

ESP - 1

PROVISIONAL ANSWER KEY

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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 herewith 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) 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 પ્રશ્નપ્રમાણે 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 પ્રશ્ન ક્રમાંક મુજબ અને તે સંદર્ભમાં રજૂ કરવા.
- (4) માસ્ટર પ્રશ્નપત્ર માં 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-સૂચન ધ્યાનમાં 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) પરીક્ષામાં હાજર રહેલ ઉમેદવાર જ વાંધા - સૂચન રજૂ કરી શકશે .
- (8) ઉમેદવારે વાંધા-સૂચન સાથે પોતાની જવાબવહીની નકલ બિડાણ કરવાની રહેશે.

001. મહાયાન બૌદ્ધ દર્શન (Buddhism) બે દાર્શનિક શાખાઓ ધરાવે છે. નીચેના પૈકી કઈ એ મહાયાન બૌદ્ધ દર્શન સાથે સંકળાયેલ છે ?
- (A) માધ્યમિક અને યોગચાર (Madhyamika and Yogachara)
 (B) વિજ્ઞાનવાદ અને સ્થાવિરવાદ (Vignanavada and Sthaviravada)
 (C) મહાસંધિકા અને થેરાવાદ (Mahasanghika and Theravada)
 (D) આચાર્યવાદ અને સર્વાસિવાદ (Acharyavada and Sarvasivada)
002. 'શોણ સંસ્કૃતિ' (Soan culture) એ સંસ્કૃતિ માટે વપરાતું અન્ય નામ છે.
- (A) મધ્ય પાષાણયુગ સંસ્કૃતિ (Middle Paleolithic culture)
 (B) Lower Paleolithic culture
 (C) Upper Paleolithic culture
 (D) Mesolithic culture
003. નીચે આપેલ જૂથ 'A' ને જૂથ 'B' સાથે યોગ્ય રીતે જોડો.
- | | |
|---|---|
| <p>A</p> <p>a. શંકર દેવ</p> <p>b. ચૈતન્ય દેવ</p> <p>c. બાસવેશ્વર</p> <p>d. નાભદાસ</p> <p>(A) a - 2, b - 1, c - 4, d - 3</p> <p>(C) a - 4, b - 3, c - 2, d - 1</p> | <p>B</p> <p>1. રસિક પરંપરા (Rasik School)</p> <p>2. વીર શૈવ પરંપરા (Veer Shaiva School)</p> <p>3. ગૌડિયા પરંપરા (Gaudiya School)</p> <p>4. મહાપુરૂષીય પરંપરા (Mahapurushiya School)</p> <p>(B) a - 2, b - 3, c - 1, d - 4</p> <p>(D) a - 1, b - 2, c - 3, d - 4</p> |
|---|---|
004. નીચે આપેલ જૂથ 'A' ને જૂથ 'B' સાથે યોગ્ય રીતે જોડો.
- | | |
|---|--|
| <p>A</p> <p>a. કાહે કોયલ શોર મચાચે</p> <p>b. ઔરંગઝેબ</p> <p>c. એક લાલાની રાણી</p> <p>d. આઠમા તારાનું આકાશ</p> <p>(A) a - 3, b - 4, c - 1, d - 2</p> <p>(C) a - 4, b - 3, c - 2, d - 1</p> | <p>B</p> <p>1. સૌમ્ય જોશી</p> <p>2. હરિશ નાગ્રેચા</p> <p>3. ચીનુ મોદી</p> <p>4. લાભશંકર ઠાકર</p> <p>(B) a - 1, b - 2, c - 3, d - 4</p> <p>(D) a - 2, b - 1, c - 4, d - 3</p> |
|---|--|
005. નીચેના પૈકી કયું સ્થળ એ ત્રણ નદીઓ કપિલા, સરસ્વતી અને હિરણ્યાના સંગમ સ્થાને સ્થિત છે ?
- (A) ચાણોદ (B) દ્વારકા (C) ભાલકા (D) મોઢેરા
006. ગુજરાતમાં કયા સ્થળે સપ્તયાતન પ્રકારનું મંદિર સ્થિત છે ?
- (A) ચક્રભરૂત (Chakrabharut) (B) ધારાસંવેલ (Dharasanvel)
 (C) કાલાવાડ (Kalavad) (D) સારામા (Sarama)
007. નીચેના પૈકી કોણે એકેશ્વરવાદ અને નિર્ગુણ ભક્તિના સિદ્ધાંતને ટેકો આપ્યો ?
- (A) તુલસીદાસ (B) મીરાબાઈ (C) શંકર દેવ (D) કબીર

001. The Mahayana Buddhism had two philosophical schools. Which of the following belonged to Mahayana Buddhism?

- (A) Madhyamika and Yogachara (B) Vignanavada and Sthaviravada
(C) Mahasanghika and Theravada (D) Acharyavada and Sarvasivada

002. 'Soan culture' is another name for _____.

- (A) Middle Paleolithic culture (B) Lower Paleolithic culture
(C) Upper Paleolithic culture (D) Mesolithic culture

003. Match the groups

A

- a. Sankardev
b. Chaitanyadev
c. Basveshwar
d. Nabhdas

- (A) a - 2, b - 1, c - 4, d - 3.
(C) a - 4, b - 3, c - 2, d - 1.

B

1. Rasik School
2. Veershaiva School
3. Gaudiya School
4. Mahapurushiya School

- (B) a - 2, b - 3, c - 1, d - 4
(D) a - 1, b - 2, c - 3, d - 4

004. Match the groups

A

- a. Kahe koyal shor Machaye
b. Aurangazeb
c. Ek lalani Rani
d. Athama Taranu Akash

- (A) a - 3, b - 4, c - 1, d - 2.
(C) a - 4, b - 3, c - 2, d - 1.

B

1. Saumya Joshi
2. Harish Nagrecha
3. Chinu Modi
4. Labhsankar Thaker

- (B) a - 1, b - 2, c - 3, d - 4
(D) a - 2, b - 1, c - 4, d - 3

005. Which place is situated at a confluence of three rivers—Kapila, Saraswati and Hiranya?

- (A) Chanod (B) Dwaraka
(C) Bhalka (D) Modhera

006. In Gujarat where was the temple of Saptayatan type located?

- (A) Chakrabhrut (B) Dhrasanvel
(C) Kalavad (D) Sarama

007. Who has supported the principle of monotheism and nirgunabhakti?

- (A) Tulsidas (B) Mirabai
(C) Shankardev (D) Kabir

008. કપાસના દોરડા (સાંકળ)ની મદદથી કમરની આજુ બાજુ (Loin cloth) (કટિ પ્રદેશ પર વીંટવાનું વસ્ત્ર) (કસૂટા) બાંધીને પહેરવાનો સ્થાનિક પહેરવેશ કઈ જાતિનો છે ?
 (A) ભીલ (B) કણબી (C) વરલી (D) ગામીત
009. નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
 (A) બરોડા સંગ્રહાલય અને ચિત્ર ગેલેરી એ તેના સંગ્રહમાં ઈજીપ્તના મમ્મી (Mummy) ધરાવે છે.
 (B) કચ્છ સંગ્રહાલય એ મુથુવા કાપડ ધરાવે છે.
 (C) બંને (A) અને (B)
 (D) (A) અથવા (B) એક પણ નહીં
010. નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
 (A) પ્રાકૃત એ પાલીમાંથી ઉતરી આવેલ છે.
 (B) પાલી ભાષા એ સંસ્કૃત કરતાં પ્રાચીન છે.
 (C) બંને (A) અને (B)
 (D) (A) અથવા (B) એક પણ નહીં
011. નીચેના પૈકી કઈ એ પ્રથમ ભારતીય ફિલ્મ હતી કે જે વિદેશી ભાષાની શ્રેષ્ઠ ફિલ્મ માટે (Oscar) માં નામાંકિત થઈ હતી ?
 (A) પાથેર પાંચાલી (B) મધર ઈન્ડિયા
 (C) મિર્ઝા ગાલીબ (D) કાગઝ કે ફૂલ
012. ‘બહુજન હિતાય બહુજન સુખાય’ એ નો મુદ્રાલેખ છે.
 (A) ઓલ ઈન્ડિયા રેડિયો (All India Radio)
 (B) દુરદર્શન (Doordarshan)
 (C) ઈન્ડિયન કાઉન્સિલ ઓફ હેન્ડીક્રાફ્ટ (Indian Council of Handicrafts)
 (D) સાહિત્ય અકાદમી (Sahitya Academi)
013. ભારતીય રાષ્ટ્રીય સેના (Army) વિશે નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
 1. તે હિંદ છોડો ચળવળની નિષ્ફળતા બાદ રચવામાં આવ્યું.
 2. INA નો સૌ પ્રથમ વિચાર એ સુભાષચંદ્ર બોઝને મલાયામાં આવ્યો હતો.
 3. INA એ જાપાની સેના દ્વારા ઊભી કરવામાં આવી હતી અને ભારતના સ્વાતંત્ર્ય સુધી તેમના દ્વારા તેને મદદ કરવામાં આવી હતી.
 નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
 (A) 1, 2 અને 3 (B) માત્ર 1
 (C) માત્ર 2 અને 3 (D) ઉપરના પૈકી એક પણ નહીં
014. ચતુર્થ બૌદ્ધ પરિષદ બાબતે નીચેના પૈકી કયું વિધાન સત્ય છે ?
 (A) ચતુર્થ બૌદ્ધ પરિષદ પાટલિપુત્રમાં યોજાઈ હતી.
 (B) ચતુર્થ બૌદ્ધ પરિષદ એ રાજગૃહમાં યોજાઈ હતી અને અજાતશત્રુ દ્વારા તેને આશ્રય આપવામાં (પ્રોત્સાહિત કરવામાં) આવી હતી.
 (C) ચતુર્થ બૌદ્ધ પરિષદ એ કાશ્મીરમાં યોજાઈ હતી અને કનિષ્ક દ્વારા તેને આશ્રય આપવામાં (પ્રોત્સાહિત કરવામાં) આવી હતી.
 (D) પ્રથમ બૌદ્ધ પરિષદ એ કાશ્મીરમાં યોજાઈ હતી અને અજાતશત્રુ દ્વારા તેને આશ્રય આપવામાં (પ્રોત્સાહિત કરવામાં) આવી હતી.

008. Loin cloth (kasuta) fixe around the waist with the help of cotton cords (sankad) is the indigenous dress of which tribe?
- (A) Bhil (B) Kunbis
(C) Warlis (D) Gamits
009. Which of the following statements is/are correct?
- (A) The Baroda Museum and Picture Gallery has an Egyptian Mummy in its collection.
(B) Kutch Museum has Muthuva Textiles
(C) Both (A) and (B)
(D) Neither (A) nor (B)
010. Which of the following statements is/are correct?
- (A) Prakrit has been derived out of Pali.
(B) Pali language is older than Sanskrit
(C) Both (A) and (B)
(D) Neither (A) nor (B)
011. Which was the first Indian film to be nominated for Oscar for best foreign language film
- (A) Pather Panchali (B) Mother India
(C) Mirza Ghalib (D) Kagaz ke phool
012. 'BahujanHitaya BahujanSukhaya' is the motto of _____.
- (A) All India Radio (B) Doordarshan
(C) Indian Council of Handicrafts (D) Sahitya Academi
013. Which of the following statements is/are correct regarding Indian National Army?
1. It was formed after the failure of Quit India movement.
 2. The idea of the INA was first conceived in Malaya by Subhash Chandra Bose.
 3. The INA was raised by the Japanese Army and supported by them till India's Independence.
- (A) 1, 2 and 3 (B) 1 only
(C) 2 and 3 only (D) None of the above
014. Which of the following statements is correct about the fourth Buddhist council?
- (A) Fourth Buddhist Council was held in Pataliputra
(B) Fourth Buddhist Council was held in Rajgriha and patronized by Ajatasatru
(C) Fourth Buddhist Council was held in Kashmir and patronized by Kanishka
(D) First Buddhist Council was held in Kashmir and patronized by Ajatasatru

015. જૈન ધર્મ વિશે નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
 1. જૈનો વેદમાં માને છે.
 2. તેઓ આત્માના અસ્તિત્વને સ્વીકારે છે.
 3. કુલ 24 તીર્થંકરો હતા કે જેમણે વાસ્તવમાં જૈન દર્શનની સ્થાપના કરી.
 નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
 (A) માત્ર 1 (B) માત્ર 2 અને 3 (C) માત્ર 1 અને 2 (D) 1, 2 અને 3
016. પાથાલગાડી (Pathalgadi) ચળવળ એ નીચેના પૈકી કયા રાજ્ય સાથે સંબંધિત છે ?
 (A) મણિપુર (B) ઝારખંડ (C) આસામ (D) નાગાલેન્ડ
017. રાજા રામ મોહન રાય નીચેના પૈકીની કઈ સંસ્થાઓ સાથે સંકળાયેલા હતા ?
 1. આત્મીય સભા
 2. તત્વ બોધીની સભા
 3. સાધારણ બ્રહ્મો સમાજ
 નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
 (A) માત્ર 1 (B) માત્ર 1 અને 2
 (C) માત્ર 2 અને 3 (D) 1, 2 અને 3
018. ચોલા (Chola) વહીવટીતંત્રના સંદર્ભમાં “કુરરમ્સ” (Kurrams)નો અર્થ શું થાય છે ?
 (A) મોટા જમીન માલિકો (B) કૃષિ મજૂરો
 (C) ગ્રામ સંઘો (D) વ્યાપારી બજાર
019. ભારતના Imperial Gazetteer એ નોંધ્યું છે કે બોમ્બે પ્રેસીડેન્સી હેઠળના સ્થળો એ 1857ના વિપ્લવના સાક્ષી હતા.
 (A) રાજકોટ, સુરત (B) ભાવનગર, વડોદરા અને ગુલબર્ગ
 (C) જૂનાગઢ અને ગુલબર્ગ (D) કરાંચી, અમદાવાદ અને કોલ્હાપુર
020. પ્રાચીન ભારતમાં આક્રમણકારોના ઘટના ક્રમ બાબતે નીચેના પૈકી કયો ક્રમ સાચો છે ?
 (A) ગ્રીક – શક – કુષાણ (B) ગ્રીક – કુષાણ – શક
 (C) શક – ગ્રીક – કુષાણ (D) શક – કુષાણ – ગ્રીક
021. બુલંદ દરવાજા વિશે નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
 (A) બુલંદ દરવાજા એ અકબર દ્વારા તેણે ગુજરાત પર મેળવેલ વિજયની યાદગીરી રૂપે બાંધવામાં આવ્યો હતો.
 (B) તે એક સ્વતંત્ર ઈમારતીય રચના ધરાવે છે કારણ કે તે કોઈ મોટા સ્થાપત્યકીય બાંધકામના ભાગ રૂપ નથી.
 (C) (A) અને (B) બંને
 (D) (A) અથવા (B) એક પણ નહીં
022. ઐતિહાસિક પૂરાવાઓની હકીકતોના આધારે, ગુજરાતમાં સ્થિત સુદર્શન તળાવનો જીર્ણોદ્ધાર ગુપ્તયુગ દરમ્યાન કરવામાં આવ્યો, તે પહેલાં કયા રાજાએ તેનો જીર્ણોદ્ધાર કરાવ્યો હતો ?
 (A) ચંદ્રગુપ્ત મૌર્ય (B) અશોક
 (C) રૂદ્રદામન - પહેલો (D) ઉપરના પૈકી એક પણ નહિ

015. Which of the following statements is/are correct regarding Jainism?
1. The Jains believe in the Vedas
 2. They admit the existence of a soul.
 3. There were twenty-four Tirthankaras, who actually established the Jaina darshan.
- (A) 1 only (B) 2 and 3 only
(C) 1 and 2 only (D) 1, 2 and 3
016. The Pathalgadi Movement is related to which of the following states?
- (A) Manipur (B) Jharkhand
(C) Assam (D) Nagaland
017. With which of the following associations, Raja Rammohan Roy is associated?
1. Atmiya Sabha.
 2. Tattva Bodhini Sabha.
 3. Sadharan Brahmo Samaj.
- (A) 1 only (B) 1 and 2 only
(C) 2 and 3 only (D) 1, 2 and 3
018. With reference to Chola Administration what is the meaning of “Kurrams”?
- (A) Big landowners (B) Agricultural labourers
(C) Village Unions (D) Trading market
019. The Imperial Gazetteer of India observed that the following places of Bombay presidency witnessed the revolt of 1857 _____.
- (A) Rajkot, Surat (B) Bhavnagar, Vadodara and Gulbarga
(C) Junagadh and Gulbarga (D) Karachi, Ahmedabad and Kolhapur
020. Which one of the following is the correct chronological order regarding to Invaders in ancient India?
- (A) Greeks-Sakas-Kushans (B) Greeks-Kushans-Sakas
(C) Sakas-Greeks-Kushans (D) Sakas-Kushans-Greeks
021. Which of the following statements is/are correct regarding Buland Darwaza?
- (A) Buland Darwaza was built by Akbar to commemorate his victory over Gujarat.
 - (B) It is independent structure because it is not part of any major architectural building.
 - (C) Both (A) and (B)
 - (D) Neither (A) nor (B)
022. According to historical evidence, which king renovated the Sudarshan Lake located in the state of Gujarat before its renovation during Gupta period?
- (A) Chandragupta Maurya (B) Ashoka
(C) Rudradaman-I (D) None of the above

023. નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?

1. કુમારપાળ એ ગુજરાતના અશોક કહેવાય છે.
2. રૂદ્રમહાલય એ સૌ પ્રથમ મૂળરાજ દ્વારા બાંધવામાં આવ્યો હતો.
3. ગુજરાતના સોલંકી વંશના મોટાભાગના રાજાઓ શૈવ સંપ્રદાય અનુસરતા હતા.
4. પાટણ ખાતેની રાણ-કી-વાવ એ રાણી રૂપમતી દ્વારા બાંધવામાં આવી હતી.

નીચેના પૈકી વિકલ્પ પસંદ કરો.

- (A) માત્ર 1, 2 અને 3 (B) માત્ર 2 અને 4
(C) માત્ર 1 અને 3 (D) 1, 2, 3 અને 4

024. નીચેના પૈકી કઈ જોડી યોગ્ય રીતે જોડાયેલી નથી ?

- (A) ઈન્ડિયન સોશીયોલોજીસ્ટ (Indian Sociologist) (London) – શ્યામજી કૃષ્ણ વર્મા
(B) વંદે માતરમ (Vande Mataram) (Paris) – મેડમ કામા
(C) ફ્રી હિન્દુસ્તાન (Free Hindustan) (Vancouver) – તારકનાથ દાસ
(D) તલવાર (Talwar) (Berlin) – સુરેન્દ્રનાથ ચેટરજી

025. એ લખેલી 'આનંદમઠ' જેવી ઐતિહાસિક નવલકથા દ્વારા ભારતીયોમાં રાષ્ટ્રવાદની ભાવના જગાવી.

- (A) બંકિમચંદ્ર (B) ગિરીશચંદ્ર (C) બિપીનચંદ્ર (D) નાબગોપાલ

026. નીચેના પૈકી કોણે નવાનગર રાજ્યનો પાયો નાખ્યો ?

- (A) જામ રાવલજી (B) રણમલજી (C) સાફાજી (D) જામ વિભાજી

027. સર સયાજીરાવ ગાયકવાડ ત્રીજાના શાસન દરમ્યાન ડૉ. બી.આર. આંબેડકરે કયો હોદ્દો ધારણ કર્યો હતો ?

