GPSC
Exe Engineer

Previous Year Paper
(Civil)
13 Oct, 2024

BIR
PROVISIONAL ANSWER KEY

Name of the post	**Executive Engineer (Civil), Class-1 (GWRDC)**
Advertisement No	**3/2024-25**
Preliminary Test Held On	**13-10-2024**
Que. No	**001-300**
Publish Date	**17-10-2024**
Last Date to Send Suggestion (S)	**24-10 -2024**

Instructions / સૂચના (Physical Submission)

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

1) All the suggestion should be submitted in prescribed format of suggestion sheet PHYSICALLY.
2) Question wise suggestion to be submitted in the prescribed format (Suggestion Sheet) published on the website.
3) All suggestions are to be submitted with reference to the Master Question Paper with provisional answer key (Master Question Paper), published here with on the website. 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 shall be made on separate sheet. Objection for more than one question in single sheet shall not be considered & treated as Cancelled.
7) Only Candidate who is present in the exam entitled to submit the objection/(s).
8) Candidate should attach copy of his/her OMR (Answer sheet) with objection/(s).

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

1) ઉમેદવારે વાંધા-સૂચનો નિયત કરવામાં આવેલ વાંધા-સૂચન પત્રકથી રજૂ કરવાના રહેશે.
2) ઉમેદવારે પ્રશ્ન પ્રમાણે વાંધા-સૂચનો રજૂ કરવા વેબસાઈટ પર પ્રસિધ્ધ થયેલ નિયત વાંધા-સૂચન પત્રકના નમૂનાનો જ ઉપયોગ કરવો.
3) ઉમેદવારે પોતાને પરીક્ષામાં મળેલ પ્રશ્નપુસ્તિકામાં છપાયેલ પ્રશ્નક્રમાંક મુજબ વાંધા-સૂચનો રજૂ ન કરતા તમામ વાંધા-સૂચનો વેબસાઈટ 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-સૂચન ધ્યાને લેવામાં આવશે નહીં.
5) ઉમેદવારે જે 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-સૂચન પત્રકમાં એકથી વધારે પ્રશ્નોની રજૂઆત કરેલ હશે તો તે અંગેના વાંધા-સૂચનો ધ્યાને લેવાશે નહીં.
7) માત્ર પરીક્ષામાં હાજર રહેલ ઉમેદવાર જ વાંધા-સુચન રજુ કરી શકશે.
8) ઉમેદવારે વાંધા-સૂચન સાથે પોતાની જવાબવહીની નકલ બિડાણ કરવાની રહેશે.

Website link for prescribed format (Suggestion Sheet):
http://gpsc.gujarat.gov.in/Documents/AdvertismentDocument/2018-3-20_723.pdf

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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(સ્ક્રોલ) 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) અટારિ 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) નંદીઘોષ
(D) શ્રીધ્વજ

007. ભાવનગર જિલ્લાના તળાજા નજીક આવેલી 30 ગુફાઓ કયા નામે ઓળખાય છે?

(A) ખાપરા કોડિયાની ગુફાઓ
(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

001. The verses used in which dances are taken from the Sanskrit play 'Geet Govindam'?

(A) Manipuri
(B) Kathakali
(C) Mohini Attam
(D) Odyshi

002. What are the forms of painting known as 'Angika kala' and 'Nag painting'?

(A) Warli Painting
(B) Manjusha Chitrakari
(C) Cherial (scroll) Painting
(D) Paitkar 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) Atari Pong
(D) Sogathabaji

005. Lunar day and Solar day are called _____ respectively.

(A) Time (વાર) and Day
(B) Tithi and Nakshatra
(C) Yog and Karan
(D) Tithi and day

006. What is the name of the chariot of Lord Jagannath in the rath yatra of Lord Jagannath?

(A) Taladhwaja (તાલધ્વજ)
(B) Devadalan (દેવદલન)
(C) Nandighosh (નંદીઘોષ)
(D) Shreedhwaja (શ્રીધ્વજ)

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 Bava Pyara

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

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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

012. સુરતમાં વેપારી કોઠી સૌ પ્રથમ કયા અંગ્રેજે સ્થાપી હતી?

(A) સર થોમસ રો
(B) કેપ્ટન હોકિન્સ
(C) થોમસ એલ્ડવર્થ
(D) એલ્ફિનસ્ટોન

013. ગુજરાતમાં પ્રથમ અંગ્રેજી શાળા સુરતમાં કોણે શરૂ કરી હતી?

(A) જીજીભાઈ છાપગર
(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. સતલુઝ અને કાલી નદીઓ વચ્ચે આવેલો હિમાલયનો ભાગ કયા નામે ઓળખાય છે?

(A) પંજાબ હિમાલય
(B) નેપાળ હિમાલય
(C) કુમાઉ હિમાલય
(D) આસામ હિમાલય

010. Who founded Vithoba in Pandharpur?

(A) Bhakta Pundalik
(B) Nivruthinath
(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) Brahmanism
(C) Bhagavata Dharma
(D) Buddhism

012. Which Englishman first established a trading centre (કોઠી) at Surat in Gujarat?

(A) Sir Thomas Roe
(B) Captain Hawkins
(C) Thomas Aldworth
(D) Elphinstone

013. Who started the first English school at Surat?

(A) Jijibhai Chhapagar
(B) Dalpatram Bhagubhai
(C) Fardunji Marzban
(D) Dadabhai Naoroji

014. Who was the leader who led the 1857 rebellion in Anand of Gujarat?

(A) Mouni Bawa (Moreshwar Ramachandra)
(B) Jaisingh Thakor
(C) Garbaddas
(D) Tatya Tope

015. Who founded the 'Kathiawadi Political Council' at Rajkot in 1917 AD?

(A) Dalpatram Bhagavandas Shukla
(B) Divan Pattani
(C) Shri Kalyanrai Bakshi
(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 Himalayas
(B) Nepal Himalayas
(C) Kumaon Himalayas
(D) Assam Himalayas

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018. 'મેંગો 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 મેનેજમેંટ (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

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 ઉગાડવા

(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. સેંટ્રલ 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

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 'petrochemical port'?

(A) Hajira

(B) Dahej

(C) Mundra

(D) Pipavav

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

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025. ગુજરાતનો પ્રથમ મેગા ફૂડ પાર્ક 'ધ ગુજરાત એગ્રો ઈન્ફ્રાસ્ટ્રક્ચર મેગા ફૂડ પાર્ક' કયાં 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 વિશેષ રોકાણ ક્ષેત્રો (SIR)માં નીચેના પૈકી કોનો સમાવેશ થાય છે?

1. અમદાવાદ - ધોલેરા
2. વલસાડ - ઉમરગામ
3. વડોદરા - અંકલેશ્વર
4. સુરત - નવસારી
5. ભરુચ - દહેજ

(A) માત્ર 1, 2 અને 5
(B) ફક્ત 1, 2 અને 3
(C) માત્ર 1, 2, 3 અને 5
(D) આપેલ તમામ

028. ગુજરાતના નાગરિકો માટે ''મહેસૂલમાં ક્રાંતિ'' કાર્યક્રમ અંતર્ગત મહેસૂલી સેવા સરળ અને ઝડપી બને તે માટે કઈ એપ્લીકેશન લોન્ચ કરવામાં આવેલ છે?

(A) iORA-2.0
(B) FAME-2
(C) e - Dhara
(D) BhuNaksha

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 સબમરીન જાન્યુઆરી 2023માં ભારતીય નૌકાદળમાં સામેલ કરવામાં આવી હતી?

(A) INS કરંજ
(B) INS કલવરી
(C) INS વાગીર
(D) INS વેલા

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.

025. Where was started the first Mega Food Park of Gujarat – The Gujarat Agro Infrastructure Mega Food Park?

(A) Ahmedabad
(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) Pilibhith - 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. Valsad – Umargam
3. Vadodara – Ankleshwar
4. Surat – Navsari
5. Bharuch – Dahej

(A) Only 1, 2 and 5
(B) Only 1, 2 and 3
(C) Only 1, 2, 3 and 5
(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) BhuNaksha

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 Economic 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. Which one of the following is correct about 'Pinaka'?

(A) It is a multibarrel rocket system
(B) It is a type of battle tank
(C) It is an indigenously developed drone system
(D) It is an advanced submarine

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032. ચંદ્ર પર જવા માટે વિશ્વની પ્રથમ ખાનગી ફ્લાઈટ યોજનાનુ નામ શું છે?

