 - (B) Acidification with aqua regia and storage in glass containers
 - (C) Acidification with HCl and storage in glass containers**
 - (D) Acidification with H_2SO_4 and storage in glass containers
262. Which analytical method is recommended for the determination of hexavalent chromium (Cr(VI)) in waste water samples?
- (A) Graphite furnace atomic absorption spectrometry
 - (B) Inductively coupled plasma mass spectrometry
 - (C) Ion chromatography
 - (D) UV-visible spectrophotometry using the diphenylcarbazide method**
263. Which one of the following solvent is most commonly used in the Liquid-liquid extraction method for the isolation of pesticides from water samples?
- (A) Methanol
 - (B) Hexane**
 - (C) Ethyl acetate
 - (D) Acetone
264. Which of the following methods is recommended for the determination of carbamate pesticides in water samples?
- (A) UV-visible spectrophotometry
 - (B) Inductively coupled plasma mass spectrometry
 - (C) Gas chromatography with flame ionization detection
 - (D) High-performance liquid chromatography with fluorescence detection**
265. In context to Chemical Mass Balance (CMB) modeling for water quality assessment, which of the following is a critical prerequisite for accurate source apportionment?
- (A) High-resolution temporal sampling
 - (B) Use of non in-parametric statistical methods
 - (C) Comprehensive characterization of source profiles**
 - (D) Acidification at all samples to $\text{pH} < 2$
266. During the Total Organic Carbon (TOC) analysis of wastewater samples, what is the primary purpose of performing a high-temperature combustion step?
- (A) To oxidize inorganic carbonates to carbon dioxide
 - (B) To remove volatile organic compounds from the sample
 - (C) To convert all organic carbon to carbon dioxide for quantification**
 - (D) To participate heavy metals before analysis
267. In Chemical Mass Balance (CMB) modeling, which mathematical approach is primarily used to solve for the contributions of different pollution sources for observed pollutant concentrations?
- (A) Multiple Linear Regression
 - (B) Principal Component Analysis
 - (C) Neural Networks
 - (D) Matrix Inversion Techniques**
268. Which one of the following assumptions is critical for the validity of the Chemical Mass Balance (CMB) model in environmental studies?
- (A) Emission sources are linearly independent of each other
 - (B) All potential sources have been identified and included**
 - (C) The chemical composition of the sources is time dependent
 - (D) Secondary chemical reactions are negligible

269. In Chemical Mass Balance (CMB) model, which statistical parameter is used to assess the goodness-of-fit between observed and predicted concentrations?
(A) Chi-square (χ^2) (B) R-square (R^2)
(C) Coefficient of variation (CV) (D) Signal-to-Noise Ratio (SNR)
270. Which of the following strategy can be employed to reduce the uncertainty in Chemical Mass Balance (CMB) model predictions?
(A) Increasing the member of sampling locations
(B) Utilizing a larger set of chemical tracers
(C) Applying the model to shorter time periods
(D) Improving the precision of receptor measurements
271. During ionic balance calculation, a large discrepancy is noted between the sum of cations and anions. This is most likely caused by _____.
(A) Incorrect sample preservation technique
(B) Interference in the analytical methods used
(C) Presence of unmeasured or underestimated ions
(D) Sampling during an unusual climate event
272. In the calculation of ionic balance, _____ is the significance at the “charge balance error” in assessing the accuracy of analytical results.
(A) It measures the effectiveness of sample preservation
(B) It indicates the precision of the instrument used
(C) It is used to confirm the completeness at the ion analysis
(D) It helps identify potential interferences in the analysis
273. When analyzing a waste water sample for Total Dissolved Solids (TDS) and ionic balance, what is the primary reason for filtering the sample before analysis?
(A) To reduce the concentration of organic matter
(B) To eliminate suspended solids that do not contribute to TDS
(C) To prevent clogging at analytical instruments
(D) To remove dissolved gases that may interfere
274. Which of the following procedures is crucial before measuring the ionic balance in a sample that has high levels of organic matter?
(A) Centrifugation at high speed
(B) Filtration through a 0.45 μm membrane filter
(C) Precipitation of organic matter using zinc sulfate
(D) Addition of a strong oxidizing agent
275. For a water sample with high concentration of bicarbonate, what is the preferred method to adjust the ionic balance calculation?
(A) Recalculate the bicarbonate concentration based on pH and alkalinity
(B) Convert all bicarbonate to carbonate by heating the sample
(C) Use of an alternate titration method for bicarbonate
(D) Addition of a known quantity of strong acid to neutralize bicarbonate
276. Which one of the following errors could lead to an ionic imbalance when using ion exchange chromatography to measure cations in a water sample?
(A) Use at pH buffer incompatible with the anions
(B) Incomplete elution of cations from the column
(C) Overestimation of sulfate concentration
(D) Calibration of the instrument with an incorrect standard