- (A) ગૃહ સચિવ (B) સેના સચિવ
(C) કાયદા અને ન્યાય મંત્રી (D) ઉપરના પૈકી એક પણ નહીં

028. નીચેના પૈકી કઈ જોડી/જોડીઓ સત્ય છે ?

1. સમુદ્રગુપ્ત – પ્રાચીન ભારતના નેપોલિયન
2. ચંદ્રગુપ્ત બીજો – મેહરોલી ખાતે લોહ સ્તંભ તૈયાર કરાવ્યો.
3. કુમાર ગુપ્ત – વિક્રમશીલા વિશ્વવિદ્યાલયની સ્થાપના કરી.
4. સ્કંદગુપ્ત – હુણોને હરાવ્યા.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

- (A) માત્ર 1 અને 3 (B) માત્ર 1, 2 અને 4 (C) માત્ર 2 અને 3 (D) 1, 2, 3 અને 4

029. જવાહરલાલ નેહરૂએ કયા અધિનિયમ (Act) વિશે કહ્યું હતું કે “આપણને તમામ બ્રેક સાથેની કાર પૂરી પાડવામાં આવી છે અને એજીન વગરની”

- (A) 1919નો અધિનિયમ (Act of 1919)
(B) ક્રિપ્સ દરખાસ્ત (Cripps Proposal)
(C) 1935નો અધિનિયમ (Act of 1935)
(D) 1941ની ઓગસ્ટ દરખાસ્ત (August offe 1941)

023. Which of the following statements is/are correct?
1. Kumarpala is called Ashoka of Gujarat
 2. Rudra Mahalaya was first constructed by Mulraj
 3. Most of the Solanki rulers of Gujarat were following Shaivism
 4. Rani-ki-Vav at Patan was constructed by Queen Rupmati
- (A) 1, 2 and 3 only (B) 2 and 4 only
(C) 1 and 3 only (D) 1, 2, 3 and 4
024. Which of the following pairs is INCORRECTLY matched?
- (A) Indian Sociologist (London) - Shyamaji Krishna Varma
(B) Vande Mataram (Paris) - Madame Cama
(C) Free Hindustan (Vancouver) - Taraknath Das
(D) Talwar (Berlin) - Surendranath Chatterjee
025. Through his historical novels like Anandmath, _____ struck a note of nationalism among Indians.
- (A) Bankim Chandra (B) Girish Chandra
(C) Bepin Chandra (D) Nabagopal
026. Who among the following laid the foundation of Nawanagar state?
- (A) Jam Ravalji (B) Ranmalji
(C) Safaji (D) Jam Vibhaji
027. Which post did Dr B.R. Ambedkar occupy under the rule of Sir Sayajirao Gaekwad III?
- (A) Home Secretary (B) Military Secretary
(C) Minister of Law and Justice (D) None of the above
028. Which of the following pairs is/are correct?
1. Samudragupta - Napoleon of ancient India
 2. Chandragupta II - erected iron pillar at Mehrauli
 3. Kumargupta - Founded Vikramshila University
 4. Skandgupta - Defeated the Hunas
- (A) 1 and 3 only (B) 1, 2 and 4 only
(C) 2 and 3 only (D) 1, 2, 3 and 4
029. About which Act, Jawaharlal Nehru had said that “we were provided with a car with all brakes and no engine”.
- (A) Act of 1919 (B) Cripps Proposal
(C) Act of 1935 (D) August offer 1941

030. વર્ષાભિમુખ અને વર્ષાછાયાના ક્ષેત્રોએ નીચેના પૈકી કયા પ્રકારની વરસાદની લાક્ષણિકતાઓ છે ?
 (A) સંવહનિક (Conventional) (B) ભૃપૃષ્ઠ (Orographic)
 (C) ચક્રવાત (Cyclonic) (D) ઉષ્ણતા (Thermal)
031. કાશ્મીર ખીણ એ ક્ષેત્રની વચ્ચે આવેલ છે.
 (A) પિરપાંજલ પર્વતમાળા અને ધોલાધાર પર્વત માળા
 (B) ઝાસ્કર્સ પર્વત અને લડાખ પર્વતમાળા
 (C) કારાકોરમ પર્વતમાળા અને પિરપાંજલ પર્વતમાળા
 (D) પિરપાંજલ પર્વતમાળા અને હિમાદ્રિ પર્વતમાળા
032. નીચેના પૈકી ભારતના કયા રાજ્યમાં ક્ષારથી અસરગ્રસ્ત ખરાબા (Wasteland) નો સૌથી વધુ વિસ્તાર નોંધાયેલ છે ?
 (A) ઉત્તર પ્રદેશ (B) આંધ્ર પ્રદેશ (C) તમિલનાડુ (D) રાજસ્થાન
033. નીચેના પૈકી કયા કિરણો એ સૌર વર્ણપટ (Spectrum)ની કુલ ઊર્જાના 50 પ્રતિશત હિસ્સો ધરાવે છે ?
 (A) પારજંબલી કિરણો (Ultraviolet rays) (B) દૈશ્ય પ્રકાશ કિરણો (Visible rays)
 (C) અવરક્ત કિરણો (Infrared rays) (D) દીર્ઘ તરંગો (Long waves)
034. નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
 (A) ઉષ્ણકટિબંધીય નિત્યલીલાં જંગલો એ ચોમાસુ (Monsoon) જંગલો પણ કહેવાય છે.
 (B) ઉષ્ણકટિબંધીય પાનખર જંગલો એ ભારતમાં સૌથી વિશાળક્ષેત્રમાં ફેલાયેલા જંગલો છે.
 (C) (A) અને (B) બંને
 (D) (A) અથવા (B) એક પણ નહીં
035. 2011ની ગુજરાતની કુલ વસ્તી અનુસાર 0 થી 14 વર્ષનું વય જૂથ એ ગુજરાતની વસ્તીના હિસ્સો ધરાવતું હતું.
 (A) 19.2% (B) 15.25% (C) 20.31% (D) 18.25%
036. નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
 1. કચ્છ દ્વિપકલ્પ એ સમુદ્ર અને લાગુ નથી ઘેરાયેલો દ્વિપ પ્રદેશ હતો.
 2. કચ્છના ઉત્તર ભાગે ક્ષાર પ્લાવિત મેદાન એ મોટું રણ છે.
 3. ગુજરાતનું મેદાન એ કચ્છ અને કાઠીયાવાડના પૂર્વ વિસ્તારમાં આવેલ છે તથા પશ્ચિમ અને દક્ષિણ પશ્ચિમ તરફ ઢોળાવવાળું છે.
 નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
 (A) 1, 2 અને 3 (B) માત્ર 2 અને 3 (C) માત્ર 1 અને 3 (D) માત્ર 1 અને 2
037. ભારતના આયોજન પંચ દ્વારા દરખાસ્ત કરવામાં આવેલ કૃષિ આબોહવાકીય (Agro-climate) ક્ષેત્રો શેના આધાર પર કરવામાં આવેલ છે ?
 (A) જમીનનો પ્રકાર, આબોહવા (તાપમાન અને વરસાદ) તથા જળસ્ત્રોતો
 (B) વરસાદ, તાપમાન, પાણી-નિકાલ (Drainage) તથા પાક હેઠળનો વિસ્તાર
 (C) આબોહવા, વનસ્પતિ સૃષ્ટિ, જમીન તથા ભૂમિનો ઉપયોગ
 (D) ઉપસાવ (Relief), ભૂમિનો ઉપયોગ, આબોહવા તથા વાવણી હેઠળનો ચોખ્ખો વિસ્તાર

030. The rain-fed and rain-shadow areas, are the characteristics of which type of the following rainfall?
 (A) Conventional (B) Orographic
 (C) Cyclonic (D) Thermal
031. The valley of Kashmir lies between _____.
 (A) Pir Panjal range and Dhola Dhar range
 (B) Zaskars mountain and Ladakh range
 (C) Karakoram range and Pir Panjal range
 (D) Pir Panjal range and the Himadri range
032. Among the Indian states which one records highest area under salt affected wasteland?
 (A) Uttar Pradesh (B) Andhra Pradesh
 (C) Tamil Nadu (D) Rajasthan
033. Which one of the following rays carry 50 percent of the total energy of the Solar Spectrum?
 (A) Ultraviolet rays (B) Visible rays
 (C) Infrared rays (D) Long waves
034. Which of the following statements is/are correct?
 (A) Tropical Evergreen forests are also called as the monsoon forests.
 (B) Tropical Deciduous forests are the most widespread forests in India.
 (C) Both (A) and (B)
 (D) Neither (A) nor (B)
035. The share of 0 to 14 years old population in total population of Gujarat in 2011 was _____.
 (A) 19.2% (B) 15.25%
 (C) 20.31% (D) 18.25%
036. Which of the following statements is/are correct?
 1. The Kutch Peninsula was an island surrounded by seas and lagoons.
 2. Salt-soaked plain to the north of Kutch is the Great Rann.
 3. The Gujarat Plain lies east of Kachchh and Kathiawar and slopes towards the west and south west.
 (A) 1, 2 and 3 (B) 2 and 3 only
 (C) 1 and 3 only (D) 1 and 2 only
037. What are the bases of agro-climatic regions proposed by the Planning Commission of India?
 (A) Soil type, climate (temp & rainfall) and water resources
 (B) Rainfall, temperature, drainage and cropped area
 (C) Climate, vegetation, soil and land use
 (D) Relief, land use, climate and net sown area

038. ભારતના દ્વિપકલ્પ ઉચ્ચપ્રદેશનો સૌથી મોટો એકમ (Largest unit) નીચેના પૈકી કયો છે ?
 (A) કેન્દ્રીય જમીન ઉચ્ચપ્રદેશ (Central High Land) (B) માળવા ઉચ્ચપ્રદેશ
 (C) દખ્ખણનો ઉચ્ચપ્રદેશ (D) મેઘાલયનો ઉચ્ચપ્રદેશ
039. નર્મદા નદી વિશે નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
 1. તે દેશની પાંચમા ક્રમની સૌથી લાંબી નદી છે.
 2. તે મધ્યપ્રદેશ, મહારાષ્ટ્ર અને ગુજરાતમાંથી પસાર થાય છે.
 3. ઉદ્ગમથી સમુદ્ર સુધીની નદીની કુલ લંબાઈ 2400 કિલોમીટર છે.
 નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
 (A) 1, 2 અને 3 (B) માત્ર 2 અને 3 (C) માત્ર 1 અને 3 (D) માત્ર 1 અને 2
040. નીચેના પૈકીની કઈ નદીઓના આંતર જોડાણ અંગેની દરખાસ્ત ગુજરાત સરકાર દ્વારા મૂકવામાં આવી હતી ?
 1. ઉકાઈ - પૂર્ણા 2. દેવ - સુખી 3. કડાણા - ભાદર
 નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
 (A) માત્ર 1 અને 2 (B) માત્ર 2 અને 3 (C) માત્ર 1 અને 3 (D) 1, 2 અને 3
041. ગુજરાતની નીચેના પૈકીની કઈ આબોહવાકીય તથા ભૌગોલિક પરિસ્થિતિઓ એ કપાસના ઉત્પાદન માટે સાનુકૂળ વાતાવરણ ધરાવે છે ?
 1. 21°C થી 30°C વચ્ચેનું તાપમાન
 2. 150-175 સેમી. વચ્ચેનો વરસાદ
 3. ગાઢ (Deep) કાળી જમીન
 નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
 (A) માત્ર 1 (B) માત્ર 2 અને 3 (C) માત્ર 1 અને 3 (D) 1, 2 અને 3
042. ભારતમાં પાકની ઋતુઓ બાબતે નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
 1. ખરીફ ઋતુ એ મહદંશે દક્ષિણ પશ્ચિમી વર્ષાઋતુ સાથે સંયોગ (Coincides) ધરાવે છે.
 2. શિયાળાના પ્રારંભ સાથે રવિ ઋતુની શરૂઆત થાય છે.
 3. ઝૈડ (Zaid) એ રવિ પાકની લણણી બાદ શરૂ થતી ટૂંકા સમયગાળાની ઉનાળુ પાકની ઋતુ છે.
 નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
 (A) માત્ર 1 (B) માત્ર 1 અને 2 (C) માત્ર 3 (D) 1, 2 અને 3
043. નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
 1. કુદરતી ગેસ ગોડવાના પથરાળ ખડકો (beds)માં ઉપલબ્ધ થાય છે.
 2. કુધ્રેમુક (Kudhremuk) અને ગંગામુલાઈ (Gangamulai) મેગ્નેટાઈટ કાચી ધાતુનો વિશાળ અનામત જથ્થો ધરાવે છે.
 3. ધારવારના ખડકો પેટ્રોલીયમ માટે પ્રખ્યાત છે.
 નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
 (A) 1 તથા 2 (B) માત્ર 2 (C) માત્ર 2 અને 3 (D) 1, 2 અને 3

038. Which of the following is the largest unit of the peninsular plateau of India?
 (A) The Central High Land (B) The Malwa Plateau
 (C) The Deccan Plateau (D) The Meghalaya Plateau
039. Which of the following statements is/are correct regarding river Narmada?
 1. It is the fifth largest river in the country
 2. It traverses Madhya Pradesh, Maharashtra and Gujarat
 3. The total length of the river from source to sea is 2400 kilometers
 (A) 1, 2 and 3. (B) 2 and 3 only
 (C) 1 and 3 only (D) 1 and 2 only
040. Which of the following rivers interlinking was proposed by the government of Gujarat?
 1. Ukai-Purna 2. Dev-Sukhi 3. Kadana-Bhadar
 (A) 1 and 2 only (B) 2 and 3 only
 (C) 1 and 3 only (D) 1, 2 and 3
041. Which of the following Gujarat Climatic and Geographical conditions of Gujarat is/are suitable for Cotton production?
 1. Temperature between 21 °C to 30 °C
 2. Rainfall between 150-175 cm
 3. Deep Black Soil
 (A) Only 1 (B) Only 2 and 3
 (C) Only 1 and 3 (D) 1, 2 and 3
042. Which of the following statements is/are correct regarding cropping seasons in India?
 1. Kharif season in India largely coincides with Southwest Monsoon.
 2. The Rabi season begins with the onset of winter.
 3. Zaid is a short duration summer cropping season beginning after harvesting of Rabi crops.
 (A) 1 only (B) 1 and 2 only
 (C) 3 only (D) 1, 2 and 3
043. Which of the following statements is/are correct?
 1. Natural gas occurs in the Gondwana beds
 2. Kudhremuk and Gangamulai have extensive deposits of magnetite ores
 3. Dharwars rocks are famous for petroleum
 (A) 1 and 2 (B) 2 only
 (C) 2 and 3 only (D) 1, 2 and 3

044. બાળ મૃત્યુ દર એ દ્વારા વ્યાખ્યાયિત થાય છે.
- (A) વર્ષ દરમ્યાન થયેલા પ્રતિ 1000 જીવંત જન્મ સામે મૃત જન્મની સંખ્યા
 (B) વર્ષ દરમ્યાન થયેલા પ્રતિ 1000 જીવંત જન્મ સામે જન્મ પછી તુરંત મૃત્યુ પામતા બાળકોની સંખ્યા
 (C) વર્ષ દરમ્યાન થયેલા પ્રતિ 1000 જીવંત જન્મ સામે પાંચ વર્ષની વય પ્રાપ્ત કરતાં પહેલાં મૃત્યુ પામેલા બાળકોની સંખ્યા
 (D) વર્ષ દરમ્યાન થયેલા પ્રતિ 1000 જીવંત જન્મ સામે એક વર્ષની વય પ્રાપ્ત કરતાં પહેલાં મૃત્યુ પામેલા બાળકોની સંખ્યા
045. નીચેના પૈકી કયું એ કેપીટલ ગુડ્ઝ (મૂડી માલ) તરીકે માનવામાં આવે છે ?
- (A) માલ કે જે અન્ય માલના ઉત્પાદનમાં વપરાય છે.
 (B) માલ કે જે અંતિમ ઉપભોક્તા દ્વારા વપરાશમાં લેવાય છે.
 (C) માલ કે જે સેવાઓ (Service) સંબંધિત છે.
 (D) ઉપરના તમામ
046. નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
- 1956ના ઔદ્યોગિક નીતિ ઠરાવ એ 17 ઉદ્યોગોને આરક્ષિત કર્યા.
 - 1991ની ઔદ્યોગિક નીતિ એ આ સંખ્યા ઘટાડીને 8ની કરી.
 - 1993માં આરક્ષિત યાદીમાંથી મુદ્દા 3 અને 4 રદ કરવામાં આવ્યા.
 - 2014 દરમ્યાન, રેલ્વેમાં માળખાકીય સુવિધાઓમાં ખાનગી રોકાણને અનુમતિ આપવામાં આવી.
- નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
- (A) માત્ર 1 અને 2 (B) માત્ર 2 અને 4 (C) માત્ર 1, 3 અને 4 (D) 1, 2, 3 અને 4
047. 2002માં બે ટાસ્ક ફોર્સ (કાર્ય દળ) પ્રત્યક્ષ કરનો ટાસ્ક ફોર્સ તથા પરોક્ષ કરનો ટાસ્ક ફોર્સની રચના ના અધ્યક્ષપણા હેઠળ કરવામાં આવી.
- (A) રાજા જે ચેલ્સેયા (B) વિજય એલ કેલકર (C) મનમોહન સિંહ (D) વાય. કે. અલગ
048. નીચેના પૈકી કઈ પંચવર્ષીય યોજના એ ભારતમાં Export-led Growth Strategy (નિકાસ આગેવાની વૃદ્ધિ વ્યૂહ રચના) ને અનુસરી ?
- (A) પાંચમી યોજના (B) છઠ્ઠી યોજના (C) સાતમી યોજના (D) નવમી યોજના
049. વિશ્વ બેંક દ્વારા વિશ્વના 190 દેશો માટે જારી કરવામાં આવેલ Ease of Doing Business 2020, અહેવાલમાં ભારત કયા ક્રમે આવેલ છે ?
- (A) 63 (B) 77 (C) 100 (D) 130
050. કેન્દ્રીય બજેટ 2020-21 અનુસાર વર્ષ 2019-20માં કર આવકના મુખ્ય સ્ત્રોત તરીકે નીચેના પૈકી કયા કરનો અંદાજ લગાવવામાં આવ્યો છે ?
- (A) કોર્પોરેશન કર (B) વ્યક્તિગત આવક વેરો
 (C) વસ્તુ અને સેવા કર (D) કેન્દ્રીય ઉત્પાદન શુલ્ક
051. કેન્દ્રીય બજેટ 2020 અનુસાર ભારતમાં વર્ષ 2020-21 દરમ્યાન નીચેના પૈકી કયા ખર્ચનો સૌથી વધુ અંદાજ કરવામાં આવ્યો છે ?
- (A) કેન્દ્રીય પુરસ્કૃત યોજનાઓ (B) નાણાં પંચના અનુદાન
 (C) મહેકમ (Establishment) ખર્ચ (D) વ્યાજની ચૂકવણી