(A) મુન એક્સ્પ્રેસ (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) એન્ટાસિડ (Antacid)
(C) જીવંત માઈક્રોબાયલ ખોરાક પૂરક
(D) એન્ટિબાયોટીક (Antibiotic)

034. ગ્રીનહાઉસ અસર સંબધિત છે.....

(A) ગ્રીનહાઉસ વાયુઓનો સંગ્રહ જે વાતાવરણના તાપમાનમાં વધારો કરે છે.
(B) વધેલા/વધારે તાપમાનમાં ફૂલો અને શાકભાજીનું ઉત્પાદન
(C) કાચના ઘરમાં પાકનું ઉત્પાદન
(D) આમાંથી કોઈ નહી.

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) Word
(C) SmartCell
(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

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. Greenhouse 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 glasshouse
(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) SmartCell
(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

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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

041. ભારતીય પુરાતત્વ સર્વેક્ષણ એ કયા વિભાગ / મંત્રાલયની સંલગ્ન કચેરી છે?

(A) સંસ્કૃતિ (Culture)

(B) પ્રવાસન

(C) વિજ્ઞાન અને ટેકનૉલોજિ

(D) માનવ સંશાધન વિકાસ

042. બંધારણસભાની પ્રાંતીય બંધારણ સમિતિના અધ્યક્ષ કોણ હતા?

(A) ડૉ. બી.આર. આંબેડકર

(B) પં. જવાહરલાલ નેહરુ

(C) ડૉ. રાજેન્દ્રપ્રસાદ

(D) સરદાર વલ્લભભાઈ 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 વર્સેઈલ્સ એવોર્ડ અંતર્ગત સ્થાન મળ્યું છે?

(A) લાલભાઈ દલપતભાઈ મ્યુઝિયમ, અમદાવાદ

(B) સરદાર વલ્લભભાઈ પટેલ રાષ્ટ્રીય સ્મારક, અમદાવાદ

(C) મહાત્મા ગાંધી મ્યુઝીયમ, રાજકોટ

(D) સ્મૃતિવન ભૂકંપ સ્મારક, ભૂજ

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. 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 Vallabhbhai 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) Only 1, 2 and 3 (B) Only 1, 2 and 5

(C) Only 1, 3 and 5 (D) Only 1, 2 and 4

045. Ministry of Environment, Forest and Climate Change has been allotted to which Cabinet Minister in the Cabinet of the 18th Lok Sabha?

(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 Vallabhbhai Patel National Memorial, AHMEDABAD

(C) Mahatma Gandhi Museum, RAJKOT

(D) Smritivan Earthquake Memorial, BHUJ

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047. UN દ્વારા વર્ષ 2025ને શેના માટેનું આંતરરાષ્ટ્રીય વર્ષ જાહેર કરવામાં આવ્યું છે?

(A) ક્વોન્ટમ સાયન્સ અને ટેકનૉલોજી (B) ન્યૂરોસાયન્સ

(C) એસ્ટ્રોફિઝિક્સ (D) નેનોસાયન્સ

048. સિક્યોરિટીઝ એન્ડ એક્સચેન્જ બોર્ડ ઓફ ઈન્ડિયા (SEBI) દ્વારા રોકાણકારોને વિશ્વની 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. 7ના 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 માટેનો 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

★ નિર્દેશ : પ્રશ્ન નં. 051 થી 054:

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.

051. 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. આપેલ માહિતી પ્રમાણે ખંડમાં ઉપસ્થિત કુલ વ્યક્તિઓની સંખ્યા કેટલી હશે?

(A) 100 (B) 200

(C) 120 (D) 110

053. ખંડમાં ઉપસ્થિત બધી જ વ્યક્તિઓ ખુરશી પર બેઠાં હોય તો કેટલી ખુરશીઓ ખાલી રહે?

(A) 20 (B) 10

(C) 5 (D) એક પણ નહીં

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) Karnataka

(C) Andhra Pradesh (D) Maharashtra

050. Which oilseeds 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

★ Instructions for Q.No. 051 to 054:
$\frac{10}{11}$ of the people in a hall are sitting in $\frac{5}{6}$ of the chairs available and the rest are standing.

051. If 20 chairs are vacant, find the number of people sitting and the total available chairs.

(A) 80, 100 (B) 100, 120

(C) 220, 240 (D) 110, 120

052. Find the total number of people present in the hall.

(A) 100 (B) 200

(C) 120 (D) 110

053. If all the people in the hall are sitting, how many chairs would have been vacant?

(A) 20 (B) 10

(C) 5 (D) None

M

054. 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**

058. નીચે આપેલ પદાવલિમાં જો નિશાની ÷ ને – અને નિશાની + ને × વડે બદલાવામાં આવે તો તે પદાવલિનું મૂલ્ય શું મળે?

$96 \div 12 + 3 \times 12 - 4$

(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**

054. If 30% more people turn up, how many would have no chairs 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. If '÷' 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

M

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 ખરૂં હોઈ શકે?

(A) B સૌથી ઊંચો સ્તંભ છે.

(B) સ્તંભ X, Y અને Z ની 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 આવા 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

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 રૂા. 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) $\frac{3}{34}$

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 the 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 is

(A) 0.5 (B) 0 (C) – 0.5 (D) – 0.1

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) $\frac{3}{34}$

M

067. એક સંખ્યાના 65% અને તેજ સંખ્યાની 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 સર્ટીફીકેટ મેળવવા માટે ઓછામાં ઓછા 648 ગુણ મળવા જોઈએ. જો રીમાએ 604.8 ગુણ મેળવ્યા હોય તો તેણીએ કેટલા ટકા થી સર્ટીફીકેટ ગુમાવ્યું?

(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

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/-

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 m^2 (B) 10800 m^2

(C) 14400 m^2 (D) 13200 m^2

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. 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/-

M

★ **નિર્દેશ : પ્રશ્ન નં. 074 થી 075:**
એક ચોક્કસ રકમનું ચકવૃદ્ધિ વ્યાજ સાથે રોકાણ કરવાથી બે વર્ષમાં રૂા. 8,820/- અને ત્રણ વર્ષમાં રૂા. 9,261 મળે છે.

074. વાર્ષિક વ્યાજનો દર શોધો.

(A) 5% **(B) 7.5%**

(C) 2.5% **(D) 6%**

075. 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/-**

★ **નિર્દેશ : પ્રશ્ન નં. 076 થી 077:**
એક સમાંતર શ્રેણીના પહેલા સાત પદના સરવાળા અને પહેલા બાર પદના સરવાળાનો ગુણોત્તર 7:20 છે.

076. જો ત્રીજુ પદ 11 હોય તો સામાન્ય તફાવત શોધો.

(A) 3 **(B) 4** **(C) 5** **(D) 2**

077. 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) 5^9 **(B)** 5^{36}

(C) 5^4 **(D)** 5^{13}

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 બેકી 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)** $\frac{2}{15}$

★ **Directions : Q.No. 074 to 075:**

A certain sum when invested on compound interest grows to Rs. 8,820 in 2 years and to Rs. 9,261 in 3 years.

074. Find the rate of interest per annum.

(A) 5% **(B) 7.5%**

(C) 2.5% **(D) 6%**

075. Find the principal invested.

(A) Rs. 7,500/- **(B) Rs. 7,800/-**

(C) Rs. 8,000/- **(D) Rs. 8,100/-**

★ **Directions : Q.No. 076 to 077:**

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.

076. If the third term is 11, the common difference is

(A) 3 **(B) 4** **(C) 5** **(D) 2**

077. The ratio of nineteenth to ninth term is

(A) 7:15 **(B) 15:7** **(C) 3:1** **(D) 5:3**

078. The fifth term of a geometric progression terms is 625. The product of its first nine terms 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 integers 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 the three subjects?

(A) $\frac{1}{12}$ **(B)** $\frac{1}{6}$

(C) $\frac{4}{15}$ **(D)** $\frac{2}{15}$

M

081. નીચે આપેલાં જૂથ ધ્યાને લઈ બધી જોડણી સાચી હોય તેવો વિકલ્પ પસંદ કરો.

1. જિગીષા, વિજિગીષા, જિજ્ઞવિષા, અભીપ્સા

2. રુરુદિષા, મુમૂર્ષા, મુમુક્ષા, શુશ્રૂષા

3. કનિષ્ઠ, અનિષ્ટ, જ્યેષ્ઠ, વિશિષ્ટ

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. ઇંદીવર, કૈરવ, 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. વકીલ × આરોપી

(A) ફક્ત 1 અને 3 યોગ્ય છે.