277. When applying the principle of mass balance to a closed chemical system involving precipitation, which of the following statements is most accurate?
 (A) The mass of dissolved ions can increase while the solid phase mass decreases
 (B) The total mass of all components must remain constant, irrespective of phase changes
 (C) Mass balance is not applicable in cases where chemical equilibrium is not achieved
 (D) Mass balance requires that all input and output masses of chemical species be equal only for the gaseous phase
278. Under the Environment Protection Rules 1986, which schedule outlines the general standards for the discharge at effluents?
 (A) Schedule I (B) Schedule III
 (C) Schedule V (D) Schedule VI
279. Which section of the Environment Protection Act, 1986, empowers the Central Government to lay down standards for the quality of the environment?
 (A) Section 5 (B) Section 6
 (C) Section 7 (D) Section 8
280. _____ is the maximum term of imprisonment prescribed under the Environment Protection Act, 1986 for a violation leading to substantial environmental disaster.
 (A) Three years (B) Five years
 (C) Seven years (D) Ten years
281. Lucas reagent is _____.
 (A) Anhydrous aluminium chloride with concentrated hydrochloric acid
 (B) Anhydrous zinc chloride with hydrochloric acid
 (C) Anhydrous zinc chloride with potassium sulfate
 (D) Anhydrous calcium chloride with hydrochloric acid
282. Methane on heating with a regulated supply of diogen at high pressure and in the presence at MO_2O_3 gives _____ of the following.
 (A) Methanol (B) Methanal
 (C) Methanoic acid (D) Dimethyl ether
283. Ethylene reacts with 1% alkaline potassium permanganate produces _____ of the following.
 (A) Acetic acid (B) Ethylene glycol
 (C) Formaldehyde (D) Acetone
284. Which of the following compound is not chiral?
 (A) 3-Chloro-2-methyl Pentane (B) 2-Chloro Pentane
 (C) 1-Chloro Pentane (D) 1-Chloro-2-methyl Pentane
285. During the addition polymerization, the reaction proceeds via _____ of the following.
 (A) Cascade process (B) Addition reaction
 (C) Free radical chain reaction (D) Step-Growth Process
286. In allene, hybridization of central and terminal carbons respectively are _____ of the following.
 (A) SP^2 and SP^2 (B) SP^2 and SP^3
 (C) SP and SP^2 (D) SP and SP^3

287. What is the increasing order of stability of following carbocations?

(I) Tropyliumcation

(II) $\text{CH}_2 = \text{CH} - \text{C}^+\text{H}$

(III) $(\text{C}_6\text{H}_5)_3\text{C}^+$

(IV) CH_3^+

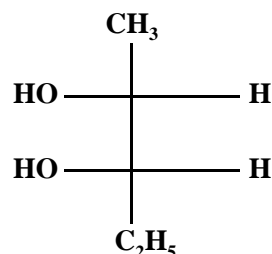
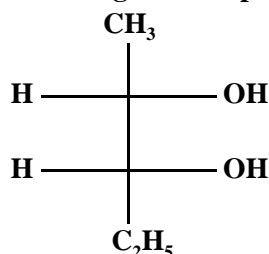
(A) III < I < II < IV

(B) IV < II < III < I

(C) I < III < II < IV

(D) IV < III < II < I

288. Following two compounds are,



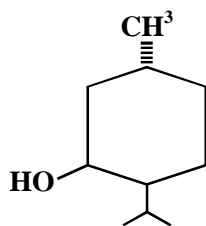
(A) Enantiomers

(B) Diastereomers

(C) Identical

(D) Epimer

289. The correct configuration of following neomenthol is _____ of the following.



(A) 1S, 2R, 5R

(B) 1S, 2S, 5R

(C) 1R, 2R, 5R

(D) 1S, 2S, 5S

290. Which one of the following heterocyclic ring is present in the amino acid histidine?

(A) Imidazole

(B) Pyridine

(C) Tetrahydropyrrole

(D) Indole

291. The reaction at benzaldehyde with ethyl-2-bromo propionate in the presence of zinc is known as _____ of the following reactions.

(A) Perkin

(B) Knoevenagel

(C) Claisen

(D) Reformatsky

292. The molecular formulae of compound used in welding is _____

(A) C_2H_6

(B) C_2H_2

(C) $\text{C}_3\text{H}_6\text{O}$

(D) $\text{C}_3\text{H}_5\text{N}$

293. Which of the following intermediate is involved in witting reaction?

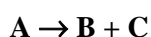
(A) Carbocation

(B) Carbanion

(C) Ylide

(D) Free radical

294. For a reaction,



If the initial concentration of A was reduced from 2 M to 1 M in 1 hour and from 1 M to 0.25 M in 2 hours, the order of reaction will be _____.

(A) 0

(B) 1

(C) 2

(D) 3

295. Choose incorrect order for the acidic strength among the following.
(A) $\text{CO}_2 > \text{CO}$ (B) $\text{HClO}_2 > \text{HOCl}$
(C) $\text{SiO}_2 > \text{CO}_2$ (D) $\text{SO}_2 < \text{SO}_3$
296. In the conversion of aryl diazonium chloride to chlorobenzene, the oxidation state of copper changes in _____ order.
(A) I to II and back to I (B) I to III and back to I
(C) II to III and back to II (D) II to III and turn to 0
297. In mass spectrum of dichlorobenzene the ratio of ion peak at $m/2$ 146, 148 and 150 is _____ of the following.
(A) 1:1:1 (B) 3:3:1
(C) 1:2:1 (D) 9:6:1
298. The member of hyperfine split lines observed in ESR spectrum of methyl radical is _____.
(A) 1 (B) 4
(C) 6 (D) 8
299. Benzene and benzene d^6 (hexadeuterated benzene) may be distinguished by _____.
(A) Thin layer chromatography (B) UV-visible spectroscopy
(C) ^{13}C -NMR Spectroscopy (D) Mass spectroscopy
300. In 400 MHz ^1H -NMR spectrum, an organic compound exhibited as doublet. The two lines of the doublet are at 2.35 and 2.38 PPM. The coupling constant (J) value will be _____.
(A) 3Hz (B) 6Hz
(C) 9Hz (D) 12Hz