044. Infant mortality rate is defined as
- (A) Number of still births per 1000 live births in a year
 (B) Number of infants dying soon after birth per 1000 live births in a year
 (C) Number of infants dying before reaching the fifth year of age per 1000 live births in a year
 (D) Number of infants dying before reaching the first year of age per 1000 live births in a year
045. Which of the following is considered as capital goods?
- (A) Goods that are used in producing other goods
 (B) Goods which are consumed by final consumer
 (C) Goods which are service related
 (D) All of the above
046. Which of the following statements is/are correct?
1. The 1956 Industrial Policy Resolution had reserved 17 industries
 2. The 1991 Industrial Policy reduced this number to 8
 3. In 1993, items 3 and 4 were deleted from the reservation list
 4. During 2014, private investment in rail infrastructure was allowed
- (A) 1 and 2 only (B) 2 and 4 only
 (C) 1, 3 and 4 only (D) 1, 2, 3 and 4
047. In 2002, two Task Forces - Task Force on Direct Taxes and Task Force on Indirect Taxes were set up under the Chairmanship of _____.
- (A) Raja J. Chelliah (B) Vijay L. Kelkar
 (C) Manmohan Singh (D) Y. K. Alagh
048. Which Five Year Plan had followed Export-led Growth strategy in India?
- (A) Fifth Plan (B) Sixth Plan
 (C) Seventh Plan (D) Ninth Plan
049. What was the rank of India as per World Bank's Ease of Doing Business 2020 Report across 190 countries?
- (A) 63 (B) 77
 (C) 100 (D) 130
050. Which of the following tax was estimated to be the major source of tax revenue in India during 2019-20 as per Union Budget 2020-21?
- (A) Corporation Tax (B) Personal Income Tax
 (C) Goods and Services Tax (D) Union excise duties
051. Which of the following expenditure is estimated to be highest in India during 2020-21 as per Union Budget 2020?
- (A) Centrally Sponsored Schemes (B) Finance Commission Grants
 (C) Establishment Expenditure (D) Interest Payments

052. જો કોઈ પણ દેશના ચૂકવણા સંતુલન (Balance of Payments) એ ધન (Positive) હોય તો નીચેના પૈકીની કઈ બાબત બનશે નહિં ?
- (A) સોનાની આયાત
(B) અન્ય દેશમાંથી ટૂંકાગાળાની તથા લાંબાગાળાની લોનની પ્રાપ્તિ
 (C) વિદેશી વિનિમય અનામત વૃદ્ધિ
 (D) અન્ય દેશોને મૂકી લોન
053. ભારતમાં વ્યાપારી ખાધને ઓછી કરવા માટે નીચેના પૈકી કયા ઉપાયો મદદરૂપ થઈ શકે ?
- (A) વિશેષ (Special) આર્થિક ક્ષેત્ર તથા નિકાસ પ્રક્રિયા ક્ષેત્રનું નિર્માણ
 (B) ચલણનું અવમૂલ્યન
(C) (A) અને (B) બંને
 (D) (A) અથવા (B) એક પણ નહીં
054. રોજગારના સંદર્ભમાં 'working age population' (કાર્યરત વય વસ્તી) એ શ્રેષ્ઠ રીતે તરીકે વ્યાખ્યાપિત કરી શકાય.
- (A) 18 વર્ષથી વધુ વય ધરાવતા લોકો
 (B) 18 થી 60 વર્ષની વય ધરાવતી વ્યક્તિઓ
 (C) 65 વર્ષથી ઓછી વય ધરાવતી વ્યક્તિઓ
(D) 15 થી 59 વર્ષની વય ધરાવતી વ્યક્તિઓ
055. નીચેના પૈકી કયું રાજ્ય એ "Reuse of Treated waste water" ની નિતિ અમલમાં મૂકનાર દેશનું પ્રથમ રાજ્ય છે ?
- (A)** ગુજરાત
 (B) મહારાષ્ટ્ર
 (C) દિલ્હી
 (D) પંજાબ
056. મહેસૂલી ખાદ્ય એ ના બરાબર (જેટલી) હોય છે.
- (A)** કુલ મહેસૂલી ખર્ચ – કુલ મહેસૂલી આવક
 (B) કુલ મહેસૂલી ખર્ચ – સરકારી ઋણ સિવાયની કુલ આવક
 (C) નાણાકીય ખાદ્ય – વ્યાજનું ચૂકવણું
 (D) ઉપરના પૈકી એક પણ નહિં
057. કોમ્પ્યુટીંગમાં વપરાશકાર (user) એ માણસ છે કે નહિ તે ચકાસવા માટે નીચેના પૈકી કયા ટેસ્ટનો ઉપયોગ કરવામાં આવે છે ?
- (A) Debugging
 (B) Cryptanalysis
(C) CAPTCHA
 (D) Black Box Testing
058. PSLV રોકેટનું આગામી નાનું પ્રતિરૂપ (model) એ છે.
- (A) Mini polar satellite launch vehicle
 (B) Cube satellite launch vehicle
(C) Small satellite launch vehicle
 (D) Multiple satellite launch vehicle
059. Chandrayan - 2s rover (6-wheeled robotic vehicle)નું નામ શું હતું ?
- (A) વિક્રમ (Vikram)
(B) પ્રાગ્યન (Pragyan)
 (C) ચંદ્ર (Chandra)
 (D) ઓરબીટર (Orbiter)
060. એક એસ્ટ્રોનોમીકલ યુનિટ (AU) (ખગોળશાસ્ત્રીય એકમ) એ આશરે બરાબર હોય છે.
- (A)** સૂર્ય અને પૃથ્વી વચ્ચેનું સરેરાશ અંતર
 (B) પૃથ્વી અને ચંદ્ર વચ્ચેનું સરેરાશ અંતર
 (C) ચંદ્ર અને સૂર્ય વચ્ચેનું સરેરાશ અંતર
 (D) ઉપર પૈકી એક પણ નહિં

052. If the Balance of Payments of any country is positive, which of the following will not happen?
(A) Import of gold
(B) Receiving of short term and long term loans from other countries
(C) Increase in foreign exchange reserve
(D) Capital loan to other countries
053. What initiatives will help in reducing trade deficit of India?
(A) Setting up Special Economic Zones and Export Processing Zones.
(B) Devaluation of Currency
(C) Both (A) and (B)
(D) Neither (A) nor (B)
054. As per the context of employment, 'working age population' is best defined as _____.
(A) People above 18 years of age
(B) Persons aged between 18 and 60 years
(C) Persons below 65 years of age
(D) People aged 15 to 59 years
055. Which is the first state in the country to have policy on "Reuse of Treated Waste Water"?
(A) Gujarat
(B) Maharashtra
(C) Delhi
(D) Punjab
056. Revenue deficit is equal to _____.
(A) Total Revenue Expenditure – Total Revenue Receipts
(B) Total Revenue Expenditure – Total Receipts except Government Borrowings
(C) Fiscal Deficit – Payment of Interest
(D) None of the above
057. Which of the following tests used in computing to check whether the user is human or not?
(A) Debugging
(B) Cryptanalysis
(C) CAPTCHA
(D) Black Box Testing
058. The upcoming smaller counterpart of PSLV rocket is _____.
(A) Mini Polar Satellite Launch Vehicle
(B) Cube Satellite Launch Vehicle
(C) Small Satellite Launch Vehicle
(D) Multiple Satellite Launch Vehicle
059. What was the name of Chandrayan-2s rover (6-wheeled robotic vehicle)?
(A) Vikram
(B) Pragyan
(C) Chandra
(D) Orbiter
060. One Astronomical Unit (AU) is approximately equal to _____.
(A) Average distance between Sun & Earth
(B) Average distance between Earth & Moon
(C) Average distance between Moon & Sun
(D) None of the above

061. ભારતનું સર્વપ્રથમ Multi Petaflo Super computer એ છે.
 (A) પરમ (PARAM) (B) આદિત્ય (AADITYA)
 (C) પ્રત્યુષ (PRATYUSH) (D) મીહીર (MIHIR)
062. દૂધમાંથી મલાઈ (Cream) અલગ કરવા માટે નીચેના પૈકીની કઈ તકનીકનો ઉપયોગ થઈ શકે ?
 (A) રંજક્રિયા (Chromatography) (B) નિસ્ચંદન (Distillation)
 (C) ગાળણક્રિયા (Filtration) (D) કેન્દ્રત્યાગી (Centrifugation)
063. છબી વિસ્તરણ (Image extension) ‘JPEG’ એ માટે વપરાય છે.
 (A) Joint Picture Export Group (B) Joint Photo Enhance Group
 (C) Joint Photo Experiment Group (D) ઉપરના પૈકી એક પણ નહિં
064. ભારતના પ્રધાનમંત્રી નરેન્દ્રમોદી અને તેમના સમકક્ષ ઈઝરાઈલના બેંજામીન નેત્યાન્યાહુ એ ભારતના નીચેના પૈકી કયા રાજ્યમાં (iCreate centre) નું ઉદ્ઘાટન કર્યું ?
 (A) હિમાચલ પ્રદેશ (B) રાજસ્થાન
 (C) પંજાબ (D) ઉપરના પૈકી એક પણ નહિં
065. વન્ય પ્રાણી સુરક્ષા અધિનિયમ, 1972 બાબતે નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
 1. તે વનસ્પતિ તેમજ પ્રાણી ક્ષેત્ર બંનેનો સમાવેશ કરે છે.
 2. રાષ્ટ્રીય ઉદ્યાનો અને વન્ય પ્રાણી અભયારણ્યો એ આ અધિનિયમ હેઠળ સ્થાપવામાં આવ્યા છે.
 3. તેનો ધ્યેય પ્રાણી શાસ્ત્રીય તથા વનસ્પતિ શાસ્ત્રીય બાગોનું ભૂતપૂર્વ પરિસ્થિત (ex situ) અનુસાર જાળવણી કરવાની બાબતને પ્રોત્સાહન આપવાનું છે.
 નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
 (A) માત્ર 1 અને 2 (B) માત્ર 1 અને 3 (C) માત્ર 2 અને 3 (D) 1, 2 અને 3
066. નીચેના પૈકીની ગુજરાતની કઈ (Wetland) (જલપ્લાવિત ક્ષેત્ર) એ રામસર સાઈટ તરીકે સુનિશ્ચિત કરવામાં આવી છે ?
 (A) ખિજારીયા (B) નળ સરોવર (C) થોળ (D) નાનું રણ
067. નીચેના પૈકીનો કયો અણુ ઊર્જા પ્લાન્ટ (Atomic Power Plant) એ ભારતમાં પરમાણુ શક્તિ (Nuclear Power) નો સૌથી મોટો ઉત્પાદક છે ?
 (A) કાકરાપાર (B) કુડાનકુલમ (C) નરોરા (D) તારાપુર
068. DRDO દ્વારા હાથ ધરવામાં આવેલી “Mission Shakti”નું મુખ્ય ધ્યેય શું છે ?
 (A) BrahMos-II hypersonic cruise missileનું પરીક્ષણ
 (B) સ્વદેશી નિર્મિત Light combat aircraft “Tejas” ને વિકસાવવું
 (C) સ્વદેશી નિર્મિત Nuclear powered submarine નો વિકાસ
 (D) ઉપરના પૈકી એક પણ નહિં
069. જ્યારે ધ્વનિના તરંગો હવામાંથી પાણીમાં પ્રસરણ પામે છે ત્યારે નીચેના પૈકી શું અચળ રહે છે ?
 (A) આવૃત્તિ (B) વેગ
 (C) તરંગ લંબાઈ (D) કળાનો તફાવત (Phase difference)

061. India's first Multi Petaflop Supercomputer is .
(A) PARAM (B) AADITYA
(C) PRATYUSH (D) MIHIR
062. Which of the following techniques can be used to separate cream from milk?
(A) Chromatography (B) Distillation
(C) Filtration (D) Centrifugation
063. Image extension JPEG stands for _____.
(A) Joint Picture Expert Group (B) Joint Photo Enhance Group
(C) Joint Photo Experiment Group (D) None of the above
064. Indian PM Narendra Modi and his Israel counterpart Benjamin Netanyahu inaugurated the iCreate centre in which state of India?
(A) Himachal Pradesh (B) Rajasthan
(C) Punjab (D) None of the above
065. Which of the following statements is/are correct regarding Wildlife Protection Act, 1972?
1. It covers both plants and animals within its ambit.
2. National Parks and Wildlife Sanctuaries are set up under this Act.
3. It aims to promote ex situ conservation in zoological and botanical gardens.
(A) 1 and 2 only (B) 1 and 3 only
(C) 2 and 3 only (D) 1, 2 and 3
066. Which of the following wetlands of Gujarat is designated as Ramsar site?
(A) Khijariya (B) Nalsarovar
(C) Thol (D) Little Rann
067. Which atomic power plant is the largest producer of nuclear power in India?
(A) Kakrapar (B) Kudankulam
(C) Narora (D) Tarapur
068. What is the main aim of "Mission Shakti" conducted by DRDO?
(A) BrahMos-II hypersonic cruise missile testing
(B) Indigenous Light combat aircraft "Tejas" development
(C) Development of indigenous nuclear powered submarine
(D) None of the above
069. When sound waves travel from air to water, which of the following remains constant?
(A) Frequency (B) Velocity
(C) Wavelength (D) Phase difference

070. નીચેના પૈકી કયા અધિનિયમે કેન્દ્ર અને એકમો (units) વચ્ચે સમવાય યાદી, પ્રાંતીય યાદી અને સમવર્તી (concurrent) યાદીમાં સત્તાની વહેંચણી કરી ?
- (A) Indian Independence Act, 1947 (B) Government of India Act, 1919
(C) Indian Councils Act, 1909 (D) Government of India Act, 1935
071. નીચેના પૈકી કયા મૂળભૂત હકો એ ભારતીય નાગરિકો તેમજ વિદેશીઓ બંનેને ઉપલબ્ધ છે ?
- (A) અંતઃકરણની સ્વતંત્રતા તથા ધર્મના પાલન, આચાર અને પ્રચારની સ્વતંત્રતા (કલમ 25)
(B) લઘુમતીઓનો શૈક્ષણિક સંસ્થા સ્થાપવા અને સંચાલન કરવાનો અધિકાર (કલમ 30)
(C) પ્રવાસ કરવાનો (movement) અને નિવાસની સ્વતંત્રતા (કલમ 19)
(D) ઉપરના તમામ
072. નીચેના પૈકી કઈ બાબતો સર્વોચ્ચ અદાલતના મૂળ ક્ષેત્રાધિકાર (Jurisdiction) માં સમાવિષ્ટ છે ?
1. ભારત સરકાર તથા એક અથવા એકથી વધુ રાજ્યો વચ્ચેનો વિવાદ
 2. સંસદના કોઈ ગૃહની ચૂંટણી અથવા રાજ્ય વિધાનસભાની ચૂંટણી અંગેના વિવાદ
 3. ભારત સરકાર અને કેન્દ્ર શાસિત પ્રદેશ વચ્ચેના વિવાદ
 4. બે અથવા બે થી વધુ રાજ્યો વચ્ચેનો વિવાદ
- નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
- (A) માત્ર 1 અને 2 (B) માત્ર 2 અને 3 (C) માત્ર 1 અને 4 (D) માત્ર 3 અને 4
073. નીચેના પૈકી કયો એ રાજ્યનીતિનો માર્ગદર્શક સિદ્ધાંત નથી ?
- (A) આજીવિકાના પર્યાપ્ત સાધનોનો અધિકાર
(B) લઘુમતીઓની ભાષા, લિપિ અથવા સંસ્કૃતિનું રક્ષણ
(C) પોષણ અને જીવનધોરણનું સ્તર વધારવા તથા જાહેર આરોગ્ય સુધારવા માટે રાજ્ય પ્રયાસ કરશે
(D) કુટિર ઉદ્યોગોનો વિકાસ કરવો
074. નાણાં વિધેયક (Money Bill) વિશે નીચેના પૈકી કયું વિધાન સત્ય નથી ?
- (A) નાણાં વિધેયક એ ભારતના આકસ્મિક ભંડોળમાંથી થતું નાણાંનું વિનિયોગ છે.
(B) કોઈ પણ વિધેયક જે કોઈ પણ કર વેરાને લાદવાની, નાબૂદ કરવાની, માફ કરવાની, ફેરફાર કરવાની કે નિયમન કરવાની માત્ર જોગવાઈ ધરાવતું હોય તેને નાણાં વિધેયક કહેવાય.
(C) નાણાં વિધેયકમાં એકીકૃત ભંડોળ અથવા આકસ્મિક ભંડોળના કબજાની જોગવાઈઓ સામેલ હોય છે.
(D) નાણાં વિધેયક એ ભારત સરકાર દ્વારા થતું નાણાં ઉધાર લેવાની પ્રક્રિયા અને બાંહેધરીનું નિયમન છે.
075. 2nd ARC અનુસાર, કયા અહેવાલમાં 'The Heart of Governance' શબ્દનો ઉલ્લેખ કરવામાં આવ્યો છે ?
- (A) Citizen Centric Administration (12th report)
(B) Economic Administration (4th report)
(C) Local Governance (8th report)
(D) State and District Administration (11th report)
076. ભારતના મુખ્ય ચૂંટણી આયુક્ત એ વર્ષ માટે હોદ્દા ઉપર રહી શકે છે.
- (A) ૯ વર્ષ
(B) રાષ્ટ્રપતિની મરજી હોય ત્યાં સુધી
(C) 6 વર્ષ સુધી અથવા 65 વર્ષની વય પૂર્ણ કરે બે માંથી જે પહેલું હોય તે
(D) 5 વર્ષ સુધી અથવા 60 વર્ષની વય પૂર્ણ કરે બે માંથી જે પહેલું હોય તે

070. Which of the following Act divided the powers between the Centre and units into Federal List, Provincial List and Concurrent List?
- (A) Indian Independence Act, 1947. (B) Government of India Act, 1919
(C) Indian Councils Act, 1909. (D) Government of India Act, 1935
071. Which of the following Fundamental Rights are available to both citizens and foreigners?
- (A) Freedom of conscience and free profession, practice and propagation of religion (Article 25)
(B) Right of minorities to establish and administer educational institutions (Article 30)
(C) Freedom of movement and residence (Article 19)
(D) All of the above
072. Which of the following are included in the original jurisdiction of the Supreme Court?
1. A dispute between the Government of India and one or more states
 2. A dispute regarding elections to either House of Parliament or that of Legislature of a state
 3. A dispute between the Government of India and a Union Territory
 4. A dispute between two or more states
- (A) 1 and 2 only (B) 2 and 3 only (C) 1 and 4 only (D) 3 and 4 only
073. Which of the following is not a Directive Principle of State Policy?
- (A) Right to adequate means of livelihood
(B) Protection of language, script or culture of minorities.
(C) The state shall endeavour to raise the level of nutrition and standard of living and to improve public health.
(D) To develop cottage industries
074. Which of the following statements is INCORRECT regarding Money Bill?
- (A) A Money Bill is concerned with the appropriation of moneys out of the Contingency Fund of India.
(B) A Bill shall be deemed to be a Money Bill if it contains only provisions relating to imposition, abolition, remission, alteration or regulation of any tax.
(C) A Money Bill has provisions for the custody of the Consolidated Fund of India or the Contingency Fund of India.
(D) A Money Bill deals with the regulation of borrowing of money or giving of any guarantee by the Government of India.
075. According to the 2nd ARC, what was termed as “The Heart of Governance” in which report?
- (A) Citizen Centric Administration (12th Report)
(B) Economic Administration (4th Report)
(C) Local Governance (8th Report)
(D) State and District Administration (11th Report)
076. The Chief Election Commissioner of India holds office for a period of _____.
- (A) Six years
(B) During the pleasure of the President
(C) For six years or till the age of 65 years, whichever is earlier
(D) For five years or till the age of 60 years, whichever is earlier