(B) ફક્ત 2 અને 4 યોગ્ય છે.

(C) ફક્ત 1 અને 2 યોગ્ય છે.

(D) 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. આગખેલ	-	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 = ત્र્યંબક

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 of the following Pozzolanic materials can be used as mineral admixtures in cement?

i. Fly ash

ii. Silica fume

iii. Rice husk ash

iv. Metakaolin

(A) Only (i)

(B) Only (i) and (ii)

(C) Only (ii) and (iii)

(D) (i), (ii), (iii) and (iv)

102. Which of the following statements is/are true for aggregates such as slag and crushed overburnt brick or tile which may be found suitable to be used for plain concrete members?

i. Such aggregates should not contain more than 5% of sulphates as SO_3

ii. Such aggregates should not absorb more than 10% of their own mass of water

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

103. Which of the following statements is/are true for the size of the aggregate to be used with cement?

i. The nominal maximum size of the coarse aggregate should be as large as possible within the limits specified but in no case greater than ¼ of the minimum thickness of the member

ii. For most work, 20 mm aggregate is suitable

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

104. What is the maximum permissible concentration of Chlorides (as Cl) for reinforced concrete works?

(A) 500 mg / l

(B) 1000 mg / l

(C) 2000 mg / l

(D) 5000 mg / l

105. If Quartzite, Granite, Basalt and Limestone are the aggregates to be used, the coefficient of thermal expansion for concrete will be highest with

(A) Quartzite

(B) Granite

(C) Basalt

(D) Limestone

106. In the bricks, when tested in accordance with the procedure laid down in IS 3495 (Part 2) : 1992, after immersion in cold water for 24 hours, water absorption shall not be more than

i. 20 percent by weight upto class 12.5

ii. 15 percent by weight for classes higher than 12.5

(A) Only (i)
(B) Only (ii)
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

107. Tolerance limits for dimensions of bricks in length, width and height are estimated considering a sample of _____ number of bricks taken together

(A) 10
(B) 20
(C) 30
(D) 40

108. In order for efflorescence to form, which of the following conditions must exist?

i. Soluble salts must be present.

ii. Salts must be dissolved by a liquid.

iii. The liquid must have a path to migrate to the surface and evaporate.

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

109. In structural glazing, which type of glass is commonly used to enhance the safety and reduce the risk of injury from broken glass?

(A) Annealed Glass
(B) Tempered Glass
(C) Laminated Glass
(D) Frosted Glass

110. Which of the following statements is/are not true for Basalt?

i. Basalt is highly reactive to chemical weathering.

ii. Basalt is an igneous rock formed from the rapid cooling of lava.

iii. Basalt has high compressive strength, making it suitable for road and building construction.

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

111. Which of the following types of timber is most suitable for outdoor construction, such as bridges and railway sleepers, due to its high resistance to decay and insects?

(A) Teak
(B) Pine
(C) Cedar
(D) Oak

112. Which of the following benefits is most commonly associated with the use of fly ash in concrete production?

i. Reduces water demand

ii. Increases the concrete setting time

iii. Increases the permeability of concrete

iv. Reduces efflorescence

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

113. Which of the following statements is/are true for Class F fly ash?

i. It contains of fly ash normally produced from the burning of anthracite or bituminous coal

ii. This class of fly ash has both pozzolanic and varying degree of self-cementitious properties

(A) Only (i)
(B) Only (ii)
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

114. Which property/properties of ceramics make(s) them highly suitable for use in high-temperature applications such as furnace linings and kiln furniture?

i. High thermal resistance

ii. Low thermal expansion

iii. High ductility

iv. High malleability

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

115. Which of the following is not a characteristic advantage of Fibre Reinforced Polymer (FRP) when used for strengthening and repairing structural elements?

(A) High strength-to-weight ratio

(B) Excellent electrochemical corrosion resistance

(C) High thermal conductivity

(D) Good insulation properties

116. Which type of brick bond is characterized by alternating rows of headers and stretchers in each course, providing a strong and aesthetically pleasing pattern?

(A) English Bond
(B) Flemish Bond
(C) Stretcher Bond
(D) Header Bond

117. Which of the following statements is/are TRUE for Rubble Masonry?

i. Rubble masonry is the simplest type of stone masonry.

ii. Stones are used just as they are found in nature with no shaping or refining done before using them.

iii. The joints in this masonry are wide because of the usage of irregular or unevenly shaped stones.

iv. It is the most economical option in stone masonry because it uses unfinished stones.

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

118. Which of the following describes Ashlar Fine Masonry?

(A) Stones are roughly dressed and laid with thick mortar joints.
(B) Stones are cut and dressed to exact dimensions with thin mortar joints.
(C) Randomly-sized stones with no uniformity in joint thickness.
(D) Stones are laid without any mortar.

119. What is the primary purpose of providing weep holes in cavity walls?

(A) To enhance the structural integrity of the wall
(B) To allow trapped water to drain out and prevent moisture buildup
(C) To improve the thermal insulation of the wall
(D) To provide ventilation to the inner wall cavity

120. Which of the following statements is/are false?

i. Preventive Maintenance tasks aim to prevent building damage and retain structural integrity. This includes inspecting roofs, clearing drains and gutters, washing floors, etc.

ii. Corrective Maintenance is intended to restore the functionality and comfort of a building. This includes replacing broken windows, repairing disconnected electrical fixtures, emergency plumbing repairs, etc.

(A) Only (i)
(B) Only (ii)
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

121. A small piece of metal or the hardest or toughest stone procurable, sunk in mortices and fixed across the joints as additional ties is known as

(A) Cramp
(B) Dowel
(C) Cornice
(D) Corbel

122. In rubble masonry, a sharp edge formed by two planes is known as

(A) Arris
(B) Bed joint
(C) Flash
(D) Joggle

123. Which of the following methods is/are used for controlling groundwater during excavation?

i. Sump pumping
ii. Deep well system
iii. Well point systems

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

124. Which type of cofferdam can hold water upto 12 m height?

(A) Earthen cofferdam
(B) Rockfill cofferdam
(C) Single-walled cofferdam
(D) Double-walled cofferdam

125. The minimum number of holdfasts that shall normally be fixed on each side of the door frame is

(A) 2
(B) 3
(C) 4
(D) 5

126. Which of the following statements is/are true?

i. Dynamic viscosity is the resistance to movement of one layer of a fluid over another.
ii. The unit of dynamic viscosity is Pascal-second.
iii. Kinematic viscosity is expressed as the ratio of fluid dynamic viscosity to its density.
iv. The unit of measurement of kinematic viscosity is m^2s^{-1}.

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

127. _____ are the loci of points of all the fluid particles that have passed continuously through a particular spatial point in the past.

(A) Streaklines
(B) Streamlines
(C) Pathlines
(D) Timelines

128. The friction factor of laminar liquid flow in a circular pipe is inversely proportional to

(A) Reynolds number
(B) Froude number
(C) Mach number
(D) Prandtl number

129. The shear stress in a fully developed laminar flow in a circular pipe

(A) is maximum at the pipe wall

(B) is minimum at the pipe wall

(C) is maximum at the pipe centre

(D) varies parabolically across the section

130. Which of the following statements is/are true?

i. Control section is defined as a section in which a fixed relationship exists between the discharge and the depth of flow.

ii. For subcritical flow, the control section for gradually varied flow is at the upstream.

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

131. If the flow characteristics such as flow depth and the velocity of flow at any point do not change with respect to time, then it is known as

(A) steady flow

(B) uniform flow

(C) laminar flow

(D) critical flow

132. Which of the following statements is/are true?

i. The specific energy curve is a curve that shows the variation of specific energy with respect to time.

ii. Critical depth of flow is that of flow at which the specific energy is minimum.

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

133. Which of the following equations is/are used in deriving equations for the hydraulic jump in a rectangular channel in terms of the conjugate depths and initial Froude number?

i. continuity equation

ii. momentum equation

iii. energy equation

(A) Only (i)

(B) Only (i) and (ii)

(C) Only (ii) and (iii)

(D) (i), (ii) and (iii)

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134. Which of the following statements is/are true for Impulse turbines?

i. They are a specific type of hydraulic turbine that harnesses the kinetic energy of high velocity water sprays or steam to generate electrical power.

ii. Water strikes the blades normally within the impulse turbines, leading to its alternate name, the normal turbine.

(A) Only (i)
(B) Only (ii)
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

135. Reciprocating pumps

i. are positive displacement pumps.

ii. are used for low discharge and high head.