077. અનુસૂચિત જાતિ (SC)ના રાષ્ટ્રીય આયોગ બાબતે નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય નથી ?
 (A) SC માટેનું અલગ રાષ્ટ્રીય આયોગ એ 2014માં અસ્તિત્વમાં આવ્યું.
 (B) આયોગ એ અધ્યક્ષ, ઉપાધ્યક્ષ તથા ત્રણ અન્ય સદસ્યોનું બનેલું છે.
 (C) આ આયોગ એ બંધારણીય સંસ્થા (body) છે જે કલમ 338 હેઠળ સ્થાપવામાં આવ્યું છે.
 (D) ઉપરના તમામ
078. નીચેના પૈકી કઈ writ એ બંધારણીય સંસ્થાઓ તથા નીજી વ્યક્તિગત અને સંસ્થાઓ વિરુદ્ધ ઉપલબ્ધ નથી ?
 (A) બંદી પ્રત્યક્ષીકરણ (Habeas corpus) (B) પરમાદેશ (Mandamus)
 (C) ઉત્પ્રેષણ (Certiorari) (D) ઉપરના પૈકી એક પણ નહિં
079. નીચેના પૈકી કયો એ સ્વતંત્રતાનો હક નથી ?
 (A) જીવન જીવવાનો અને સ્વતંત્રતા રક્ષણ (B) સમાનતાનો હક
 (C) ધરપકડ અને અટકાયત સામે રક્ષણ (D) ઉપરના પૈકી એક પણ નહિં
080. 44માં સુધારણા અધિનિયમ બાબતે નીચેના પૈકી કયું વિધાન / કયા વિધાનો સત્ય છે ?
 (A) કટોકટીના સમય દરમ્યાન કલમ (Article) 20 અને 21 દ્વારા અધિકૃત કરવામાં આવેલા મૂળભૂત હકોને મોકુફ કરવાની ખાતરી
 (B) મૂળભૂત હકોની યાદીમાંથી મિલકતના હકને રદ કર્યો
 (C) (A) અને (B) બંને
 (D) (A) અથવા (B) એક પણ નહીં
081. ખાતાકીય સ્થાયી (Standing) સમિતિઓ વિશે નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?
 (A) કેન્દ્ર સરકારના વિવિધ મંત્રાલયો અને ખાતાઓને લગતી કુલ 24 સ્થાયી (standing) સમિતિઓ છે.
 (B) પ્રત્યેક સમિતિ 25 સદસ્યો (15 લોકસભામાંથી અને 10 રાજ્યસભામાંથી) ધરાવે છે.
 (C) બંને (A) અને (B)
 (D) (A) અથવા (B) એક પણ નહીં
082. “20 મુદ્દાનો કાર્યક્રમ” એ માટે મુખ્ય કાર્યક્રમ હતો.
 (A) શહેરી વિકાસ (B) શિક્ષણનું સાર્વત્રિકીકરણ (universalisation)
 (C) આદિજાતિ વિકાસ (D) ઉપરના પૈકી એક પણ નહિં
083. નીચેના પૈકી કયું/કયા એ પંચાયતી રાજની સંસ્થાઓ વિશેની અશોક મહેતા સમિતિની ભલામણો છે ?
 1. ત્રણ સ્તરીય પંચાયતી રાજ પ્રણાલી સ્થાપવી.
 2. વિકાસના કાર્યો જિલ્લા પંચાયતને હસ્તાંતરિત કરવા.
 3. રાજ્ય કક્ષાથી નીચેની કક્ષાએ વિકેન્દ્રીકરણની બાબતમાં જિલ્લો એ પ્રથમ ક્રમે હોવો જોઈએ.
 4. જિલ્લા કક્ષાએ આયોજનની બાબત માટે જિલ્લા પરિષદને જવાબદાર બનાવવી જોઈએ.
 નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
 (A) 1, 2, 3 અને 4 (B) માત્ર 2, 3 અને 4 (C) માત્ર 2 અને 4 (D) 1, 3 અને 4

077. Which of the following statements is/are INCORRECT regarding the National Commission for SCs?
- (A) The separate National Commission for SCs came into existence in 2014.
 (B) The commission consists of Chairman, A Vice-Chairman and three other members.
 (C) This commission is a Constitutional body which is established under Article 338.
 (D) All of the above
078. Which of the writs are not available against legislative bodies and private individual and bodies?
- (A) Habeas Corpus (B) Mandamus
 (C) Certiorari (D) None of the above
079. Which of the following is not a Right to Freedom?
- (A) Protection of Life and Liberty (B) Right to Equality
 (C) Protection against Arrest and Detention (D) None of the above
080. Which of the following statements is/are correct regarding 44th Amendment Act?
- (A) Ensured suspension of Fundamental Rights guaranteed by Articles 20 and 21 during emergency.
 (B) Right to property was deleted from the list of Fundamental Right.
 (C) Both (A) and (B)
 (D) Neither (A) nor (B)
081. Which of the following statements is/are correct regarding Departmental Standing committees?
- (A) There are total 24 standing committees related to various ministries and departments of the Central government
 (B) Each committee consists of 25 members (15 from Lok Sabha and 10 from Rajya Sabha)
 (C) Both (A) and (B)
 (D) Neither (A) nor (B)
082. 'Twenty-point programme' was a flagshi programme for _____.
- (A) Urban Development (B) Universalisation of education
 (C) Tribal Development (D) None of the above
083. Which of the following was/were the recommendations of Ashok Mehta Committee on Panchayati Raj institutions?
1. Establishment of a three-tier Panchayati Raj system.
 2. Transfer of Developmental functions to the Zila Parishad.
 3. District should be the first point for decentralisation below the state level.
 4. Zila Parishad should be made responsible for planning at the district level.
- (A) 1, 2, 3 and 4 (B) 2, 3 and 4 only
 (C) 2 and 4 only (D) 1, 3 and 4 only

084. શૂન્ય કાળ (Zero Hour) બાબતે નીચેના પૈકી કયું વિધાન/કયા વિધાનો સત્ય છે ?

1. આપણી સંસદીય કાર્યવાહીમાં “શૂન્ય કાળ” શબ્દએ ઔપચારિક રીતે માન્ય નથી.
2. કોઈ પણ દિવસે કેટલા મુદ્દાઓ ઉઠાવી શકાય તેની સંખ્યાની કોઈ મહત્તમ મર્યાદા હોતી નથી.
3. શૂન્ય કાળ હેઠળ કોઈ મુદ્દાને પરવાનગી આપવી કે ન આપવી તે અંગેનો અંતિમ સત્તાધિકાર સંસદીય બાબતોના મંત્રી હોય છે.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

- (A) માત્ર 1 (B) માત્ર 2 અને 3
(C) માત્ર 1 અને 2 (D) 1, 2 અને 3

085. નીચેના પૈકી કઈ કંપનીએ મુંબઈ અને અમદાવાદ વચ્ચે બુલેટ ટ્રેનના કરાર પ્રાપ્ત કર્યા છે ?

- (A) Tata (B) L&T
(C) શાપૂરજી પલોનજી (D) રીલાયન્સ

086. UN શાંતી સ્થાપનાની પ્રવૃત્તિઓ માટે ભારતે ની રકમનું વચન આપ્યું.

- (A) 1,50,000 US ડોલર્સ (B) 2,00,000 US ડોલર્સ
(C) 1,00,000 US ડોલર્સ (D) 50,000 US ડોલર્સ

087. નીચેના પૈકી કયા દેશની સૈન્ય ટુકડીએ 2021ની ગણતંત્ર દિવસ પરેડની કૂચ કરી હતી ?

- (A) ભૂતાન (B) બ્રિટન
(C) બાંગ્લાદેશ (D) ઈઝરાઈલ

088. તાજેતરમાં યોજાયેલી સૈયદ મુસ્તાક અલી ટ્રોફીમાં કયા રાજ્યએ વિજય હાંસલ કર્યો ?

- (A) કર્ણાટક (B) કેરળ
(C) તમિલનાડુ (D) ગુજરાત

089. તાજેતરમાં પરીક્ષણ કરવામાં આવેલ Akash - NG (New Generation) મિસાઈલ એ પરની છે.

- (A) જમીનથી હવા (B) હવાથી જમીન
(C) હવાથી પાણી (D) પાણીથી હવા

090. નીચેના પૈકી કયા રાજકીય પક્ષ એ નેપાળના પ્રધાનમંત્રીને પક્ષમાંથી હાંકી કાઢ્યા ?

- (A) નેપાલ કોમ્યુનિટી પાર્ટી (B) નેપાલ ડેમોક્રેટીક પાર્ટી
(C) નેપાલ રીપબ્લીક ફ્રંટ (D) ઉપરના પૈકી એક પણ નહિં

091. સીમા સુરક્ષા બળ દ્વારા ની સરહદ પર ઓપરેશન સર્દ હવા (Sard Hawa) શરૂ કરવામાં આવ્યું.

- (A) સિક્કીમ (B) રાજસ્થાન
(C) બિહાર (D) ઉત્તરાખંડ

084. Which of the following statements is/are correct regarding Zero Hour?
1. The term 'Zero Hour' is not formally recognized in our parliamentary procedure.
 2. There is no maximum limit on the number of matters that can be raised on any given day.
 3. Parliamentary Affairs Minister is the final authority to allow or not allow the raising of matters in the House under Zero Hour.
- (A) 1 only (B) 2 and 3 only
(C) 1 and 2 only (D) 1, 2 and 3
085. Which of the following company bagged the contract of Bullet train between Mumbai and Ahmedabad?
- (A) Tata (B) L&T
(C) Shapoorji Pallonji (D) Reliance
086. _____ amount was pledged by India for the UN Peace building activities?
- (A) 1,50,000 US dollars (B) 2,00,000 US dollars
(C) 1,00,000 US dollars (D) 50,000 US dollars
087. Which of the following countries' military contingent marched the Republic Parade of 2021?
- (A) Bhutan (B) Britain
(C) Bangladesh (D) Israel
088. Which of the following states won the recently held Syed Mustaq Ali Trophy?
- (A) Karnataka (B) Kerala
(C) Tamil Nadu (D) Gujarat
089. The recently tested Akash-NG (New Generation) missile is a _____.
- (A) Surface-to-Air (B) Air-to-Surface
(C) Air-to-Water (D) Water-to-Air
090. Which of the following political parties expelled Nepal's Prime Minister from the party?
- (A) Nepal Communist Party
(B) Nepal Democratic Party
(C) Nepal Republic Front
(D) None of the above
091. The operation Sard Hawa was launched by the Border Security Force in the borders of
- (A) Sikkim (B) Rajasthan
(C) Bihar (D) Uttarakhand

092. દિલ્હી સરકાર દ્વારા (Switch Delhi) અભિયાન શરૂ કરવામાં આવ્યું. આ અભિયાનનું ધ્યેય છે.
 (A) વિજ આધારિત વાહનોના ઉપયોગને ઉત્તેજન આપવું.
 (B) સૌર ઊર્જાના ઉપયોગને ઉત્તેજન આપવું.
 (C) દરરોજ એક કલાક માટે લાઈટ બંધ કરવી.
 (D) ઉપરના પૈકી એક પણ નહિં
093. નીચેના પૈકી કયા રાજ્યમાં તાજેતરમાં 1600 ટન લીથીયમનો જથ્થો મળી આવેલ છે ?
 (A) તેલંગણા (B) કર્ણાટક
 (C) કેરળ (D) ઓરિસ્સા
094. ભારત - યુએસ સંયુક્ત લશ્કરી કવાયત (Yudh Abhyas) નું 16મું સંસ્કરણ (edition) ખાતે યોજાયું.
 (A) પંજાબ (B) તમિલનાડુ
 (C) ગોવા (D) રાજસ્થાન
095. કેન્દ્ર સરકારે જળપ્લાવિત (wetland) ક્ષેત્રોના સંરક્ષણ અને વ્યવસ્થાપન માટે ખાતે નવા કેન્દ્રની સ્થાપના કરવાની જાહેરાત કરી છે.
 (A) હૈદરાબાદ (B) વારાણસી
 (C) ચેન્નાઈ (D) કચ્છ
096. ભારત સરકાર દ્વારા વર્ષ 2020-21 માટે નાણાંકીય ખાદ્યનો અંદાજ અંદાજીત કરવામાં આવ્યો છે.
 (A) 6.8% (B) 7.0%
 (C) 9.5% (D) 10.0%
097. વિજ્ઞાન અને પર્યાવરણ કેન્દ્ર દ્વારા રજૂ કરવામાં આવેલ 'Ease of Living Index 2020' અનુસાર શહેર એ ભારતમાં સૌથી વધુ રહેવા યોગ્ય શહેર છે.
 (A) હૈદરાબાદ (B) ચેન્નાઈ
 (C) બેંગલૂરુ (D) ઈન્દોર
098. ભારત, જાપાન અને દેશોએ ઈન્ડો-પેસિફીક ક્ષેત્રમાં સ્થિરતા માટે ત્રિપક્ષીય ભાગીદારીની શરૂઆત કરી છે.
 (A) ઈન્ડોનેશિયા (B) ઈટાલી
 (C) મલેશિયા (D) ઉપરના પૈકી એક પણ નહિં
099. ભારતીય નૌ-સેના અને યુરોપીયન સંઘ નૌ-સેના વચ્ચે ભારતીય નૌ-સેના યુરોપીયન નૌકા કવાયતનું ઉદ્ઘાટન સંસ્કરણ ખાતે થયું.
 (A) એડનના અખાત (B) બંગાળના ઉપસાગર
 (C) ભૂમધ્ય સમુદ્ર (D) હિંદ મહાસાગર
100. UNCTAD (United Nations Conference on Trade and Development) દ્વારા રજૂ કરાયેલ (World Investment Report 2021) અનુસાર, FDI પ્રાપ્ત કરવામાં ભારત એ ક્રમનો સૌથી વધુ FDI પ્રાપ્ત કરનાર દેશ છે.
 (A) 2જા (B) 3જા (C) 4થા (D) 5મા

092. Switch Delhi campaign was launched by the Delhi Government, the aim of this campaign is _____.
(A) Promote use of electric vehicles
(B) Promote use of solar electricity
(C) Switch off the lights per one hour in every day
(D) None of the above
093. In which of the following states, 1600 tonnes of Lithium deposits were found recently?
(A) Telangana (B) Karnataka
(C) Kerala (D) Odisha
094. The 16th edition of Indo-US joint military exercise Yudh Abhyas was held at
(A) Punjab (B) Tamil Nadu
(C) Goa (D) Rajasthan
095. The Central Government announced the establishment of New Centre for Wetland Conservation and Management in _____.
(A) Hyderabad (B) Varanasi
(C) Chennai (D) Kutch
096. _____ percent of fisca defici was estimated for the year 2020-2021 by the Government of India.
(A) 6.8% (B) 7.0%
(C) 9.5% (D) 10.0%
097. According to Ease of Living Index 2020 - by Centre for Science and Environment _____ is the most livable city in India.
(A) Hyderabad (B) Chennai
(C) Bengaluru (D) Indore
098. India, Japan and _____ countries have launched trilateral partnership for stability in Indo-Pacifi Region?
(A) Indonesia (B) Italy
(C) Malaysia (D) None of the above
099. The inauguration edition of Indian navy-European naval exercise between Indian navy and European Union naval took place at _____.
(A) Gulf of Aden
(B) Bay of Bengal
(C) Mediterranean sea
(D) Indian Ocean
100. According to World Investment Report 2021 by UNCTAD (United Nations Conference on Trade and Development), India is the _____ largest recipient of FDI inflows
(A) 2nd (B) 3rd
(C) 4th (D) 5th

101. Earth's atmosphere can be divided into how many layers?
(A) 3 (B) 4 (C) 5 (D) 6
102. Which of the following are the examples of 'in situ conservation' of biodiversity?
(i) Germplasm
(ii) National Parks
(iii) Sanctuaries
(iv) Botanical Gardens
(v) Zoos
(A) Only (i) (B) (ii) and (iii)
(C) (iv) and (v) (D) (ii), (iii), (iv) and (v)
103. The goal of the 'Paris Declaration' is to limit global warming to well below _____ compared to pre-industrial levels
(A) 1.0°C (B) 1.5 °C (C) 2.0°C (D) 3.0°C
104. Which of the following are Biosphere Reserves?
(i) Sundarban, West Bengal
(ii) Khangchendzonga, Sikkim
(iii) Kachchh, Gujarat
(iv) Seshachalam, Andhra Pradesh
(A) (i) and (ii) (B) (i), (ii) and (iii)
(C) (i), (ii) and (iv) (D) (i), (ii), (iii) and (iv)
105. The temperature of the 'Effluent' shall not exceed ____ above the receiving water temperature.
(A) 2°C (B) 4°C (C) 5°C (D) 6°C
106. As per Bharat VI emission norms for Passenger Car, the emission for Carbon Mono-Oxide should not be more than
(A) 1 milligram / km (B) 10 milligram / km
(C) 100 milligram / km (D) 1000 milligram / km
107. For which of the pollutants, the emission norms for Passenger Cars didn't change in Bharat VI with reference to Bharat IV?
(i) Carbon Mono-Oxide
(ii) Nitrogen Oxides
(iii) Hydrocarbons
(A) Only (i) (B) (i) and (ii) (C) (i), (ii) and (iii) (D) None
108. The pyramid of energy in terrestrial ecosystem is
(A) upright (B) inverted (C) spindle shaped (D) irregular
109. Currently, the Electronic Waste generation rate in India is around
(A) 0.1 Million tonnes / year (B) 1 Million tonnes / year
(C) 10 Million tonnes / year (D) 100 Million tonnes / year

110. Which among the following areas in India has the largest number of endemic plant species?
 (A) Himalayan Region (B) Malabar Region
 (C) Gangetic Plains (D) Western Ghats
111. If $A = \begin{bmatrix} 1 & 3 & 5 \\ 0 & 2 & -1 \\ 0 & 0 & 3 \end{bmatrix}$, then eigen values of the matrix $I + A + A^2$, where I denotes the identity matrix are
 (A) 3, 7, 11 (B) 3, 7, 12 (C) 3, 7, 13 (D) 3, 9, 16
112. A 5×7 matrix has all its entries equal to -1 . The rank of this matrix is
 (A) 7 (B) 5 (C) 1 (D) 0
113. For real values of x , the minimum value of the function $f(x) = \exp(x) + \exp(-x)$ is
 (A) 2 (B) 1 (C) 0.5 (D) 0
114. The value of the integral $\int_{-1}^1 \frac{dx}{x^2}$ is
 (A) 2 (B) -2
 (C) Does not exist (D) ∞
115. For a vector E , which one of the following statements is not true?
 (A) If $\nabla \cdot E = 0$, E is called solenoidal
 (B) If $\nabla \times E = 0$, E is called conservative
 (C) If $\nabla \times E = 0$, E is called Irrotational
 (D) If $\nabla \cdot E = 0$, E is called Irrotational
116. The vector field $\vec{F}(x, y) = x\hat{i} - y\hat{j}$ is
 (A) Divergence free, but not Irrotational
 (B) Irrotational, but not divergence free
 (C) Divergence free and Irrotational
 (D) Neither divergence nor Irrotational
117. The Fourier series of a real periodic function has only
 P: cosine term if it is even
 Q: sine terms if it is even
 R: cosine terms if it is odd
 S: sine terms if it is odd
 Which of the following statements are true?
 (A) P and S (B) P and R (C) Q and S (D) Q and R
118. Solution of the differential equation $3y \frac{dy}{dx} + 2x = 0$ represents a family of
 (A) Ellipses (B) Circles
 (C) Parabolas (D) Hyperbolas
119. The order and degree of the differential equation $\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^3 + y^4 = e^{-x}$
 (A) 2, 3 (B) 3, 2 (C) 2, 1 (D) 1, 2

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120. If $i = \sqrt{-1}$, then the value of i^i will be
(A) \sqrt{i} (B) -1 (C) $\frac{\pi}{2}$ (D) $e^{-\frac{\pi}{2}}$
121. The function $f(z) = z\bar{z}$ is
(A) Analytic at $z = 0$ (B) Not analytic at $z = 0$
(C) Nowhere analytic (D) None of these
122. For the function $f(z) = \frac{\sin\sqrt{z}}{\sqrt{z}}$; $z = 0$ is a
(A) Pole (B) Essential singularity
(C) Removable singularity (D) Non-essential singularity
123. To fit $y = ab^x$ by the method of least squares, the number of normal equations needed are
(A) 1 (B) 2 (C) 3 (D) 4
124. The probability that A happens is $\frac{1}{4}$. The odd against happening of A are
(A) 2: 1 (B) 3: 1 (C) 4: 1 (D) 5: 1
125. If $V(X)=2$, then $\text{var}(2X+2)$
(A) 2 (B) 4 (C) 6 (D) 8
126. If $f(x) = 2x^3 - 5x$, then $\Delta^3 f(x)$ is
(A) 2 (B) 3 (C) 6 (D) 12
127. Newton-Raphson method is useful in case of large values of
(A) $f(x)$ (B) $f'(x)$ (C) $f''(x)$ (D) $f'''(x)$
128. Simpson's rule for integration gives exact result when $f(x)$ is a polynomial of degree
(A) 1 (B) 2 (C) 3 (D) 4
129. Taylor's series method will be useful to give some starting values of
(A) Milne's method (B) Runge-kutta method
(C) Euler's method (D) None of these
130. For which value of x the matrix given below will become singular?
$$\begin{bmatrix} 8 & x & 0 \\ 4 & 0 & 2 \\ 12 & 6 & 0 \end{bmatrix}$$

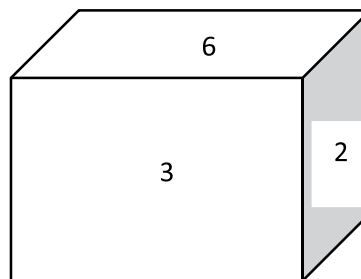
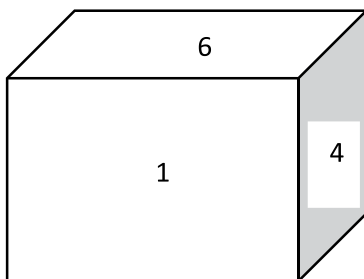
(A) 4 (B) 6 (C) 8 (D) 12
131. Which of the following is the correct full form of HTML, the standard language for Web pages?
(A) Hyper Text Mixed Language
(B) Hyper Text Markup Language
(C) Hardware Test Markup Language
(D) Hardware Test Mixed Language
132. Which of the following is not an input device?
(A) Scanner (B) Keyboard (C) Mouse (D) Speaker

133. Which one of the following is a cryptographic protocol used to secure HTTP connection?
(A) Explicit congestion notification (ECN)
(B) Transport layer security (TLS)
(C) Resource relocation protocol
(D) Session control transport protocol
134. Which of the following is the first dedicated "Educational Satellite" for delivering educational materials in a two-way communication fashion to the class rooms?
(A) GSAT1 (B) GSAT2 (C) GSAT3 (D) GSAT9
135. Which of the following types of memory holds the computer's start-up routine?
(A) Read Only Memory
(B) Random Access Memory
(C) Cache Memory
(D) Random Allocation Memory
136. Which of the following attacks is used by hackers for data interception?
(A) Phishing (B) Denial of Service
(C) Network-tapping (D) Sniffing
137. Which among the following is the correct full form of MOOCs in context of ICT enabled teaching?
(A) Massive Open Online Courses (B) Mega Open Online Curriculum
(C) Mega Optional Online Courses (D) Master Open Online Curriculum
138. Which Indian city has emerged at the top among the Indian cities to have successfully implemented governance through institutionalised use of data (especially through big data crunching)?
(A) Bangalore (B) Pune (C) Surat (D) Ahmedabad
139. Which of the following is not a type of Machine Learning algorithms?
(A) Supervised Learning (B) Unsupervised Learning
(C) Reinforcement Learning (D) Virtual Learning
140. Which of the following terms can be used for characterizing the 'Big Data'?
(i) Volume
(ii) Variety
(iii) Velocity
(iv) Variability
(v) Veracity
(A) (i), (ii) and (iii) (B) (i), (ii) and (iv)
(C) (ii), (iii), (iv) and (v) (D) (i), (ii), (iii), (iv) and (v)
141. Which of the following statement(s) is / are true for the concept of Virtual Reality?
(i) Virtual reality is the creation of virtual, three dimensional, computer generated environment presented to our senses in such a way that we experience it as if we were really there.
(ii) Virtual reality adds to the reality we normally see rather than replace it.
(A) Only (i) (B) Only (ii) (C) Both (i) and (ii) (D) Neither (i) nor (ii)

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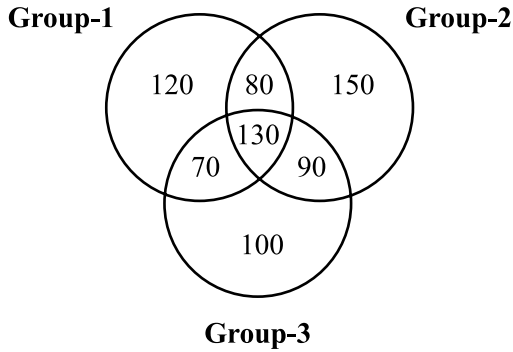
142. Find the remainder for $[(79 \times 87 \times 95)/11]$.
(A) 8 (B) 4 (C) 1 (D) 0
143. If by walking at $\frac{1}{2}$ of her normal speed, Seema is 20 minutes late in reaching her office, then what is the usual time taken by her to cover the respective distance?
(A) 10 minutes (B) 15 minutes (C) 20 minutes (D) 40 minutes
144. Two trains for Chennai leave Mumbai at 5:00 a.m. and 5:45 a.m. and travel at 120 kmph and 150 kmph, respectively. After how many kilometers from Mumbai will the trains be together?
(A) 450 km (B) 360 km (C) 120 km (D) 200 km
145. A train 150 m long passes a man, running at 6 km/hr in the same direction in which the train is going, in 15 seconds. The speed of the train is:
(A) 36 km/hr (B) 40 km/hr (C) 30 km/hr (D) 42 km/hr
146. A boat goes 16 km upstream in 90 minutes. If the speed of the stream is 6 km/hr, then the speed of the boat in still water will be
(A) 16.67 km/hr (B) 16.00 km/hr (C) 16.67 m/s (D) 16.00 m/s
147. Sushant leaves Surat on bicycle. Having travelled for 1.5 h at 10 km/h, he makes a stop for 1.5 h and then pedals on with the same speed. Five hours after Sushant started, Suresh leaves Surat on a motorcycle and rides with speed of 25 km/h in the same direction as Sushant had gone. What distance will they cover before Suresh overtakes Sushant?
(A) 35 km (B) 48.5 km (C) 58.33 km (D) 116.66 km
148. Ram alone can do a piece of work in 4 days and Raman alone in 6 days. Ram and Raman undertook to do it for Rs. 3000. With the help of Raghav, they completed the work in 2 days. How much is to be paid to Raghav?
(A) Rs. 150 (B) Rs. 200 (C) Rs. 250 (D) Rs. 500
149. Three pipes P, Q and R can fill a tank from empty to full in 20 minutes, 15 minutes, and 10 minutes, respectively. When the tank is empty, all the three pipes are opened. P, Q and R discharge chemical solutions X, Y and Z, respectively. What is the proportion of the solution Z in the liquid in the tank after 5 minutes?
(A) $\frac{3}{13}$ (B) $\frac{6}{13}$ (C) $\frac{12}{13}$ (D) $\frac{24}{13}$
150. Present ages of Sunil and Anil are in the ratio of 8:7. Before 4 years, the ratio of their age was 4:3. What is Anil's present age?
(A) 4 (B) 6 (C) 7 (D) 8
151. In a mixture of 80 litres, the ratio of milk and water is 3: 1. If this ratio is to be 1: 3, then the quantity of water to be further added would be:
(A) 160 litres (B) 120 litres (C) 100 litres (D) 80 litres
152. A basket contains 42 balls of blue, red, and yellow colors. The ratio of blue balls to red balls is 3:2. The probability of choosing a yellow ball is $\frac{2}{7}$. If two balls are picked from the basket, then what is the probability that one ball is red and one ball is yellow?
(A) $\frac{2}{7}$ (B) $\frac{24}{287}$ (C) $\frac{36}{287}$ (D) $\frac{48}{287}$

153. How many of the following numbers are divisible by 133?
931, 1463, 1499, 2399, 2261, 2527, 3679, 4123, 4389, 3059
(A) 5 (B) 6 (C) 7 (D) 8
154. A merchant has 1000 kg of sugar, part of which he sells at 8% profit and the rest at 18% profit. He gains 14% on the whole. The quantity sold at 18% profit is
(A) 400 (B) 500 (C) 600 (D) 700
155. When 3 fair coins are tossed together what is the probability of getting at least 2 heads?
(A) 1/2 (B) 1/3 (C) 1/4 (D) 1/6
156. Here are some words translated from an artificial language
(i) alomencarniva means Solar system
(ii) alomencalavari means Solar energy
(iii) kudariasivana means Dark matter
Which word from the following means Dark energy?
(A) alomencakudaria (B) kudarialavari
(C) kudariacarniva (D) alomencasivana
157. Study the following 3 statements
(i) Milind runs faster than Avinash,
(ii) Dhanashri runs faster than Milind
(iii) Avinash runs faster than Dhanashri
If statements (i) and (ii) are true then statement (iii) is
(A) True (B) False
(C) Can't predict (D) Data insufficient
158. Study the series pattern and fill in the blank
 $V_5ML, V_4MM, V_3MN, \underline{\hspace{2cm}}, V_1MP$
(A) V_2MP (B) V_4MO (C) V_2MO (D) V_1OM
159. Two positions of a dice are shown below, which number will appear on the face opposite to the face with number 4?



- (A) 3 (B) 5 (C) 2 (D) 1

160. What will be the total size of the group whose bifurcation is given below?



- (A) 500 (B) 760 (C) 860 (D) 1240

161. In an election between two candidates, one got 55% of the total votes 20% of which were invalid. If the total number of votes casted were 7500, then the number of votes that the other candidate got were

- (A) 2700 (B) 3300 (C) 3375 (D) 4125

162. _____ is used to draw smooth curves of any nature.

- (A) Templates (B) French curve
(C) Compass (D) Mini drafter

163. The locus of a point considered as the end of a taut string being unwound from a given curve in the plane of that curve is called as

- (A) Involute (B) Spiral (C) Cycloid (D) Hyperbola

164. If a room of 2592 m³ is represented by a cube of 324 cm³ then the Representative Fraction will be (RF)?

- (A) 800 (B) 200 (C) 1/800 (D) 1/200

165. If the line is parallel to Horizontal Plane and perpendicular to Vertical Plane, its true length will be seen in

- (A) Vertical Plane (B) Horizontal Plane
(C) Both (D) None

166. Solids whose axis are inclined to its own base are called

- (A) Right solids (B) Oblique solids
(C) Truncated solids (D) None

167. The probability that a product will perform a required function under specific condition for certain period of time is known as _____.

- (A) Quality (B) Reliability
(C) Sensitivity (D) Availability

168. Reliability of a system is always _____ that of the individual components when connected in series.

- (A) Lower than (B) Lower than or equal to
(C) Higher than (D) Higher than or equal to

169. A control chart represents
 (A) Worker's motivation (B) Top management commitment
 (C) Process variability (D) Process capability
170. Which of the following statement(s) is / are True with reference to Pareto Chart?
 (i) It is a graph that indicates the frequency of defects, as well as their cumulative impact.
 (ii) It is useful to find defects to prioritize in order to observe the greatest overall improvement
 (A) Only (i) (B) Only (ii)
 (C) Both (i) and (ii) (D) Neither (i) nor (ii)
171. Six Sigma performance produces a defect-free product allowing only ____ errors per 1 million opportunities
 (A) 0.7 (B) 1.7 (C) 3.4 (D) 6.8
172. DMADV (Define, Measure, Analyze, Design, Verify) is a six-sigma framework focusing on
 (A) Development of new product (B) Development of existing product
 (C) Quality control (D) Identifying root cause of error
173. The attractive forces that exist between non-polar molecules are called as:
 (A) van der Waals forces (B) Interfacial forces
 (C) Ionic bond forces (D) Covalent bonds
174. Aluminum alloys are widely used in the aircraft industry due to its
 (A) Good corrosion resistance (B) Good weldability
 (C) High strength (D) Low specific gravity
175. The essential source of magnetism is due to
 (A) Charged particles alone (B) Magnetic dipoles
 (C) Magnetic domains (D) Movement of charged particles
176. A material is considered to be linear elastic if
 (A) Energy \propto Load (B) Energy \propto Displacement
 (C) Load \propto Displacement (D) Energy $\propto \frac{1}{\text{Displacement}}$
177. Poisson's ratio of perfectly plastic material is
 (A) -1.0 (B) 0.10 (C) 0.35 (D) 0.50
178. Progressive deformation of a material at a slow rate for applied constant loading is called as
 (A) Creep (B) Consolidation (C) Fatigue (D) Yielding
179. In Reinforced Cement Concrete (RCC), steel is used as a reinforcing material because
 (A) its thermal expansion is almost equal to that of concrete
 (B) its thermal expansion is more than that of concrete
 (C) its thermal expansion is less than that of concrete
 (D) of its easy availability

180. Resilient Modulus (M_r) can be represented by:

(A) $M_r = \frac{\text{Stress}}{\text{Strain}}$

(C) $M_r = \frac{\text{Direct stress}}{\text{Linear strain}}$

(B) $M_r = \frac{\text{Deviatric stress}}{\text{Recoverable strain}}$

(D) $M_r = \frac{\text{Direct stress}}{\text{Volumetric strain}}$

181. Most of the commercial glasses are made of

(i) Lime

(ii) Silica

(iii) Soda

(A) Only (i)

(C) (i) and (ii)

(B) Only (ii)

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

182. The stress-strain curve is always a straight line for

(A) Elastic materials

(B) Elasto-plastic materials

(C) Materials obeying Hooke's law

(D) Visco-elastic materials

183. Breaking of a wire due to repeated bending is an example of

(A) Creep failure

(C) Fatigue failure

(B) Ductile failure

(D) Shear failure

184. Which of the following factor(s) affects the phenomenon of creep

(i) Magnitude of load

(ii) Exposure time

(iii) Exposure temperature

(iv) Material's Properties

(A) (i) and (iv)

(C) (ii), (iii) and (iv)

(B) (i), (ii) and (iii)

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

185. The viscous component of viscoelastic material is modelled as _____

(A) Dashpot

(B) Locknut

(C) Spring

(D) Plunger

186. The Body Centred Cubic (BCC) crystal structure possesses _____ atomic packing factor.

(A) 0.68

(B) 0.74

(C) 6.80

(D) 7.40

187. The bandgap in a typical diamond structure is

(A) ~ 1.1 eV

(B) ~ 2.5 eV

(C) ~ 3.7 eV

(D) ~ 5.5 eV

188. Mild steel used in building construction belongs to which category?

(A) Alloy steel

(C) Medium carbon steel

(B) High carbon steel

(D) Low carbon steel

189. Lead is widely used in

(A) Batteries

(C) Transformers

(B) Galvanized pipes

(D) Switch gears

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198. The time earmarked for a construction task involving 800 m^2 of marble flooring is five days, working 8 hours/day. If a workers team consisting of 04 skilled and 02 unskilled workers can finish the marble flooring at the rate of $2.5 \text{ m}^2/\text{hr}$, then the number of teams required is:
(A) 08 (B) 16 (C) 20 (D) 40
199. From the following select the crane which is suitable for construction of high-rise buildings.
(A) Derrick crane (B) Traveller crane
(C) Tower crane (D) Overhead gantry crane
200. A ready-mix concrete (RMC) plant has a batch mixer with 1000 litres capacity. If it takes 16 seconds for 01 batch production, then what is the volume of concrete produced from the RMC plant in an hour?
(A) 550 m^3 (B) 225 m^3 (C) 112.5 m^3 (D) 22.5 m^3
-

PROVISIONAL ANSWER KEY

Name of The Post

Gujarat Engineering Service, Class-1 and Class-2

Advertisement No

71/2020-21

Preliminary Test Held On

28-07-2021

Que. No.

001-300 (Concern Subject)

Publish Date

29-07-2021

Last Date to Send Suggestion (S)

05-08-2021

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 herewith 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) 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 પ્રશ્નપ્રમાણે 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 પ્રશ્ન ક્રમાંક મુજબ અને તે સંદર્ભમાં રજૂ કરવા.
- (4) માસ્ટર પ્રશ્નપત્ર માં 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-સૂચન ધ્યાનમાં 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) પરીક્ષામાં હાજર રહેલ ઉમેદવાર જ વાંધા - સૂચન રજૂ કરી શકશે .
- (8) ઉમેદવારે વાંધા-સૂચન સાથે પોતાની જવાબવહીની નકલ બિડાણ કરવાની રહેશે.