(A) Only (i)
(B) Only (ii)
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

136. Weber number involves which of the following?

i. Inertial Force
ii. Surface Tension Force
iii. Viscous Force
iv. Gravitational Force
(A) Only (i) and (ii)
(B) Only (iii) and (iv)
(C) Only (ii) and (iii)
(D) Only (i) and (iv)

137. Which of the following instruments are used for measuring velocity?

i. Hot water anemometer
ii. Pitot tube
iii. Orifice meter
iv. Preston tube
(A) Only (i)
(B) Only (i) and (ii)
(C) Only (ii) and (iii)
(D) Only (iii) and (iv)

138. Which of the following statements is/are true regarding Water Hammer?

i. It is a sudden rise of pressure in a long pipe due to sudden closure of a valve.

ii. It is developing of the negative pressure created due to the vacuum emerging from the sudden closure of a valve.

(A) Only (i)
(B) Only (ii)
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

139. Hardy Cross method is an iterative method for determining the flow in pipe network systems where

i. Inputs are known
ii. Inputs are unknown
iii. Outputs are known
iv. Outputs are unknown

(A) Only (i) and (iii)
(B) Only (ii) and (iv)
(C) Only (i) and (iv)
(D) Only (ii) and (iii)

140. The loss of head in a pipe carrying turbulent flow varies

i. directly as square of the velocity of flow
ii. directly as length of flow
iii. inversely as square of the velocity of flow
iv. inversely as length of flow

(A) Only (i)
(B) Only (i) and (ii)
(C) Only (i) and (iv)
(D) Only (ii) and (iii)

141. A commonly used hand pump has a

(A) reciprocating pump
(B) submersible pump
(C) Axial Flow Pump
(D) Radial Flow Pump

142. Which of the following criteria should be considered while selecting a centrifugal pump?

i. Head
ii. Discharge
iii. Efficiency

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

143. The total head against which a pump has to work include(s)

i. Static Head
ii. Velocity Head
iii. Head Loss

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

144. For a hydraulically efficient rectangular channel, the width is _____ the depth.

(A) half
(B) equal to
(C) twice
(D) thrice

145. Which of the following statements is/are true for an open channel flow?

i. Energy grade line is obtained by adding pressure head and velocity head

ii. Hydraulic grade line is the free surface itself

(A) Only (i)
(B) Only (ii)
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

146. The Penman equation is used primarily for estimating

(A) Runoff
(B) Soil moisture content
(C) Evapotranspiration
(D) Groundwater recharge

147. The wading technique is commonly used to measure

(A) Soil moisture content
(B) River discharge
(C) Evaporation rates
(D) Groundwater level

148. Which of the following chemical emulsions is primarily used to reduce water loss through evaporation from open water surfaces?

(A) Silicon-based emulsions
(B) Asphalt-based emulsions
(C) Oil-based emulsions
(D) Polymer-based emulsions

149. Which of the following is used for lifting a small quantity of water to a great height?

(A) Hydraulic crane
(B) Hydraulic ram
(C) Draft tube
(D) Penstock

150. Centrifugal pump gives maximum efficiency when its impeller blades are

(A) bent backward
(B) bent forward
(C) straight
(D) wave-shaped

151. Which of the following is not an elastic constant?

(A) Young's modulus
(B) Poisson's ratio
(C) Shear modulus
(D) Yield strength

152. What is the typical range of Poisson's ratio for most materials?

(A) 1 to 0
(B) 0 to 0.5
(C) 0.5 to 1
(D) 1 to 2

153. Which of the following structural elements is most efficient in resisting axial compressive loads?

(A) I-beam
(B) Circular hollow section
(C) Rectangular solid section
(D) T-section

154. What is the physical interpretation of the shear modulus?

(A) Resistance to change in shape without change in volume
(B) Resistance to change in volume without change in shape
(C) Resistance to axial deformation
(D) Resistance to bending

155. What is the relationship between Young's modulus (E) and the spring constant (k) for a rod of length L and cross-sectional area A?

(A) k = EA/L
(B) k = EL/A
(C) k = E/LA
(D) k = L/EA

156. What happens to Poisson's ratio as a material approaches incompressibility?

(A) It approaches 0
(B) It approaches 0.5
(C) It approaches 1
(D) It approaches infinity

157. What is the physical meaning of a material having a low Poisson's ratio?

(A) The material is very stiff
(B) The material is very compressible
(C) The material experiences little lateral deformation when stressed axially
(D) The material is nearly incompressible

158. Which of the following statements about isotropic materials is true?

(A) They have different properties in different directions
(B) They require only one elastic constant to describe their behaviour
(C) They have the same elastic properties in all directions
(D) They cannot be deformed elastically

159. In a state of plane stress, how many independent stress components are there?

(A) 2
(B) 3
(C) 4
(D) 5

M

160. On Mohr's circle for plane stress, what does the diameter of the circle represent?

(A) The average normal stress

(B) The maximum shear stress

(C) The difference between principal stresses

(D) The sum of principal stresses

161. What is the physical meaning of principal stresses?

(A) Stresses that act only in the x and y directions

(B) Stresses that produce only shear deformation

(C) Normal stresses on planes where shear stress is zero

(D) Stresses that always cause failure

162. In a uniaxial stress state, what is the relationship between the applied stress (σ) and the maximum shear stress (τ_{max})?

(A) $\tau_{max} = 2\sigma$

(B) $\tau_{max} = \sigma/2$

(C) $\tau_{max} = \sigma/4$

(D) $\tau_{max} = \sigma\sqrt{2}$

163. What is the stress invariant?

(A) A stress that never changes

(B) The maximum stress in a body

(C) A combination of stress components that remains constant regardless of coordinate system orientation

(D) The stress at the center of Mohr's circle

164. Which of the following best describes the behaviour of a simply supported beam under a uniformly distributed load?

(A) The maximum bending moment occurs at the supports

(B) The shear force is zero at midspan

(C) The deflection is maximum at the quarter points

(D) The bending moment diagram is triangular

165. What is the maximum normal stress theory (Rankine's theory) of failure?

(A) Failure occurs when the maximum shear stress reaches a critical value

(B) Failure occurs when the maximum normal stress reaches the critical strength

(C) Failure occurs when the von Mises stress reaches the critical strength

(D) Failure occurs when the hydrostatic stress reaches a critical value

166. What is the significance of the octahedral shear stress?

(A) It is always the maximum shear stress in the material

(B) It is used in the von Mises yield criterion

(C) It occurs only in planar stress state

(D) It is the average of all shear stresses in the material

167. In plane stress, if $\sigma_x = 60$ MPa, $\sigma_y = 20$ MPa, and $\tau_{xy} = 10$ MPa, what is the maximum shear stress?

(A) 10 MPa

(B) 15 MPa

(C) 20 MPa

(D) 22.36 MPa

168. What graphical tool is commonly used to represent the strength of a reinforced concrete (section) under combined axial load and bending moment?

(A) Stress-strain curve

(B) Interaction diagram

(C) Mohr's circle

(D) Stress block diagram

169. Which type of slab is typically most efficient for large, column-free spaces?

(A) One-way slab

(B) Two-way slab

(C) Flat slab

(D) Waffle slab

170. In the design of a two-way slab, what is the purpose of torsional reinforcement at the corners?

(A) To resist positive moments

(B) To resist negative moments

(C) To prevent corner lifting

(D) To increase shear capacity

171. Which of the following is NOT a key feature of earthquake-resistant masonry construction?

(A) Use of through-stones or bond stones

(B) Provision of horizontal bands at various levels

(C) Use of slender walls with high aspect ratios

(D) Use of corner reinforcement

172. What does IS: 875 (Part V) primarily cover?

(A) Dead loads

(B) Imposed loads

(C) Wind loads

(D) Special loads and load combinations

M

173. A single-degree-of-freedom system has a mass of 1000 kg and a stiffness of 40,000 N/m. What is its natural frequency in Hz? (Use $\pi \approx 3.14$)

(A) 1 Hz
(B) 2 Hz
(C) 3 Hz
(D) 4 Hz

174. A structure has a natural frequency of 2 Hz and a damping ratio of 0.1. What is its logarithmic decrement?

(A) 0.314
(B) 0.628
(C) 0.942
(D) 1.256

175. A reinforced concrete slab has a thickness of 150 mm and reinforcement of 10 mm diameter bars at 200 mm spacing. What is the percentage of steel?