001. The recent highway project “Char Dham Pariyojana” by Ministry of Road Transport and Highways, Government of India, connects
(A) Kedarnath, Badrinath, Yamunothri & Gangotri
(B) Delhi, Kolkata, Chennai & Mumbai
(C) Kashmir, Kanyakumari, Kutch & Arunachal Pradesh
(D) North, South, East & West
002. The portion of a road surface which is used by high speed traffic is known as
(A) Carriageway (B) Expressway
(C) Highway (D) Right of way
003. Which of the following is considered to be superior quality bituminous mix for the construction of flexibl pavements?
(A) Premix chip carpet (B) Semi-dense bituminous mix
(C) Dense bituminous mix (D) Stone matrix asphalt
004. In India, the material used for the prime coat application for flexibl pavement construction is
(A) Bitumen (B) Bitumen emulsion
(C) Industrial grade glue (D) Tar
005. The width of a 2-lane carriageway is
(A) 3.50 m (B) 3.75 m (C) 7.00 m (D) 10.50 m
006. If V = design speed in kmph, ‘ R ’ is the radius of the curve (m), the design super elevation ‘ e ’ is expressed as
(A) $e = V / 127R$ (B) $e = V^2 / 127R$ (C) $e = V / 225R$ (D) $e = V^2 / 225R$
007. The gradient on a roadway is said to be an “Exceptional gradient”, if it is
(A) more than the floatin gradient (B) more than the ruling gradient
(C) less than the average gradient (D) steeper than the limiting gradient
008. The exceptional gradients should be limited for short stretches not exceeding about
(A) 50 metres (B) 100 metres (C) 200 metres (D) 500 metres
009. Lateral friction co-efficient as per IRC standards is:
(A) 0.15 (B) 0.30 (C) 0.35 (D) 0.40
010. The height of the driver above road surface as per IRC standards is:
(A) 1.50m (B) 1.20m (C) 0.75m (D) 0.60 m
011. For hill road constructions, the longitudinal side drains are
(A) provided on the opposite side of the hill
(B) provided on the hill side of the road
(C) provided on both sides of the road
(D) not provided

012. The design speed normally adopted in India is
(A) 75th percentile speed (B) 85th percentile speed
(C) 95th percentile speed (D) 98th percentile speed
013. Type of vehicles considered for pavement design are:
(A) Only trucks (B) Passenger Car Units (PCU)
(C) Commercial vehicles (D) All types of vehicles
014. The value of standard axle load considered for flexible pavement design is:
(A) 80 Ton (B) 80 kN
(C) 100 Ton (D) 100 kN
015. As per recent IRC 37-2018 guidelines, the analysis of flexible pavement is performed based on subgrade soil strength in terms of:
(A) California Bearing Ratio (B) Resilient Modulus
(C) Unconfined Compressive Strength (D) Modulus of Subgrade Reaction
016. The dowel bars in a rigid pavement are provided at:
(A) Expansion joints (B) Contraction joints
(C) Transverse joints (D) Longitudinal joints
017. In rigid pavements, wheel loads are transferred to subgrade by
(A) Grain to grain transfer (B) Slab action
(C) Joints (D) Dowel bars
018. A bridge is treated as a major bridge if the span is
(A) < 6 m (B) 8 to 30 m
(C) 30 to 120 m (D) More than 120 m
019. A bridge constructed across a wide dry valley is known as
(A) Through bridge (B) Grade separator
(C) Aqueduct (D) Viaduct
020. A bascule bridge is a
(A) Deck bridge (B) Fixed bridge
(C) Movable bridge (D) Through bridge
021. Free Board is the level difference between Formation Level and
(A) Deck Level (B) Danger Level
(C) High Flood Level (D) Sign Board Level above deck
022. At what interval cross sections should be determined for preliminary survey of bridge site investigation?
(A) 25 m (B) 50 m (C) 75 m (D) 100 m
023. Minimum Free Board required in a bridge is
(A) 0.5 m (B) 1.0 m (C) 1.5 m (D) 2.0 m

024. From the following, select which is not a culvert type?
(A) Box culvert (B) Pipe culvert
(C) Slab culvert (D) Through culvert
025. Arrange in the correct order of component of bridge starting from river-bed
(1) Abutment, (2) Girder, (3) Foundation, (4) Flooring
(A) 3-1-2-4 (B) 3-2-1-4 (C) 3-1-4-2 (D) 3-4-2-1
026. The suitable surfacing material for a bridge deck slab is
(A) Bituminous carpet (B) Mastic asphalt
(C) Rolled asphalt (D) Sheet asphalt
027. End support of a bridge sub-structure is known as
(A) Wing wall (B) Pier (C) Abutment (D) Girder
028. Wing-wall constructed at right angles to the abutment is called as
(A) Curved wing-walls (B) Return wing-walls
(C) Splayed wing-walls (D) Straight wing-walls
029. While designing pier structure, the water pressure to be considered as
(i) Dynamic pressure
(ii) Static pressure
(iii) Impact due to cross current
(A) Only (i) (B) (i) and (ii)
(C) (ii) and (iii) (D) (i), (ii) and (iii)
030. As per IRC specifications approaches to either side of a bridge should be straight for a minimum length of
(A) 10 m (B) 15 m (C) 20 m (D) 25 m
031. What is the standard width of expansion joints to be provided in the bridge decks?
(A) 15 mm (B) 25 mm (C) 50 mm (D) 75 mm
032. For bridges of National Highways, the class of loading considered as per IRC is
(A) A (B) AA
(C) B (D) None of the above
033. In river training work for bridge, the spur is constructed
(A) Inclined to the river flow (B) Parallel to the river flow
(C) Transverse to the river flow (D) In any direction as per the site conditions
034. Select the most suitable methods of tunneling used for laying underground sewers.
(A) Army method (B) Austrian method
(C) English method (D) Needle beam method
035. Considering the drainage in tunnels, the gradient should not be more than
(A) 2.5 % (B) 5.0 % (C) 7.5 % (D) 10.0 %

036. The mechanical ventilation method used in tunnels consists of
(A) Providing exhaust air by ducts (B) Blowing fresh air
 (C) Both (A) and (B) (D) None of the above
037. From the drainage point of view in the tunnels, the gradient should not be more than
(A) 2.5 % (B) 5.0 % (C) 7.5 % (D) 10.0 %
038. Select the lining suitable for shield-driven tunnels particularly in the subaqueous regions?
(A) Brick lining (B) Cast iron lining
 (C) Concrete lining (D) Stone lining
039. For highway construction, tunnelling is preferred if the open cut exceeds:
(A) 5 m (B) 10 m (C) 15 m (D) 25 m
040. The concentration of 0.5 to 5 micron sized dust particles adjacent to the working face in a tunnel should not be more than:
(A) 200 particles/cm³ (B) 300 particles/cm³
 (C) 400 particles/cm³ (D) 500 particles/cm³
041. The difference between maximum void ratio and minimum void ratio of a sand sample is 0.30. If the relative density of this sample is 66.6% at a void ratio of 0.40, then the void ratio of this sample at its loosest state will be:
(A) 0.40 (B) 0.60 (C) 0.50 (D) 0.75
042. The best indication of the behaviour of a deposit of sand under load can be obtained from its
(A) Bulk density (B) Dry density
 (C) Relative density (D) Grading
043. What happens by the addition of coarser particles like sand or silt to clay?
 (A) Decrease in Liquid Limit and increase in Plasticity Index
(B) Decrease in Liquid Limit and no change in Plasticity Index
(C) Decrease in both Liquid Limit and Plasticity Index
(D) Increase in both Liquid Limit and Plasticity Index
044. Consider the following details of a sand:
(i) Void ratio in the densest state = 0.40
(ii) Void ratio in the loosest state = 1.20
Find out the relative density of a sample prepared with a void ratio of 1.0.
(A) 12.5% (B) 25% (C) 75% (D) 87.5%
045. If the Liquid Limit and Plastic Limit of the soil is 44 and 21 respectively, then it can be classified as _____.
(A) ML (B) CL (C) CI (D) MI

046. Soil sample from a construction site is found to be fine-grained soil with $W_L = 60$, $I_p = 20$, $W_s = 8$. What is the type of soil?
(A) Expansive CH soil (B) Non-expansive SC soil
(C) Expansive OH soil (D) Non-expansive ML soil
047. Based on the consistency of soil, the state of soil between the semi-solid and solid state is conceptualized as
(A) Shrinkage limit (B) Plastic limit
(C) Liquid limit (D) Consistency limit
048. Which of the following statement(s) is/are correct?
(i) The dry density of a soil is less than the density of soil solids.
(ii) The water content of a soil sample cannot be more than 100%.
(iii) In a fully saturated soil, the porosity is zero.
(iv) The number of voids increases when the soil is dried.
(A) Only (i) (B) (i) and (ii)
(C) (ii) and (iii) (D) (i), (ii), (iii) and (iv)
049. A soil specimen is placed in oven and heated at 105°C , the water lost from the specimen is the
(i) Hygroscopic moisture
(ii) Capillary water
(iii) Free water
(A) Only (i) (B) (i) and (ii)
(C) (ii) and (iii) (D) (i), (ii) and (iii)
050. A dense sand exhibits the following process upon shearing:
(A) Thixotropy (B) Dilatancy (C) Swelling (D) Bulking
051. If the discharge velocity of a soil is 2.4×10^{-1} cm/s and its void ratio as 0.50, then the seepage velocity of the soil will be:
(A) 7.2×10^{-1} cm/s (B) 4.8×10^{-1} cm/s
(C) 3.6×10^{-1} cm/s (D) 1.6×10^{-1} cm/s
052. The permeabilities of a soil deposit of three layers of equal thickness are in the ratio of 1: 2 : 3. What is the ratio of average permeability for flow in parallel and perpendicular direction to the soil layers?
(A) 22/18 (B) 18/22 (C) 24/12 (D) 12/24
053. It takes 4 years for a soil specimen to attain 50% degree of consolidation. Calculate the time required to attain 50% degree of consolidation with double drainage condition.
(A) 8 years (B) 4 years (C) 2 years (D) 1 year
054. In case of a saturated clay stratum undergoing consolidation with single drainage at its top, the value of pore water pressure is maximum at the _____
(A) Top (B) Middle
(C) Bottom (D) Top as well as bottom

055. When the primary consolidation process in a soil is complete, then
 (A) the hydrostatic pressure will become zero
 (B) the excess pore water pressure will become zero
 (C) both the hydrostatic and excess pore water pressure will become zero
 (D) the effective stress will become zero
056. Vane shear test was performed on a soft clay. The dimensions of the vane were 20 cm long and 10 cm diameter. The failure of clay occurred at a torque of 1000 kg cm. What is the cohesion of the clay in kg/cm^2 ?
 (A) $\frac{1}{\pi} \times \frac{6}{7}$ (B) $\frac{1}{\pi} \times \frac{5}{7}$ (C) $\frac{1}{\pi} \times \frac{4}{7}$ (D) $\frac{1}{\pi} \times \frac{3}{7}$
057. What will be the depth of the tension crack in a saturated stiff clay with unit weight of 2 gm/cm^3 and unconfined compressive strength of 2 kg/cm^2 ?
 (A) 2m (B) 5m (C) 10m (D) 20m
058. Which of the following geosynthetic materials is used as a primary separation material?
 (A) Geocell (B) Geogrid
 (C) Geotextile (D) Geosynthetic clay liner
059. Point load from a lamp post on the surface of the ground produces a stress of 19.1 kPa at a depth of 1m below it. What is the stress at the depth of 2m? (use Boussinesq's expression)
 (A) 9.55 kPa (B) 6.37 kPa (C) 4.77 kPa (D) 4.37 kPa
060. Which soil is most susceptible to dynamic loading?
 (A) Loose, saturated clays (B) Loose, saturated sands
 (C) Dense, saturated sands (D) Loose, saturated silts
061. A site is having a soil deposit of dry sand. The average Standard Penetration resistance N equal to 6 was recorded. What is the compactness of the soil deposit?
 (A) Very loose (B) Dense (C) Medium (D) Loose
062. Calculate the maximum safe height of the slope for a soil with cohesion $c = 15 \text{ kN/m}^2$ and unit weight of soil as 20 kN/m^3 . Consider the factor of safety as 1.5 and stability number as 0.05.
 (A) 5 m (B) 8 m (C) 10 m (D) 12 m
063. Consider an earthen dam with 30 m water depth. The flow net of the dam consists of 25 potential drops and 5 flow channels. Determine the coefficient of permeability of the dam materials when the discharge per meter length of dam is $0.00018 \text{ m}^3/\text{s}$.
 (A) $3 \times 10^{-3} \text{ cm/s}$ (B) $6 \times 10^{-3} \text{ cm/s}$
 (C) $3 \times 10^{-2} \text{ cm/s}$ (D) $4 \times 10^{-3} \text{ cm/s}$
064. The load carrying capacity of an individual friction pile is 200 kN. What is the total load carrying capacity of a group of 9 such piles with a group efficiency factor of 0.8?
 (A) 0 kN (B) 1640 kN (C) 1440 kN (D) 900 kN

065. A clay soil sample is tested in a triaxial apparatus in consolidated-drained conditions at a cell pressure of 100 kN/m^2 . What will be the pore water pressure at a deviator stress of 40 kN/m^2 ?
- (A) 0 kN/m^2 (B) 20 kN/m^2 (C) 40 kN/m^2 (D) 60 kN/m^2
066. In a standard Proctor test, 1.8 kg of moist soil was filled in a mould of volume 944 cc after compaction. A soil sample weighing 23 g was taken from the mould and oven-dried for 24 hours at a temperature of 110°C . Weight of the dry sample was found to be 20 gm . Specific gravity of the soil solids is $G = 2.7$. The theoretical maximum value of the dry unit weight of the soil at that water content is equal to
- (A) 4.67 kN/m^3 (B) 11.5 kN/m^3 (C) 16.25 kN/m^3 (D) 18.85 kN/m^3
067. The lime stabilisation of the soil causes
- (i) Decrease in shrinkage limit
(ii) Increase in plastic limit
(iii) Decrease in liquid limit
- (A) Only (i) (B) (i) and (ii)
(C) (ii) and (iii) (D) (i), (ii) and (iii)
068. A plate load test is carried out on a $300 \text{ mm} \times 300 \text{ mm}$ plate placed at 2 m below the ground level to determine the bearing capacity of a $2 \text{ m} \times 2 \text{ m}$ footing placed at same depth of 2 m on a homogeneous sand deposit extending 10 m below the ground. The ground water table is 3 m below the ground level. Which of the following factors does not require a correction to the bearing capacity determined based on the load test?
- (A) Absence of the overburden pressure during the test
(B) Size of the plate is much smaller than the footing size
(C) Influence of the ground water table
(D) Settlement is recorded only over a limited period of one or two days
069. What is the reason for efficiency of sheepfoot roller on compacting clayey soils?
- (A) Differential expulsion of water under roller
(B) High contact pressure
(C) High roller speed
(D) Large drum width
070. The rise of water table below a foundation influence the bearing capacity of the soil by decreasing its
- (A) Cohesion
(B) Effective unit weight of soil
(C) Effective angle of shearing resistance and effective unit weight of soil
(D) Effective angle of shearing resistance
071. Which of the following types of stone is recommended for masonry work submerged in water?
- (A) Gneiss (B) Sandstone (C) Marble (D) Quartzite

072. Match the following lists of 'Defects of Bricks' and their 'Causes':

Defects of Bricks	Causes
A. Bloating	1. presence of excess carbonaceous matter and sulphur in brick-clay
B. Effl escence	2. presence of alkalies
C. Chuff	3. imprisoned air during moulding
D. Blisters	4. falling of rain water on hot bricks

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

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

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

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

073. Which of the following is correct for Cold Twisted Deformed (CTD) reinforcement bars?

(A) They are easier to weld than Thermo Mechanical Treated rebars.

(B) Ductility increases with the amount of cold working.

(C) They exhibit a definite yield point.

(D) Cold-twisting results in strain hardening.

074. Which of the following constituents of glass acts as an accelerator for fusion of glass?

(A) Silica

(B) Lime

(C) Nickel

(D) Soda

075. The resistance offered by the heartwood to the penetration of preservative fluid under pressure is known as

(A) Treatability

(B) Heritability

(C) Fragility

(D) Severability

076. Which of the following types of plastic is widely used as a substitute of glass for doors and windows?

(A) PVC

(B) Bakelite

(C) Perspex

(D) Styrofoam

077. Carbide lime should not be used for

(i) White washing

(ii) Mortar

(iii) Plaster work

(A) Only (i)

(B) (i) and (ii)

(C) (ii) and (iii)

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

078. As per SP 62 (S&T) – Handbook on Building Construction Practices (by BIS), the bricks manufactured in _____ (employing commonly known methods for moulding and burning) are having the highest compressive strength compared to the bricks manufactured in other mentioned states.

(A) Gujarat

(B) Rajasthan

(C) Andhra Pradesh

(D) Uttar Pradesh

079. Penetration values of two bitumen samples B1 and B2 are 8 mm and 12 mm respectively. Which of these samples has better potential for resisting cracking at low temperature?

(A) B1

(B) B2

(C) It can't be ascertained as Penetration value is not connected with crack resistance

(D) It depends on the location where it's to be used

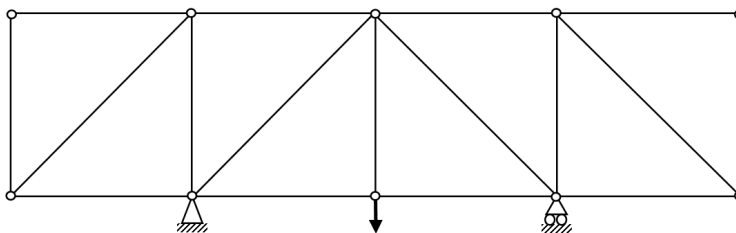
080. M60 grade concrete is to be used for manufacturing of precast tunnel lining segments. Which of the following mineral admixture should be recommended to be used in the concrete for achieving faster strength gain?
- (A) Class C fl ash (B) Class F fl ash
 (C) Silica fume (D) Rice husk ash
081. Which of the following tests determines unsoundness of cement due to an excess of calcium sulphate?
- (A) Vicat apparatus test (B) Le-Chatelier apparatus test
 (C) Autoclave test (D) None of the above
082. Which of the following statements are correct considering the effect of the properties of coarse aggregate used in concrete?
- (i) The quantity of water required for a given workability is reduced if the maximum size of aggregates is smaller.
 (ii) Strength of aggregates is not a governing criterion in lower strength concrete.
 (iii) Compared to rounded aggregates, the quantity of water required for a given workability is higher if the aggregates are angular.
- (A) (i) & (ii) (B) (ii) & (iii) (C) (i) & (iii) (D) (i), (ii) & (iii)
083. Which of the following is / are the correct effect() on concrete due to increase in temperature?
- (i) Compressive Strength decreases (ii) Tensile Strength decreases
 (iii) Modulus of Elasticity increases
- (A) Only (i) (B) (i) & (ii) (C) Only (iii) (D) (i), (ii) & (iii)
084. Which of the following is/are correct with respect to the estimation of aggregate proportion in concrete mix design?
- (i) For equal workability, the volume of coarse aggregate in a unit volume of concrete is dependent only on its nominal maximum size and grading zone of fine aggregate.
 (ii) Generally lower fine aggregate content is required for crushed angular coarse aggregates.
- (A) (i) only (B) (ii) only
 (C) Both (i) & (ii) (D) None
085. As per IS:456-2000, concrete in the member represented by a core test shall be considered acceptable if no individual core has a strength less than _____ percent of the cube strength of the grade of concrete specified for the corresponding age.
- (A) 75 (B) 85 (C) 90 (D) 95
086. Which of the following quantities have the same SI unit?
- (i) Work (ii) Energy
 (iii) Momentum (iv) Amount of heat
- (A) (i) & (ii) (B) (i), (ii) & (iii)
 (C) (i), (ii) & (iv) (D) (i), (ii), (iii) & (iv)

087. Which of the following is always correct for two forces P & Q passing from point O and their resultant force R?
- If R is passing from O, then P & Q are collinear forces.
 - Magnitude of R is greater than that of P as well as that of Q.
 - Magnitude of R is greater than either P or Q.
- (A) (i) only (B) (i) and (ii) (C) (ii) and (iii) (D) None
088. Force P of 10 N is acting at point (1,0) at an angle of 30° (anticlockwise) from +x-axis. Which of the following system applied at point (0,0) can replace the given force? (Coordinates are given in cm unit)
- 10 N force in same direction of P, accompanied by anticlockwise moment of 5 N-cm.
 - 10 N force in same direction of P, accompanied by anticlockwise moment of 8.66 N-cm.
 - 10 N force in opposite direction of P, accompanied by clockwise moment of 5 N-cm.
 - 10 N force in opposite direction of P, accompanied by clockwise moment of 8.66 N-cm.
089. Which of the following is/are correct with reference to friction?
- The law of static friction states that the limiting friction bears a constant ratio to the normal reaction between two bodies.
 - The angle of the plane at which the body placed on it is just on the verge of sliding down, is equal to angle of friction.
- (A) Only (i) (B) Only (ii)
 (C) Both (i) & (ii) (D) Neither (i) nor (ii)
090. A right angle triangle having centroid at $h/3$ from its horizontal base is rotated for a full revolution about its vertical side. Distance of centroid for this 3-dimensional solid shape from its base
- is less than $h/3$
 - is equal to $h/3$
 - is more than $h/3$
 - depends upon the material
091. A triangular section with horizontal base would give maximum Second Moment of Area about the horizontal axis passing from
- base of triangle
 - apex of triangle
 - centroid of triangle
 - mid-height of triangle
092. If Bar 1 having cross-sectional area A and Young's Modulus E_1 is subjected to tensile force of P_1 , and Bar 2 having cross-sectional area 2A and Young's Modulus E_2 is subjected to compressive force of P_2 and they both undergo same amount of strain, then which of the following is correct?
- If $E_1 = 2E_2$, then $P_2 = 2P_1$
 - If $E_1 = 2E_2$, then $P_1 = P_2$
 - If $E_2 = 2E_1$, then $P_1 = P_2$
 - If $E_2 = 2E_1$, then $P_2 = 2P_1$
093. Maximum thermal stress in circular tapering section will increase if
- diameter of smaller end of the bar decreases
 - diameter of larger end of the bar decreases
 - Modulus of Elasticity of material decreases
 - Coefficient of thermal expansion decreases

094. A 5 m long rod of 8 mm diameter and 12 N/m self-weight is suspended vertically. The maximum stress developed in the rod is approximately
(A) 0.6 MPa (B) 1.2 MPa (C) 6.0 MPa (D) 7.5 MPa
095. If the material doesn't show any change in volume when it is subjected to stress, then its Poisson's Ratio must be
(A) Zero (B) 0.33 (C) 0.5 (D) Infinit
096. Which of the following is/are correct for state of stress in a plane?
(i) Shear stress on the plane having maximum normal stress must be zero.
(ii) Normal stress on the plane having maximum shear stress must be zero.
(A) Only (i) (B) Only (ii)
(C) Both (i) & (ii) (D) Neither (i) nor (ii)
097. If an element is subjected to a tensile stress of 60 MPa in horizontal direction, a tensile stress of 20 MPa in vertical direction and shear stress of 30 MPa which tends to rotate the element in anticlockwise direction, then the Radius of Mohr's Circle will be
(A) 30 MPa (B) 40 MPa
(C) 50 MPa (D) None of the above
098. Two triangular wedges having same sides are connected such that they create a cube. If this member is subjected to tensile stress of 100 MPa in x-direction and compressive stress of 100 MPa in y-direction, what is the normal stress on the plane of joint?
(A) 0 (B) 50 MPa (C) 70.71 MPa (D) 100 MPa
099. Which of the following failure theories assumes that failure by yielding of a material takes place when the maximum principal strain in the material subjected to principal stresses is equal to the strain at the yield point in a simple tension or compression test?
(A) Von Mises theory (B) Tresca theory
(C) St. Venant's theory (D) Beltrami's theory
100. Which of the following pairs is not matched correctly for material type and number of planes of symmetry for their material properties?
(A) Anisotropic: no plane of symmetry (B) Monoclinic: one plane of symmetry
(C) Orthotropic: two planes of symmetry (D) Isotropic: infinit planes of symmetry
101. A flitch beam is prepared by connecting two steel plates of 12 mm × 300 mm each to the wooden beam of 300 mm × 300 mm size. Which of the following arrangements would give maximum bending strength of the beam?
(A) Providing both the plates horizontally, one at top of wooden beam and the other at bottom of wooden beam
(B) Providing both the plates vertically, one on left side of wooden beam and the other on right side of wooden beam
(C) Providing both the plates horizontally, both at bottom side of wooden beam
(D) Cutting the wooden beam vertically in two parts and providing both the plates vertically, between two wooden parts

102. Which of the following is/are correct for maximum Shear Stress in a triangular section?
 (i) If depth of the section is doubled, maximum shear stress is reduced by half.
 (ii) If width of the section is doubled, maximum shear stress is reduced by half.
 (A) Only (i) (B) Only (ii)
 (C) Both (i) & (ii) (D) Neither (i) nor (ii)
103. If diameter of solid circular shaft is D , external diameter of hollow circular shaft is $2D$ and internal diameter of hollow circular shaft is D , what is the ratio of torsional stiffness of hollow circular shaft to that of solid circular shaft? Length and Material of both the shafts are same.
 (A) 2 (B) 7 (C) 15 (D) 31
104. Which of the following is/are correct with reference to Unsymmetrical Bending?
 (i) The product of inertia of a section with respect to two perpendicular axes is zero if either one of the axes is an axis of symmetry.
 (ii) If the product of inertia is zero about two coordinate axes passing through the centroid, then the bending is symmetrical or pure bending.
 (A) Only (i) (B) Only (ii)
 (C) Both (i) & (ii) (D) Neither (i) nor (ii)
105. Which of the following theories is majorly used for analysis of thick cylinders?
 (A) Courbon's theory (B) Poisson's theory
 (C) Lamé's theory (D) Perry's theory

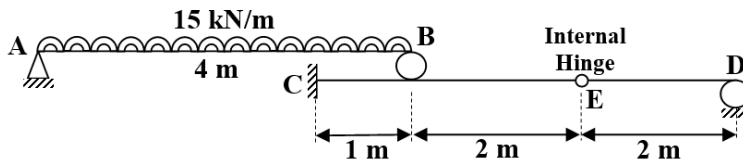
106. Neglecting self-weight of the members, how many zero force members are present in the given truss?



- (A) 8 (B) 10 (C) 12 (D) 14
107. When subjected to downward UDL throughout the span, which of the following beams gives the least value for maximum hogging moment anywhere in the beam?
 (A) Propped Cantilever Beam
 (B) Fixed Beam
 (C) Overhanging beam having quarter span as overhang on both the sides
 (D) Simply Supported Beam

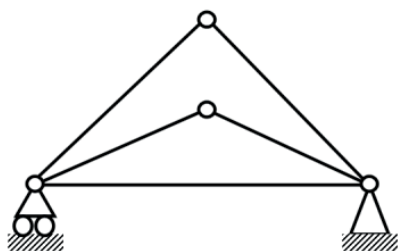
108. A Simply Supported Beam AB is subjected to Uniformly Varying Moments throughout the span having value of M kN-m at point A, uniformly decreasing moving towards B and zero moment at point B. Which of the following statements is correct for Shear Force Diagram (SFD) of this beam?
- (A) SFD at point A is higher than point B.
 (B) SFD at point B is higher than point A
 (C) SFD at A and B are same and non-zero.
 (D) Shear Force at all the sections of beam is zero, so SFD is a zero-line.

109. In the given beam system, what is the reaction at point D?



- (A) 30 kN (B) 20 kN (C) 10 kN (D) 0
110. An overhanging beam A-B-C-D is having supports at B and C. $AB = 2$ m, $BC = 5$ m and $CD = 3$ m. Point P is at 5 m distance from A. What is the maximum sagging moment produced at point P, if a concentrated load of 10 kN is rolling on the beam?
- (A) 8 kN-m (B) 12 kN-m (C) 15 kN-m (D) 18 kN-m
111. Maximum Bending Moment in a simply supported beam subjected to UDL in only central half of the beam is _____ % of that of simply supported beam subjected to same amount of UDL throughout the span.
- (A) 25 (B) 50 (C) 66.67 (D) 75
112. A simply supported beam AB is subjected to two Uniformly Varying loads. One is having ordinate of $2w$ kN/m at A and zero ordinate at midpoint of beam point C. The second UVL is having ordinate of w kN/m at B and zero ordinate at C. Maximum bending moment in the beam will be
- (A) at point C
 (B) at the point on left side of C
 (C) at the point on right side of C
 (D) either on left side of C or on right side of C depending upon value of w
113. A Simply Supported Beam AB of span 4 m is subjected to upward point load P , downward point load P and upward point load P at respectively 1m, 2m and 3m distance from point A. How many points of contraflexure are present in this beam?
- (A) 0 (B) 1 (C) 2 (D) 3
114. Beam A-B-C is supported by a hinge at A and a vertical spring of stiffness 25 N/mm at B. $AB = 2$ m and $BC = 3$ m. If a vertical load of 100 N is applied at C, vertical deflection at C will be
- (A) 5 mm (B) 10 mm (C) 20 mm (D) 25 mm

115. Which of the following is correct about Static Indeterminacy and Stability of the given plane truss?



- (A) Statically Determinate and Stable
 (B) Statically Determinate and externally Unstable
 (C) Statically Determinate and internally Unstable
 (D) Statically Indeterminate and internally Unstable
116. When a fixed beam of span 5 m is subjected to point load of 200 kN at midpoint, its maximum deflection is δ_1 . When the same beam is converted to a simply supported beam and subjected to UDL of 20 kN/m throughout the span, its maximum deflection is δ_2 . Which of the following is correct?
- (A) $\delta_1 = \delta_2$ (B) $\delta_1 > \delta_2$
 (C) $\delta_1 < \delta_2$ (D) Data is insufficient
117. A simply supported beam AB is subjected to a moment at point B. Ratio of rotation at A to rotation at B is
- (A) 1/4 (B) 1/2 (C) 1 (D) 2
118. A fixed beam AB is subjected to Uniformly Varying Load having maximum ordinate at B and zero ordinate at A. Which of the following are correct for this beam?
- (i) $BM_A > BM_B$ (ii) $BM_A < BM_B$
 (iii) $SF_A > SF_B$ (iv) $SF_A < SF_B$
 (A) (i) & (iii) (B) (i) & (iv)
 (C) (ii) & (iii) (D) (ii) & (iv)
119. If the diameter of a long column is reduced by 50%, then Euler's buckling load will be reduced by
- (A) 6.25% (B) 12.5%
 (C) 50% (D) 93.75%
120. A continuous beam A-B-C is supported at points A, B and C by simple supports. Length of AB and BC are same. It is subjected to UDL throughout span AB. Neglecting the self-weight of the beam, which of the following is correct for this beam?
- (A) Point of contraflexure is located at point B.
 (B) Point of contraflexure is absent in this beam.
 (C) Entire span AB is under sagging moment.
 (D) Entire span BC is under hogging moment.

121. Which of the following Influence Line Diagrams (ILD) has a shape having similar view to the shape of Bending Moment Diagram of a simply supported beam subjected to UDL throughout the span?
- (A) ILD of bending moment at B for a continuous beam A-B-C having same spans and all simple supports
(B) ILD of reaction at B for a continuous beam A-B-C having same spans and all simple supports
 (C) ILD of horizontal reaction for two-hinged parabolic arch having both simple supports
 (D) ILD of horizontal reaction for three-hinged parabolic arch having both simple supports
122. Properties of an I-section Column are: $A = 1600 \text{ mm}^2$, $Z_x = 64 \times 10^3 \text{ mm}^3$, $Z_y = 48 \times 10^3 \text{ mm}^3$. For no tension in column, the allowable eccentricity e_y is
- (A) 30 mm (B) 35 mm
(C) 40 mm (D) unable to be decided as data is insufficient
123. As per Kani's Method, the sum of rotation factors at a joint is
- (A) 0 **(B)** $-1/2$ (C) -1 (D) $-3/2$
124. As per approximate analysis for multi-storeyed frames subjected to vertical loads in the exterior bay, it is assumed that the hinge points are approximately located at a distance of _____ from the exterior column. ($L = \text{span of the beam}$)
- (A) $0.05 L$ **(B)** $0.10 L$ (C) $0.15 L$ (D) $0.20 L$
125. A fixed beam of span L is subjected to UDL throughout the span. If the plastic moment capacity of the section is M_p then the total collapse load causing the plastic collapse of a beam will be
- (A) $4M_p/L$ (B) $8M_p/L$ (C) $12M_p/L$ **(D)** $16M_p/L$
126. Which of the following is the correct sequence for the solution of matrix method of structural analysis?
- (i) Numbering of degrees of freedom and numbering of joints
 (ii) Partitioning the stiffness matrix and force vector
 (iii) Calculating the local and global stiffness matrix
 (iv) Finding the solution
- (A)** (i) – (iii) – (ii) – (iv) (B) (i) – (iv) – (ii) – (iii)
 (C) (ii) – (i) – (iii) – (iv) (D) (ii) – (i) – (iv) – (iii)
127. Which of the following are properties of assembled global stiffness matrix?
- (i) Orthogonal matrix
 (ii) Symmetric matrix
 (iii) Singular matrix
- (A) (i) & (ii) **(B)** (ii) & (iii)
 (C) (i) & (iii) (D) (i), (ii) & (iii)

128. In folded plates, external loads are resisted by two actions which are 'Plate action' and 'Slab action'. With reference to that, which of the following statements is/are correct?
- (i) Transverse bending between the junctions of the plates is termed as 'Plate Action'.
(ii) Longitudinal bending of the plates in their own plane is termed as 'Slab Action'.
- (A) Only (i) (B) Only (ii)
(C) Both (i) & (ii) (D) Neither (i) nor (ii)
129. In a spring mass system, a mass with a roller support on horizontal plane is provided with a horizontal spring of 30 N/mm stiffness on the left side and another horizontal spring of 20 N/mm on right side of the mass. Both the springs are attached to fixed supports at their ends. What is the equivalent stiffness of the springs?
- (A) 10 N/mm (B) 12 N/mm (C) 25 N/mm (D) 50 N/mm
130. In viscous damped free vibrations, damping force is proportional to
- (A) Natural Frequency (B) Displacement
(C) Velocity (D) Acceleration
131. For standard rolled steel sections ISMB and ISMC having the same depth, which of the following properties of ISMB is/are always higher than that of ISMC?
- i. Width of flange
ii. Thickness of flange
iii. Thickness of web
- (A) Only (i) (B) Only (ii)
(C) (ii) and (iii) (D) (i), (ii) & (iii)
132. In bolted connections, prying forces induced in the bolts are mainly due to
- (A) uneven distribution of shear (B) bending of long bolts
(C) flexibility of connected plates (D) block shear in the plate
133. By restraining the midpoint of a pin-ended column using a bracing, the critical load can be increased by a factor of
- (A) 1.5 (B) 2.0 (C) 3.0 (D) 4.0
134. Fire resistance level of a steel structure is specified in terms of
- (A) Ultimate Stress (B) Yield Stress
(C) Temperature (D) Time
135. A portal frame ABCD has fixed supports at A and D. The frame is subjected to downward UDL throughout part BC and a horizontal load at midpoint of AB. How many plastic hinges are to be generated for failure of this portal frame by the beam mechanism?
- (A) 2 (B) 3 (C) 4 (D) 5
136. The curve defining the relationship between the number of stress cycles to failure at a constant stress range during fatigue loading of a structure, is known as
- (A) Stress-Strain curve (B) Dynamic Stress Level curve
(C) Attenuation curve (D) S-N curve

137. Which of the following is not included in Limit State of Serviceability?
 (A) Fracture due to fatigue (B) Vibrations in the structure
 (C) Corrosion (D) Fire
138. Which of the following is correct Load Combination for Limit State of Strength, as per IS:800-2007? (DL = Dead Load, LLL = Leading Live Load, ALL = Accompanying Live Load, EL = Earthquake Load)
 (A) 1.5 DL + 1.5 LLL + 0.53 ALL + 1.05 EL
 (B) 1.5 DL + 1.5 LLL + 0.53 ALL + 0.6 EL
 (C) 1.2 DL + 1.2 LLL + 1.05 ALL + 0.6 EL
 (D) 1.2 DL + 1.2 LLL + 1.05 ALL + 1.2 EL
139. As per IS Code, which of the following factor(s) is / are considered for the design of tension member in working stress design of steel structures?
 (i) Shear lag effect
 (ii) Effect of punched holes
 (iii) Block shear mode of failure
 (A) Only (i) (B) (i) and (ii)
 (C) Only (iii) (D) (i), (ii) and (iii)
140. In case of staggered bolt holes, design strength of a steel tension member due to rupture of critical section increases if gauge length between the bolt holes _____ or staggered pitch length between the line of bolt holes _____ .
 (A) increases, increases (B) increases, decreases
 (C) decreases, increases (D) decreases, decreases
141. As per IS:800-2007, plastic method of analysis can be used in general cases if the yield stress of the grade of steel used does not exceed
 (A) 250 MPa (B) 415 MPa (C) 450 MPa (D) 500 MPa
142. Match the following lists of conditions to be satisfied and the solutions they provide for the Plastic Analysis:

Conditions to be satisfied	Solutions provided by the satisfied conditions
A. only Equilibrium and Mechanism conditions	1. Lower bound solution
B. only Equilibrium and Plasticity conditions	2. Upper bound solution
C. all three conditions (Equilibrium, Mechanism and Plasticity)	3. Unique value of lowest plastic limit load

- (A) A-2, B-1, C-3 (B) A-2, B-3, C-1
 (C) A-3, B-2, C-1 (D) A-1, B-2, C-3
143. Matches for Section classes and their respective Design Moment Capacity M_d (before applying partial factor of safety for materials) are given below with general symbols. Which of them is not a correct match?
 (A) Plastic: $M_d = Z_p f_y$ (B) Compact: $M_d = Z_e f_y$
 (C) Semi-compact: $M_d = Z_e f_y$ (D) Slender: $M_d = Z_e f_y$

144. Which of the following statements is/are correct for intermittent fillet welding?
- For exposed conditions, it offers better life and ease of maintenance compared to continuous welding.
 - It is preferred when a structure is subjected to dynamic loading.
- (A) Only (i) (B) Only (ii)
(C) Both (i) & (ii) (D) Neither (i) nor (ii)
145. What is the minimum end distance for 20 mm diameter bolt when edges are cut by machine-flame
- (A) 30 mm (B) 33 mm (C) 34 mm (D) 37 mm
146. In the case of members with fire protection material applied, the exposed surface area is to be taken as
- the internal surface area of the fire protection material
 - the external surface area of the fire protection material
 - average of the product of thickness and length of the fire protection material
 - weighted average of the product of thickness and length of the fire protection material
147. As per general notations followed in IS:800-2007, Shear area for a welded I-section subjected to major axis bending is calculated by
- (A) ht_w (B) dt_w (C) $2bt_f$ (D) $Ah/(b+h)$
148. A column carries a factored axial compressive load of 2400 kN and factored bending moment of 96 kN-m. If 300mm × 400mm base plate is provided with larger dimension in direction of moment, then minimum pressure experienced by the plate will be
- (A) 16 MPa (B) 12 MPa (C) 8 MPa (D) 0
149. Yield stress ratio ϵ for Fe410 grade of steel is
- (A) 0.75 (B) 0.78 (C) 0.81 (D) 1
150. Which of the following is/are the correct modification incorporated in IS:875(Part III)-2015 compared to the previous version IS:875(Part III)-1987?
- The previous classification of structures into Terrain category 2, 3 and 4 are deleted and accordingly the modification factor k_2 is renamed as height and structure size factor.
 - An additional modification factor, termed as important factor has been included for important structures.
- (A) Only (i) (B) Only (ii)
(C) Both (i) & (ii) (D) Neither (i) nor (ii)
151. In design of flexural members, maximum depth of neutral axis $x_{u,max}$ depends upon
- Characteristic yield strength of steel f_y
 - Modulus of Elasticity of steel E_s
- (A) Only (i) (B) Only (ii)
(C) Both (i) & (ii) (D) Neither (i) nor (ii)

152. According to IS:456-2000, in working stress method, permissible stresses in concrete for compressive bending stress is _____ compressive direct stress for the same grade of concrete.
 (A) greater than
 (B) less than
 (C) equal to
 (D) greater for concrete grade > M25 and lesser for concrete grade ≤ M25, than
153. According to IS:456-2000, cracks due to bending in a compression member need not be checked if it is subjected to a design axial load greater than _____ .