(A) 0.26%
(B) 0.36%
(C) 0.46%
(D) 0.56%

176. A steel column has a slenderness ratio of 120. If the yield strength of steel is 250 MPa and Young's modulus is 200 GPa, what is the critical stress according to Euler's formula?

(A) 108 MPa
(B) 137 MPa
(C) 166 MPa
(D) 195 MPa

177. In a simple truss with a triangular configuration, if the internal member forces are in tension, which of the following methods is most appropriate to analyze the truss?

(A) Moment Distribution Method
(B) Unit Load Method
(C) Method of Joints
(D) Conjugate Beam Method

178. For a simply supported beam subjected to a moving point load, what does the influence line for the shear force at a given section represent?

(A) The change in shear force due to the movement of the load across the span
(B) The change in bending moment due to the movement of the load across the span
(C) The maximum shear force that can occur at the section
(D) The minimum shear force that can occur at the section

179. To ensure stability in a frame structure, which of the following conditions must be met?

(A) The number of equations must be equal to the number of unknowns

(B) The structure must be rigidly fixed at all supports

(C) The structure must be in perfect alignment with no deformations

(D) The total number of members must be equal to the number of joints

180. In a section, shear centre is a point through which, if the resultant load passes, the section will not be subjected to any

i. Torsion

ii. Bending

iii. Tension

iv. Compression

(A) Only (i)

(B) Only (i) and (ii)

(C) Only (ii) and (iii)

(D) (i), (ii), (iii) and (iv)

181. What is the concept of "strong column-weak beam" in ductile detailing?

(A) Column should be designed to be weaker than beams to absorb more energy

(B) Beams should be over-reinforced and columns should be under-reinforced

(C) Beams should be designed to absorb more energy

(D) Beams should be designed to yield before columns

182. The logarithmic decrement δ is a measure of the damping in a system. If the amplitude of the n^{th} peak in a free vibration response is A_n and the amplitude of the $(n + 1)^{th}$ peak is A_{n+1}, what is the formula for the logarithmic decrement δ?

(A) $\delta = \frac{1}{n} ln\left(\frac{A_n}{A_{n+1}}\right)$

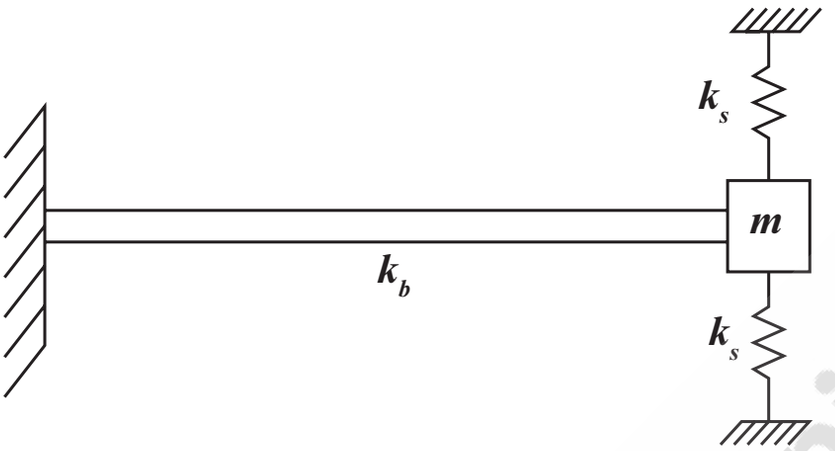
(B) $\delta = \frac{1}{n} ln\left(\frac{A_{n+1}}{A_n}\right)$

(C) $\delta = ln\left(\frac{A_n}{A_{n+1}}\right)$

(D) $\delta = ln\left(\frac{A_{n+1}}{A_n}\right)$

M

183. What is the equivalent stiffness (k_{eq}) of the system shown in the following figure, if k_b is the stiffness of the massless beam and k_s is the stiffness of each spring?



(A) $k_{eq} = k_b + 2k_s$

(B) $k_{eq} = (k_b \times 2k_s) / (k_b + 2k_s)$

(C) $k_{eq} = k_b \times 2k_s$

(D) $k_{eq} = 1 / (1/k_b + 1/2k_s)$

184. What instrument is used to measure and record earthquake ground motion?

(A) Barometer

(B) Seismograph

(C) Seismometer

(D) Seismogram

185. What is the primary goal of base isolation in earthquake-resistant design?

(A) To increase the building's natural frequency

(B) To decrease the transmission of ground motion to the building

(C) To make foundation more sensitive to seismic waves

(D) To improve the energy efficiency of the building

186. Why may a response spectrum be adjusted for different seismic design categories?

(A) To account for variations in construction materials used in different seismic zones.

(B) To accommodate different seismic hazard levels and building importance across locations.

(C) To standardize design requirements for all structures regardless of location.

(D) To consider different soil condition.

187. What is the primary characteristic of a critically damped system?

(A) It oscillates indefinitely without returning to equilibrium.

(B) It returns to equilibrium without oscillating and in the shortest possible time.

(C) It oscillates with decreasing amplitude over time.

(D) It takes longer than an underdamped system to return to equilibrium.

188. A mass-spring-damper system has a mass of 5 kg and a spring constant of 200 N/m. What should the damping coefficient *c* be for the system to be critically damped?

(A) 0.05 Ns/m
(B) 12.65 Ns/m
(C) 63.24 Ns/m
(D) 2000 Ns/m

189. In the context of the seismic mass participation factor, what does a higher value indicate?

(A) The structure is more flexible
(B) The structure is more rigid
(C) More mass is excited by the mode of vibration
(D) The structure has a lower natural frequency

190. In a two-degree-of-freedom (2DOF) system, what is the primary purpose of solving for the system's natural frequencies and mode shapes?

(A) To understand the dynamic behaviour and predict the response under dynamic loading
(B) To optimize the damping in the system
(C) To determine the system's failure points under dynamic loads
(D) To optimize the material usage in the system

191. What does the term "unsupported length" refer to in structural design, particularly for columns?

(A) The total height of a column from the base to the top.
(B) The portion of the column that is free to buckle without lateral support.
(C) The distance between two consecutive lateral supports.
(D) The portion of the column that is designed to carry the maximum load.

192. In a typical column interaction diagram, the x-axis usually represents

(A) The bending moment about the major axis of the column.
(B) The bending moment about the minor axis of the column.
(C) The axial load on the column.
(D) The shear force in the column.

193. How does the slenderness ratio of a tension steel member affect its strength?

(A) A higher slenderness ratio increases the member's strength.
(B) A higher slenderness ratio reduces the member's strength.
(C) Slenderness ratio has no impact on the strength of a tension member.
(D) Slenderness ratio affects only the member's deflection, not its strength.

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194. A simply supported beam with a span of 6 meters is subjected to a central point load. If the beam has a section modulus Z = 8000 mm^3 and a yield strength f_y = 250 MPa, what is the maximum moment that can cause the formation of a plastic hinge in the beam?

(A) 2.0 kN-m
(B) 5.3 kN-m
(C) 12.0 kN-m
(D) 32.0 kN-m

195. The Rankine constant is inversely related to which of the following properties?

(A) Radius of gyration
(B) Effective length of the column
(C) Modulus of elasticity
(D) Slenderness ratio

196. Which type of column base is typically used for very large axial loads or when moment resistance is required?

(A) Slab base
(B) Gusseted base
(C) Hinged base
(D) Pinned base

197. For a laterally unsupported beam, the moment capacity is primarily limited by

(A) Plastic bending capacity
(B) Shear capacity
(C) Lateral-torsional buckling
(D) Deflection control

198. What is the primary advantage of a counterfort retaining wall?

(A) Requires less excavation
(B) Suitable for retaining high earth pressure
(C) Requires less material compared to gravity walls
(D) Easier to construct in hilly regions

199. In a cylindrical water tank, the tensile stresses due to internal pressure are typically higher

(A) Near the top of the tank
(B) Near the bottom of the tank
(C) At the centre of the tank height
(D) In the foundation of the tank

200. What is the typical shape of a tendon profile in a pre-stressed concrete cantilever structure?

(A) Horizontal
(B) Inclined upward from the support
(C) Inclined downward from the support
(D) Parabolic, with the lowest point near the free end

201. Which of the following statements is/are correct as regards to the main features of Roman roads?

i. The soft soil was excavated and removed till hard stratum was reached

ii. High thickness of road construction was followed at some places, even though the magnitude of wheel loads of animal drawn vehicle was very low.

iii. The roads were constructed as per the gradient

iv. The total thickness of the construction was as high as 2 to 2.5 meters

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

202. Which of the following features are correct as per 'National Highway Act 1956'?

i. To enter into any land for carrying out surveys

ii. To declare certain selected highways as 'National Highways'

iii. Responsibility of development and maintenance of national highways to be with State and Central Governments

iv. To acquire land and take possession for the development of the national highway

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

203. The order of stages of conducting an engineering survey for highway alignment is

i. Preliminary Survey

ii. Reconnaissance Survey

iii. Final Location and detailed survey

iv. Map study

(A) (i), (iv), (ii), (iii)
(B) (ii), (iv), (i), (iii)
(C) (iv), (ii), (i), (iii)
(D) (ii), (i), (iv), (iii)

204. For a given road, the estimated safe stopping sight distance is 95 m and the overtaking sight distance is 420 m. What is the intermediate sight distance?

(A) 190 m
(B) 285 m
(C) 420 m
(D) 840 m

M

205. What would be the extra widening required for a pavement of width 7 m on a horizontal curve of radius 180 m? The wheel base of the vehicle is 6 m and the design speed is 60 kmph.

(A) 0.370 m
(B) 0.470 m
(C) 0.570 m
(D) 0.670 m

206. The correct relationship between Average Daily Traffic (ADT), Traffic Volume Count, Daily Factor (DF), Seasonal Factor (SF) is

(A) $\frac{normal\ time - crash\ time}{Crash\ cost - normal\ time}$

(B) $ADT = \frac{DF \times SF}{Traffic\ Volume\ Count}$

(C) $Traffic\ Volume\ Count = ADT \times DF \times SF$

(D) $ADT = Traffic\ Volume\ Count \times DF \times SF$

207. Which of the following Origin and Destination survey method is preferred when comprehensive traffic and transportation requirements are to be planned for a city?

(A) Roadside Interview method
(B) Return post card method
(C) Licensed plate method
(D) Home interview method

208. The free mean speed of a road is 70 kmph. At jam conditions, the average spacing between the vehicles is 6.5 m. What is the maximum flow in vehicles/hour/per lane?

(A) 2693
(B) 3591
(C) 4550
(D) 5385

209. A California Bearing Ratio (CBR) test was performed on a soil subgrade and it is observed that the load value for 2.5 mm penetration is 60 kg and for 5 mm penetration is 80 kg. With the standard assumption, the CBR value of the sample is

(A) 3.89%
(B) 5.28%
(C) 4.37%
(D) 6.19%

210. If R is the radius of the curve and L is the length of the long chord, the shift of the curve is (in meters).

(A) $\frac{L^2}{8R}$
(B) $\frac{2L^2}{R}$
(C) $\frac{L^2}{24R}$
(D) $\frac{L^2}{6R}$

211. What is the percentage content of Alumina (Al_2O_3) in Ordinary Portland Cement?

(A) 0.5 to 6.0 (B) 3.0 to 8.0

(C) 17 to 25 (D) 60 to 67

212. Which one of the following compounds in cement is responsible for flash setting in the absence of gypsum?

(A) Tetracalcium Aluminoferrite (B) Tricalcium silicate

(C) Dicalcium silicate (D) Tricalcium Aluminate

213. Which of the following statements are false?

i. Well-graded aggregates are less workable

ii. Angular and flaky aggregates are less workable

iii. Smoother the surface of aggregates, higher the workability

(A) Only (i) (B) Only (i) and (ii)

(C) Only (ii) and (iii) (D) (i), (ii) and (iii)

214. The degree of workability of concrete is said to be 'medium', if it has slump ranges between

(A) 0 and 25 mm (B) 25 and 50 mm

(C) 50 and 100 mm (D) 100 and 175 mm

215. The shape of the STOP sign according to IRC 67-2001 is

(A) Circular (B) Octagonal

(C) Square (D) Rectangular

216. The tender, which is invited from all contractors (including new contractors) through giving advertisements in local newspapers or by notice in regional languages, is called

(A) Limited tender (B) Private tender

(C) Public tender (D) Negotiated tender

217. An arrangement in which the private sector builds an infrastructure project, operates it and transfers the ownership of the project to the government after the contractual period is called

(A) BLT : Build, Lease, Transfer

(B) BTO: Build, Transfer, Operate

(C) BOOT: Build, Own, Operate, Transfer

(D) BOT: Build, Operate, Transfer

M

218. In the straight line method, the annual depreciation of the property is

(A) $\frac{\text{Original cost} - \text{Annual sinking fund}}{\text{Life in Year}}$

(B) $\frac{\text{Original cost} + \text{Annual sinking fund}}{\text{Life in Year}}$

(C) $\frac{\text{Original cost} - \text{Scrap value}}{\text{Life in Year}}$

(D) $\frac{\text{Original cost} + \text{Scrap value}}{\text{Life in Year}}$

219. The most accurate method of estimation is based on

(A) Supplementary estimate

(B) Plinth area estimate

(C) Cube rate estimate

(D) Detailed estimate

220. Which of the following statements is/are true?

i. Wraping stresses in cement concrete pavements are due to daily variation of temperatures

ii. Tie bars are generally provided across transverse joints of cement concrete pavements

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

221. A serious limitation of interdependencies between various project activities is observed in

(A) Histogram chart

(B) Bar chart

(C) Flow chart

(D) Network analysis

222. At an event other than the final event, if no activity emerges, it results in an error called

(A) Looping

(B) Dangling

(C) Interfacing

(D) Splicing

223. In PERT analysis, the time estimates of each activity and probability of occurrence follow

(A) Normal distribution curve

(B) Poisson distribution curve

(C) Binominal distribution curve

(D) Beta distribution curve

224. Choose the correct statement regarding dummy activity in a network.

(A) It requires time and does not require resources

(B) It does not require time and requires resources

(C) It does not require time and resources

(D) It requires both time and resource

225. The optimistic, most likely and pessimistic time estimates of an activity are 6, 12 and 22 days respectively. What is the standard deviation?

(A) 1.00 (B) 1.67

(C) 2.67 (D) 7.12

226. The difference between free float and slack of the tail event is called as

(A) Total float (B) Interfering float

(C) Independent float (D) Latest finish time

227. Choose the correct statement for Construction Project Management (CPM)

(A) CPM is event-oriented and it uses deterministic approach

(B) CPM is activity-oriented and it uses probabilistic approach

(C) CPM is event-oriented and it uses probabilistic approach

(D) CPM is activity-oriented and it uses deterministic approach

228. The cost slope of the direct cost curve is given by

(A) $\frac{\text{Crash cost – normal cost}}{\text{crash time – normal time}}$ (B) $\frac{\text{Normal time – crash time}}{\text{crash cost – normal time}}$

(C) $\frac{\text{Crash cost – normal cost}}{\text{normal time – crash time}}$ (D) $\frac{\text{Normal cost – crash cost}}{\text{normal time – crash time}}$

229. Resource smoothening means

(A) Gradual increase in resources

(B) Complete revamping of resources to suit the requirement

(C) Optimization and economical utilization of resources

(D) Adjustment of resources to have the least variations

230. Well-designed signalized intersection is the one in which

i. total delay is minimized

ii. cycle time is equal to the sum of red and green times in all phases

(A) Only (i) (B) Only (ii)

(C) Both (i) and (ii) (D) Neither (i) nor (ii)

231. In which district of Gujarat is the world's largest Miyawaki Forest, with over 3 lakh plants, located?

(A) Surat (B) Kachchh

(C) Rajkot (D) Gandhinagar

M

232. Smritivan Earthquake Memorial and Museum integrates different renewable energy sources as part of its sustainable design. Which of the following is the primary renewable energy source used to power the museum?

(A) Wind turbines
(B) Solar power plant
(C) Geothermal energy
(D) Hydroelectric power

233. Which of the following historical places in Gujarat is known for its advanced water conservation systems, possibly the oldest in the world?

(A) Champaner-Pavagadh
(B) Lothal
(C) Dholavira
(D) Hriday Kunj

234. Which of the following sites in Gujarat has been declared a UNESCO World Heritage Site and is known for its blend of Islamic and Rajput architecture?

(A) Hriday Kunj
(B) Champaner-Pavagadh
(C) Dholavira
(D) Vadnagar Torans

235. Which ancient city in Gujarat, dating back to the Indus Valley Civilization, is noted for its impressive town planning and was once a major port?

(A) Dholavira
(B) Lothal
(C) Vadnagar
(D) Champaner

236. The Torans at Vadnagar, an example of Solanki period architecture, are believed to have served as

(A) Water conservation systems
(B) Stepwells for harvesting rainwater
(C) Entrance gates to a large temple complex
(D) A residential area for the ruling clan

237. Akshardham temple in Gandhinagar is built primarily from which materials?

(A) Granite and marble
(B) Sandstone and iron
(C) Pink sandstone and marble
(D) Limestone and granite

238. What type of transport system is the Ahmedabad Metro?

(A) Light Rail Transit
(B) Rapid Transit
(C) Monorail transit
(D) Bullet Rail

239. The Ro-Ro ferry service launch in Gujarat connects which two locations?

(A) Dwarka and Porbandar
(B) Bhavnagar and Dahej
(C) Ghogha and Dahej
(D) Veraval and Mandvi

240. Which of the following hospitals has/have a rooftop helipad?

i. Sardar Vallabhbhai Patel Institute of Medical Sciences and Research, Ahmedabad

ii. Civil Hospital, Palanpur

iii. Civil Hospital, Himmat Nagar

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

241. Siddhpur is known for its which distinct architectural style, as seen in the Bohra Havelis?

(A) Victorian
(B) Baroque
(C) Renaissance
(D) Gothic

242. What is the purpose of the Kalpasar Project, an ambitious civil engineering project in Gujarat?

(A) To create a freshwater lake in the Gulf of Khambhat
(B) To build the largest solar park
(C) To connect major trade routes by rail
(D) To establish a new cultural heritage site

243. Gujarat's traditional 'Bhunga' homes are known for their ability to withstand what type of natural disaster, making them unique in civil engineering design?

(A) Floods
(B) Earthquakes
(C) Cyclones
(D) Landslides

244. Which ancient architectural technique used in Gujarat is known for enhancing indoor thermal comfort by providing excellent thermal insulation and is still relevant in modern green building design?

(A) High ceilings
(B) Jali (lattice) screens
(C) Courtyards
(D) Thick mud walls

245. Which environmental challenge is addressed by the layout and construction of Harappan cities like Dholavira in Gujarat?

(A) Air pollution
(B) Water scarcity
(C) Earthquakes
(D) Cyclones

246. Focusing sustainable development, which of the following construction materials is increasingly being used in Gujarat's new infrastructure projects?

(A) Traditional lime plaster
(B) Fly ash bricks
(C) Bamboo
(D) Recycled plastic

247. What is the approximate depth of the 'Rani Ki Vav' stepwell in Patan, Gujarat?

(A) 15 meters
(B) 18 meters
(C) 28 meters
(D) 35 meters

248. What was the key engineering feature of Lothal, an ancient city in Gujarat, that made it a prominent trade center in the Harappan civilization?

(A) Stone-paved roads for trade goods
(B) Dockyard for maritime trade
(C) Fortress for protection
(D) Underground drainage system

249. Which type of stone was primarily used in the construction of the Sun Temple at Modhera, contributing to its durability and architectural beauty?

(A) Limestone
(B) Marble
(C) Sandstone
(D) Granite

250. Which ancient engineering feature in Gujarat's stepwells, such as Rani Ki Vav, serves to enhance their stability and longevity?

(A) Intricate carvings that reduce structural load
(B) Elevated platforms to prevent water seepage
(C) Multi-tiered steps and load-distributing corridors
(D) Reinforced stonewalls with hidden internal supports

251. Which of the following statements is/are true regarding the isogonic lines?

i. They converge at the magnetic poles.
ii. They are equally spaced everywhere on Earth.
iii. They run parallel to the equator.
iv. They do not change position over time.

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

252. The magnetic bearing of a line was 184°35'. If the declination at that place is 1°45'E, then the true bearing of the line would be

(A) 187°20'
(B) 186°20'
(C) 183°50'
(D) 182°50'

253. What is "local attraction" in the context of compass surveying?

(A) The deviation caused by the Earth's magnetic poles shifting over time

(B) The error in a compass reading caused by nearby magnetic objects or anomalies

(C) The difference between true north and magnetic north

(D) The phenomenon where a compass points directly to the geographic north pole

254. Which of the following statements is/are true regarding the angular measurements using a theodolite?

i. In the Method of Repetition, a series of angles around a point are measured successively for many times.

ii. In the Method of Reiteration, a series of angles around a point are measured successively to close a polygon.

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

255. Which of the following methods is/are commonly used for plotting details in plane table surveying?

i. Radiation

ii. Intersection

iii. Triangulation

iv. Compassing

(A) Only (i)

(B) Only (i) and (ii)

(C) Only (iii) and (iv)

(D) (i), (ii), (iii) and (iv)

256. What is Bowditch's rule used for in surveying?

(A) To correct the lengths of sides in a traverse based on observed angles

(B) To distribute the closure error proportionally between the latitudes and departures in a traverse

(C) To calculate the area of a closed traverse

(D) To adjust angles in a triangular network

257. Which of the following statements is/are true for Automatic Levels used for measuring elevations?

i. The need for manual adjustments required in the case of dumpy levels to ensure accurate level is eliminated.

ii. It uses a compensator mechanism to keep the line of sight horizontal even if it is not perpendicular to the vertical axis.

iii. The compensator mechanism made of mirrors or prism is built into the telescope tube and can be activated if the line of sight is horizontal within 15' – 30' of the true horizontal.

(A) Only (i)

(B) Only (i) and (ii)

(C) Only (ii) and (iii)

(D) (i), (ii) and (iii)

258. In levelling, what is the correct sequence of operations when moving from one instrument setup to another, involving Backsight, Foresight and Change Point?

(A) Take a Foresight on the current station, move the instrument, then take a Backsight on the Change Point

(B) Take a Backsight on the Change Point, move the instrument, then take a Foresight on the new point

(C) Take a Backsight on a known point, move the instrument and take a Foresight on the Change Point

(D) Take a Backsight on the known point, then a Foresight on the Change Point, move the instrument and take a new Backsight on the Change Point

259. What is the key difference between the Rise and Fall Method and the Height of Instrument (HI) Method in levelling?

(A) The Rise and Fall Method requires only one reading per station, while the HI Method requires two readings per station.

(B) The Rise and Fall Method determines the elevation changes between consecutive points, while the HI Method calculates the elevations by referencing the height of the instrument.

(C) The HI Method is more accurate than the Rise and Fall Method for long distance levelling.

(D) The Rise and Fall Method uses the foresight directly for elevation calculation, while the HI Method uses backsight readings only.

260. When calculating the correction for curvature in levelling over a distance D, which of the following formulas accurately represents the correction C in meters for the curvature effect, assuming the Earth is a perfect sphere with a radius R?

(A) $C = D^2/R$

(B) $C = D^2/2R$

(C) $C = D^2/4R$

(D) $C = D^2/8R$

261. In levelling, when correcting for errors due to both the curvature of the Earth and atmospheric refraction, which of the following statements is/are correct?

i. The curvature correction accounts for the line of sight deviating from a horizontal plane due to the Earth's curvature, while the refraction correction accounts for the bending of light rays in the atmosphere, with refraction usually reducing the overall error caused by the curvature.

ii. The curvature correction is generally larger than the refraction correction, and refraction correction is always subtracted from the curvature correction.

iii. Both curvature and refraction errors are directly proportional to the distance, but refraction error is typically greater than the curvature error over long distances.

(A) Only (i)

(B) Only (i) and (ii)

(C) Only (ii) and (iii)

(D) (i), (ii) and (iii)

262. Why is it important to balance the foresight and backsight distances in levelling?

(A) To eliminate the need for applying curvature and refraction corrections

(B) To reduce errors due to Earth's curvature and atmospheric refraction

(C) To avoid errors caused by the inclined line of collimation

(D) To avoid change points

263. A planimeter is an instrument used for

(A) checking whether a given surface is plane

(B) checking whether the plane table surface is level

(C) finding area plans and maps

(D) finding the slope of a given terrain

264. Which of the following statements is/are true for 'Horizontal Equivalent' in measurement of elevations?

i. It is the distance between two successive contour lines

ii. If this distance is small, it indicates a steeper slope

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

265. Which of the following statements is/are false for Tacheometry?

i. It is a method of finding the distances and elevations simultaneously.

ii. It is not suitable in the case of hilly terrain

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

266. Which of the following statements is/are true for trigonometric levelling?

i. It is a process of determining the elevations of stations from observed vertical angles only

ii. Vertical angles are measured with a theodolite

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

267. What is the primary function of the collimator in a total station?

(A) Measure distances

(B) Align the instrument's optical system

(C) Provide horizontal angles

(D) Capture images of the survey area

268. What is the primary difference between the Geodimeter and Tellurometer in terms of distance measurement?

(A) Geodimeter uses sound waves while Tellurometer uses light waves

(B) Geodimeter uses light waves and Tellurometer uses microwaves

(C) Geodimeter measures angles while Tellurometer measures distances

(D) Geodimeter measures distances while Tellurometer measures angles

269. Which of the following statements is/are false for Parallax?

i. The apparent movement of the point under observation with respect to the reference system caused by the movement of the camera position is known as Parallax

ii. It is caused by the motion of the point of observation and the difference in elevation between the points observed.

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

270. If N is the optimum number of rain gauge stations, C_v is the coefficient of variation of the rainfall values of the existing rain gauge stations and P is the desired degree of percentage error in the estimate of the basin mean rainfall, then how N, C_v and P are connected?

(A) $N = (C_v / P)^2$

(B) $N = (P / C_v)^2$

(C) $N = (C_v / P)$

(D) $N = (P / C_v)$

271. Which of the following statements is/are true regarding network of rain gauge stations?

i. In plains, 01 rain gauge up to 500 km^2 shall be sufficient

ii. In not too elevated regions with average elevation of 01 kilometer above the sea-level, the network density shall be 1 rain gauge in 250 – 400 km^2

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

272. The shape of the basin is quantitatively measured by various factors such as the

i. form factor

ii. circularity ratio

iii. elongation ratio

iv. compactness coefficient

(A) Only (i)

(B) Only (i) and (ii)

(C) Only (iii) and (iv)

(D) (i), (ii), (iii) and (iv)

273. On small streams, the flow can be measured with the help of hydraulic measuring devices such as

i. Trapezoidal weir

ii. Parshall flume

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

274. An atmometer is used to measure

(A) Wind speed

(B) Atmospheric pressure

(C) Evaporation rate

(D) Solar radiation

275. Which of the following statements is/are true for Potential Evapo Transpiration (PET)?

i. It is defined as the evapotranspiration which would occur if there was always an adequate water supply available to a fully vegetated surface

ii. It is the lower limit of evapotranspiration for a crop in a given climate

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

276. The infiltration index that represents a constant average infiltration rate during a rainfall event is called

(A) W-index

(B) ϕ-index

(C) Horton index

(D) Darcy index

277. Volume of water an aquifer releases or takes into storage per unit surface area of the aquifer per unit drop of the water table is called

(A) storage coefficient

(B) specific retention

(C) specific yield

(D) specific transmissivity

278. An aquifer bound by one or two aquitards is called as

i. semi-confined aquifer

ii. leaky aquifer

iii. aquifuge

(A) Only (i)

(B) Only (i) and (ii)

(C) Only (ii) and (iii)

(D) (i), (ii) and (iii)

279. Which of the following best defines the term 'overdraft' in the context of groundwater management?

(A) The extraction of groundwater without affecting the water table

(B) The withdrawal of groundwater at a rate that exceeds its natural replenishment rate

(C) The pumping of groundwater only during dry seasons

(D) The usage of groundwater for irrigation purposes exclusively

280. Water which infiltrates the soil surface and then moves laterally through the upper soil horizons towards the stream channels above the main groundwater table is known as

i. interflow

ii. subsurface runoff

iii. storm seepage

(A) Only (i)

(B) Only (i) and (ii)

(C) Only (iii)

(D) (i), (ii) and (iii)

M

281. Which of the following is/are the assumptions of the unit hydrograph theory?

i. The effective rainfall is uniformly distributed within its duration

ii. For a given drainage basin, the hydrograph of runoff due to a given period of rainfall reflects the unchanging characteristics of the basin

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

282. In hydrogeology, an isochrone represents

(A) a line connecting points of equal groundwater head

(B) a line representing points that experience equal travel time of groundwater

(C) a contour line showing equal depth to the water table

(D) a curve depicting equal rates of groundwater recharge

283. The Muskingum method is primarily used in hydrology for

(A) Estimating peak rainfall intensity

(B) Routing flood waves through a river channel or reservoir

(C) Measuring groundwater recharge rates

(D) Predicting evaporation losses from open water bodies

284. Which of the following best defines the Time of Concentration in the context of watershed runoff?

(A) The time it takes for the first drop of rain to reach the watershed outlet

(B) The time it takes for the entire watershed to contribute to runoff at the outlet

(C) The time required for the evaporation to occur across the watershed

(D) The time it takes for groundwater to recharge after rainfall

285. Which of the following statements is/are true for plastic limit?

i. Plastic limit is the water content above which the soil stops behaving as a plastic material

ii. At plastic limit, soil begins to crumble when rolled into a thread of a soil of 3 mm diameter

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

286. Which of the following statements is/are true for shrinkage limit?

i. If the soil is dried beyond the shrinkage limit, it will show large volume changes

ii. Shrinkage limit is the minimum water content at which the soil is saturated

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

287. Which of the following best describes Thixotropy?

(A) The property of a fluid to resist flow when under stress

(B) The ability of a material to become more viscous over time

(C) The process where a material becomes fluid when shaken or agitated and solidifies when left undisturbed

(D) The tendency of a material to harden upon continuous deformation

288. Which of the following statements is/are false?

i. Clay particles have a flaky shape

ii. Sand grains generally have a rounded shape

(A) Only (i)

(B) Only (ii)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

289. Net ultimate bearing capacity of a footing in a clay stratum

(A) is independent of depth and size of the footing

(B) increases with both depth and size of the footing

(C) increases only with depth of the footing

(D) increases only with size of the footing

290. What is the primary purpose of conducting a Pycnometer test in soil mechanics?

(A) To determine the specific gravity of soil solids

(B) To measure the water content of soil

(C) To assess the compaction of soil

(D) To calculate the permeability of soil

291. Which of the following is/are the demerit(s) of a Triaxial test?

i. The specimen is free to fail on the weakest plane

ii. Formation of dead zones takes place at each end of the specimen

(A) Only (i)
(B) Only (ii)
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

292. Which of the following statements is/are true for Unconfined Compression Test (UCT)?

i. UCT is a special form of triaxial test in which the confining pressure is zero

ii. UCT can be conducted only on sandy soils which can withstand without confinement

(A) Only (i)
(B) Only (ii)
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

293. Which of the following statements is/are true regarding Wash Boring?

i. Wash boring is mainly used for advancing a hole in the ground. Once the hole has been drilled, a sampler is inserted to obtain soil samples for testing in a laboratory.

ii. The method is suitable for taking good quality undisturbed samples above ground water

(A) Only (i)
(B) Only (ii)
(C) Both (i) and (ii)
(D) Neither (i) nor (ii)

294. The Wilcox Diagram is primarily used to evaluate which of the following characteristics?

(A) Soil permeability
(B) Suitability of water for irrigation based on salinity and sodium hazard
(C) Water table fluctuations in aquifers
(D) Sediment transport in rivers

295. The Swedish Circle Method, used for slope stability analysis, is based on which of the following assumption(s)?

i. The failure surface is a circular arc

ii. The soil mass behaves elastically during failure

iii. The slope is homogeneous and isotropic

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

296. Which of the following is an assumption made in Rankine's Earth Pressure Theory?

(A) The soil is anisotropic and partially saturated

(B) The wall has friction with the backfill

(C) The ground surface is planar and horizontal

(D) The backfill material is cohesive and heterogeneous

297. The Oedometer test is primarily used to determine which of the following property/properties of soil?

i. Consolidation characteristics

ii. Permeability

iii. Shear strength

(A) Only (i)

(B) Only (i) and (ii)

(C) Only (ii) and (iii)

(D) (i), (ii) and (iii)

298. Which of the following statements is/are true for Loess?

i. It is predominantly a silt-sized sediment that is formed by the accumulation of wind-blown dust

ii. It is usually homogenous

iii. It is non-porous

(A) Only (i)

(B) Only (i) and (ii)

(C) Only (ii) and (iii)

(D) (i), (ii) and (iii)

299. Newmark's Influence Chart is primarily used in the analysis of

(A) Earth pressure on retaining walls

(B) Load distribution in structures

(C) Slope stability and potential failure surfaces

(D) Foundation settlement and bearing capacity

300. Electro-osmosis is primarily used to

(A) Determine the permeability of soil

(B) Consolidate fine-grained soils using an electric field

(C) Increase the shear strength of granular soils

(D) Purify the ground water