(f_{ck} is the characteristic compressive strength of concrete and A_c is area of gross section of the member)

- (A) $0.20 f_{ck} A_c$ (B) $0.36 f_{ck} A_c$ (C) $0.40 f_{ck} A_c$ (D) $0.45 f_{ck} A_c$
154. A RCC slab of size 4 m × 6 m having thickness 200 mm is simply supported on all four walls. 12 mm diameter bars are used in the direction of shorter span and 10 mm diameter bars are used in the direction of longer span. If the provided clear cover is 25 mm, what is the effective depth along the longer span?
 (A) 158 mm (B) 163 mm (C) 164 mm (D) 169 mm
155. According to IS:456-2000, if an increased load on the column is allowed for, the pitch of 8 mm dia. helical reinforcement shall not be less than
 (A) 20 mm (B) 24 mm (C) 25 mm (D) 32 mm
156. For a combined footing, match the following lists of direction of the reinforcements, the location of moment to be used to determine those reinforcements and location of reinforcements in footing:

Direction	Location of respective Moment	Location of Reinforcement in footing
A. longitudinal	P. at face of the column	X. top of footing
B. transverse	Q. between two columns	Y. bottom of footing

- (A) A-Q-Y, A-P-X, B-P-X (B) A-P-Y, A-Q-X, B-P-X
 (C) A-Q-Y, A-P-X, B-P-Y (D) A-P-Y, A-Q-X, B-P-Y
157. Which of the following statements is/are correct for RCC Wall designed as per IS:456-2000?
 i. Minimum thickness of wall shall be 110 mm.
 ii. The ratio of effective height to thickness shall not exceed 25.
 (A) Only (i) (B) Only (ii)
 (C) Both (i) & (ii) (D) Neither (i) nor (ii)
158. Circular ring beam which supports top dome in an Intze tank is designed for
 (A) Bending Moment only (B) Bending Moment and Shear Force only
 (C) Hoop Tension only (D) Hoop Compression only
159. Which of the following losses is a Time-dependent loss in prestressed concrete?
 (A) Elastic Shortening (B) Steel Relaxation
 (C) Anchorage Slip (D) Friction

160. As per IS:13920-2016, Longitudinal steel in beams at any section on top or bottom face shall be at least _____ of longitudinal steel provided at top face of the beam at the face of the column.
 (A) 25% (B) 33% (C) 50% (D) 67%
161. IS:1893 (Part 3) – 2014 deals with Criteria for Earthquake Resistant Design of Structures for
 (A) Bridges and retaining walls
 (B) Liquid retaining tanks
 (C) Industrial structures, including stack-like structures
 (D) Dams and embankments
162. Which of the following statements is/are correct with respect to the structure subjected to earthquake forces?
 i. Under earthquake shaking, the top bars in the beam-column joint are pulled in one direction and the bottom ones in the opposite direction.
 ii. If short and tall columns exist within the same storey level, then the long columns suffer more damage as compared to shorter ones.
 (A) Only (i) (B) Only (ii)
 (C) Both (i) & (ii) (D) Neither (i) nor (ii)
163. Which of the following best describes the structural system of Burj Khalifa?
 (A) Buttressed Core (B) Shear wall-Haunched girder frame
 (C) Truss-Tube with Interior columns (D) Truss-Tube without Interior columns
164. What is the effective height of an unreinforced masonry wall having RCC roof at one end spanning or adequately bearing on the wall; and timber floor not spanning on wall but adequately anchored to it, on the other end? (H is the height of wall between centres of support.)
 (A) 0.75H (B) 0.85H (C) 1.00H (D) 1.50H
165. Which of the following is/are correct for a masonry structure subjected to lateral loads?
 i. As a result of lateral load, in the cross walls, there will be an increase of compressive stress on the windward side, and decrease of compressive stress on the leeward side.
 ii. A wall which is carrying greater vertical loads, will be in a better position to resist lateral loads than the one which is lightly loaded in the vertical direction.
 (A) Only (i) (B) Only (ii)
 (C) Both (i) & (ii) (D) Neither (i) nor (ii)
166. Which of the following is/are correct for network diagrams in Critical Path Method (CPM)?
 i. In arrow diagram, a circle represents one activity and the arrows represent logical time relationships between activities.
 ii. In circle diagram, an arrow represents one activity and each circle represents an event.
 iii. In practice, the arrow diagram is preferred to the circle diagram.
 (A) (i) & (iii) (B) (ii) & (iii)
 (C) Only (iii) (D) (i), (ii) & (iii)

167. Which of the following is correct about network techniques PERT and CPM?
 (A) PERT and CPM are both considered as deterministic approach
 (B) PERT is considered as a probabilistic technique and CPM is considered as a deterministic approach
 (C) PERT is considered as a deterministic approach and CPM is a probabilistic technique
 (D) PERT and CPM are both probabilistic techniques
168. For an activity i-j, the early event times at i and j, and the late event times at i and j, are 7, 27, 12 and 33 respectively. The activity duration is 8. Match the following lists of Float and their duration:

Float	Duration
A. Free Float	(i) 6
B. Total Float	(ii) 7
C. Interfering Float	(iii) 12
D. Independent Float	(iv) 18

- (A) A-iii, B-iv, C-ii, D-i
 (B) A-iv, B-iii, C-ii, D-i
 (C) A-iii, B-iv, C-i, D-ii
 (D) A-iv, B-iii, C-i, D-ii
169. Which of the following is not a part of technical project appraisal?
 (A) Engineering aspects
 (B) Location
 (C) Process
 (D) Pricing options
170. Select the correct order of the below given schedule levels in the increasing order of level of details involved in schedule.
- | | |
|----------------------------------|------------------------------------|
| i. Detailed schedule | ii. Project working level schedule |
| iii. Project master schedule | iv. Summary master schedule |
| v. Project coordination schedule | |
- (A) (iii) – (iv) – (v) – (ii) – (i)
 (B) (iv) – (v) – (iii) – (ii) – (i)
 (C) (v) – (iv) – (iii) – (ii) – (i)
 (D) (iii) – (v) – (iv) – (i) – (ii)
171. When a manager monitors the work performance of workers in his department to determine if the quality of their work is 'up to standard' or not then this manager is engaging in which type of function?
 (A) Planning
 (B) Organising
 (C) Controlling
 (D) Leading
172. Which of the following dredgers is not suitable for dredging clayey materials?
 (A) Bucket Dredger
 (B) Grab Dredger
 (C) Backhoe Dredger
 (D) Suction Dredger
173. As per constant percentage method, what is the book value at the end of 1 year for a construction equipment purchased for Rs. 10000/- and having salvage value at the end of 3 years to be Rs. 1250/-?
 (A) 8750/-
 (B) 7500/-
 (C) 5000/-
 (D) 3750/-
174. Hard drawn steel wire fabric is measured in
 (A) m
 (B) m²
 (C) kg
 (D) MT

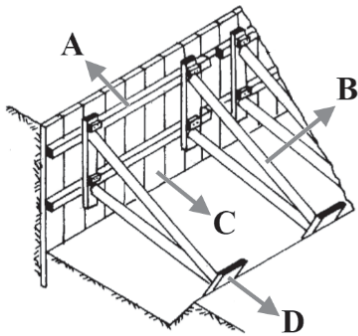
175. Which of the following is correct in context of method of measurement of concrete works?
- Beams shall be measured from face-to-face of columns and shall include haunches, if any, between columns and beams.
 - In case of columns for flat slabs, face of column shall be included with the slab for measurement.
 - In case of inverted beam, depth of beam shall be measured from bottom of slab to top of beam.
- (A) Only (i) (B) (i) and (ii)
(C) (ii) and (iii) (D) (i), (ii) and (iii)
176. Which of the following is/are correct in the context of contract management?
- Every agreement need not be a contract, but all contracts are agreement.
 - An agreement is typically not enforceable by law, whereas a contract is enforceable by law.
- (A) Only (i) (B) Only (ii)
(C) Both (i) & (ii) (D) Neither (i) nor (ii)
177. Failure to perform a contract will be a breach of contract unless the failure arises from
- (A) a party inadvertently and unintentionally not complying with the contract
(B) the inability of a party to perform the contract
(C) an unanticipated change of circumstances that makes performance impossible
(D) a disagreement as to what is required by the contract
178. A balcony having 4 m^2 area is not protected by providing any projection above it. How much of its area is considered for measurement of Plinth area?
- (A) 1 m^2 (B) 2 m^2 (C) 3 m^2 (D) 4 m^2
179. Stores ledger is maintained by the _____ department.
- (A) Purchase (B) Stores (C) Production (D) Cost accounting
180. RTFCTLARR stands for
- (A) Right to Fair Completion and Transparency in Land Allotment, Rehabilitation and Resettlement Act
(B) Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act
(C) Right to Full Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act
(D) Right to Fair Compensation and Transparency in Land Allotment, Rehabilitation and Resettlement Act
181. Which of the following is/are correct in the context of cost of quality?
- Prevention cost will be maximum at '100% defect'.
 - Failure cost decreases as we approach towards 'zero defect'.
- (A) Only (i) (B) Only (ii)
(C) Both (i) & (ii) (D) Neither (i) nor (ii)

182. In VED analysis (which is an inventory management technique), E stands for
 (A) Essential (B) Estimated
 (C) Exchangeable (D) Economical
183. As per Heinrich's Injury Pyramid, one major injury happens in _____ reportable accidents.
 (A) 29 (B) 180 (C) 300 (D) 330
184. Match the following lists of Safety Helmet Colours and respective Personnel who should wear the same at a construction site in India:

Helmet Colour	Personnel
A. Blue	1. Welders and workers with high heat application
B. Brown	2. Safety Office
C. Green	3. Electricians, Carpenters and other technical operators apart from civil workers
D. Grey	4. Site Visitors

- (A) A-3, B-4, C-2, D-1 (B) A-3, B-1, C-2, D-4
 (C) A-2, B-4, C-3, D-1 (D) A-2, B-1, C-3, D-4
185. Where any building worker is required to work on any day in excess of the number of hours constituting a normal working day, he shall be entitled to wages at the rate of _____ times his ordinary rate of wages.
 (A) 1.25 (B) 1.5 (C) 1.67 (D) 2
186. In which of the following stone masonry strengthening joints, projection of one stone fit into the depression of the adjacent stone?
 (A) Table joggle joint (B) Metal joggle joint
 (C) Cramped joint (D) Plug joint
187. When a curved wall is to be built having a radius of 1.5 m, the most suitable bond would be
 (A) Stretcher (B) Header (C) English (D) Flemish
188. Which of the following statements are correct for the mortar to be used in concrete block masonry construction?
- It should be relatively weak and slow setting.
 - Composite cement-lime mortar is best suited for the purpose, using 1:2:9 mortar for normal work and 1:1:6 mortar when intensity of loading is high or masonry is exposed to weather.
 - Mortar for masonry in superstructure should be somewhat richer than that for foundation and plinth.
- (A) (i) and (ii) (B) (ii) and (iii)
 (C) (i) and (iii) (D) (i), (ii) and (iii)

197. What are the correct names of the members shown in the sketch of Planking and Strutting for Shallow Wide Excavation?



- (A) A = Rake, B = Waling, C = Poling Board, D = Blocking
- (B) A = Rake, B = Waling, C = Blocking, D = Poling Board
- (C) A = Waling, B = Rake, C = Poling Board, D = Blocking**
- (D) A = Waling, B = Rake, C = Blocking, D = Poling Board

198. In context of fire and life safety, a high rise building during construction shall be provided with a water storage tank of minimum _____ litre capacity, which may be used for other construction purposes also.

- (A) 5000
- (B) 10000
- (C) 15000
- (D) 20000**

199. Match the following lists of Soil Improvement Methods and the Most Suitable Soil Conditions for those methods:

Soil Improvement Methods	Most Suitable Soil Conditions
A. Vibro Replacement Stone and Sand Columns	1. Expansive clays
B. Electro-Osmosis	2. Normally consolidated silts and silty clays
C. Compaction Piles	3. Soft clays and alluvial deposits
D. Pressure Injected Lime	4. Loose sandy soils: partly saturated clayey soils, loess

- (A) A-3, B-4, C-2, D-1
- (B) A-3, B-2, C-4, D-1**
- (C) A-1, B-2, C-4, D-3
- (D) A-1, B-4, C-2, D-3

200. Match the following lists of types of cofferdam and their requirement of space:

Types of cofferdam	Requirement of space
A. Rockfill	1. Limited over alluvial foundations
B. Colloidal Concrete	2. Larger space due to wider base
C. Timber	3. Limited over rocky foundations but depth of water upto 2 m only
D. Double-wall steel sheet pile	4. Limited over rocky foundations

- (A) A-3, B-1, C-2, D-4
- (C) A-2, B-4, C-3, D-1**
- (B) A-3, B-4, C-2, D-1
- (D) A-2, B-1, C-3, D-4

201. According to National Building Code of India 2016, 'Laboratories, outpatient clinics, research establishments, libraries and test houses' is classified as a subdivision of _____ buildings.

- (A) Educational
- (B) Institutional
- (C) Business**
- (D) Industrial

209. A hydraulic pipeline 3 km long and 50 cm diameter is used to convey water. The velocity of wave is 1500 m/s. If the valve provided at the outflow end is closed in 3.92 seconds, then this closure will be
 (A) gradual (B) sudden (C) data insufficient (D) cannot say
210. Given the x-component of the velocity $u = 6xy - 2x^2$, the y-component of the flow v is given by
 (A) $6y^2 - 4xy$ (B) $-6xy + 2x^2$ (C) $6x^2 - 2xy$ (D) $4xy - 3y^2$
211. The standard Hagen-Poiseuille formula for discharge through circular pipe is

$$Q = \frac{\pi}{128\mu} \left(-\frac{dp}{dx} \right) (A)^B$$

 The corresponding A, B (exponent) are (where D = diameter of pipe, L = length of pipe)
 (A) L, 4 (B) L, 2 (C) D, 2 (D) D, 4
212. In a 12 cm diameter pipe, the minor losses are equal to $5v^2/2g$. The equivalent length of pipe to account for the minor losses for $f = 0.04$ is
 (A) 5 m (B) 15 m (C) 10 m (D) 20 m
213. A body moving through still water at 8 m/s produces a water velocity of 6 m/s at a point 1 m ahead. The difference in pressure between the nose and the point 1 m ahead would be (density of water as 1000 kg/m^3)
 (A) 14000 N/m^2 (B) 9810 N/m^2
 (C) 10000 N/m^2 (D) 28000 N/m^2
214. A 10 m wide rectangular channel carries a discharge of $2(2)^{1/2} \text{ m}^3/\text{s}/\text{m}$ under critical condition. Using $(g)^{1/3} = 2.15$, the specific energy would be
 (A) 1.000 m (B) 1.837 m (C) 1.395 m (D) 0.885 m
215. A hydraulic turbine develops a power of 104 metric hp while running at a speed of 100 rpm, under a head of 81 m its specific speed is
 (A) 56 (B) 41 (C) 47 (D) None of the above
216. The maximum permissible suction lift for centrifugal pump in practice is
 (A) 8 m (B) 10 m (C) 12 m (D) 14 m
217. Before manufacturing the large sized centrifugal pumps, tests are conducted on the models and performance of the prototypes is predicted. If the speed ratio and diameter ratio between model and prototype is respectively 2 : 3 and 1 : 2, then to perform complete similarity, the respective pump-power ratio would be
 (A) 4/27 (B) 1/32 (C) 1/108 (D) 3/216
218. The allowable NPSH for a pump provided by the manufacturer for a flow of $0.065 \text{ m}^3/\text{s}$ is 3.8 m. The temperature of water is 27°C (vapour pressure head absolute = 0.45 m), atmospheric pressure is 100 kPa absolute, and the head loss from the reservoir to pump is 0.4 N-m/N . The maximum height of the pump above the suction reservoir is ($g = 10 \text{ m/s}^2$)
 (A) 12.95 m (B) 11.75 m (C) 5.35 m (D) 5.80 m

219. From the analysis of rainfall data at particular station was found that a rainfall of 400 mm had a return period of 2 years. What is the probability of rainfall equal to or greater than 500 mm at least once in 10 successive years?
- (A) Zero (B) Approx. 50%
(C) Approx. 90% (D) Approx. 100%
220. The Western Ghats of India experiences precipitation of 200 cm. The corresponding runoff by using Inglis formula is
- (A) 121.5 cm (B) 139.5 cm
(C) 148 cm (D) 111.8 cm
221. A reservoir has average water spread over 4 km^2 . During two months period of study, surface inflow = 240 ha-m; surface outflow = 192 ha-m; rainfall = 28 cm; change in storage = (+) 72 ha-m. By the hydrologic equation, the estimated reservoir losses are
- (A) 88 ha-m (B) 120 ha-m
(C) 160 ha-m (D) 232 ha-m
222. Which of the following factor(s) does not affect losses occurred due to transpiration effect
- (i) Ground water table. (ii) Moisture content of soil.
(iii) Type of leaf structure (iv) Wind speed.
- (A) Only (i) (B) Only (ii)
(C) (i), (ii) and (iii) (D) (iii) and (iv)
223. In a town there are two rain gauge stations X and Y. The rainfall data on stations X and Y in two consecutive years is 10 cm, 10 cm; and 100 cm, 100 cm, respectively. The coefficient of correlation between these two stations is
- (A) 0.50 (B) Indeterminate
(C) 1.00 (D) Infinit
224. The number of revolutions of a current meter in 60 seconds was found to be 12 and 30 corresponding to the velocities of 0.20 and 0.35 m/s, respectively. What velocity would be indicated by 50 revolutions of that current meter in 50 seconds?
- (A) 0.3 m/s (B) 0.5 m/s
(C) 0.6 m/s (D) None of above
225. Synthetic unit hydrograph developed by Snyder is valid for a basin up to
- (A) 100 miles² (B) 1000 miles²
(C) 5000 miles² (D) 10000 miles²
226. At a particular place during a flood frequency analysis, the probability of happening of rainfall is found to be 90% with value of variate as 0.834. For infinite sample size, what would be the Gumbel's frequency factor?
- (A) 0.05 (B) 0.20
(C) 0.32 (D) 0.41

227. An aquifer is stratified into three layers parallel to the bedding plane with specification as tabulated under.

Layer	Thickness (m)	Conductivity (m/d)
1	4	30
2	2	10
3	6	20

The transmissivity of aquifer in m^2/d is

- (A) 23 (B) 80 (C) 227 (D) 260

228. Flood frequency studies are more reliable when

- (A) Length of record of meteorological observations is less than 10 years
 (B) Length of record of meteorological observations is less than 20 years but more than 10 years
 (C) Yearly variation in climate is not uniform
 (D) Variation in climate is uniform year to year

229. Which one of the following is the most accurate method of reservoir routing?

- (A) Muskingum method
 (B) Goodrich method
 (C) Newton method
 (D) Standard fourth-order Runge-Kutta (SRK) method

230. An unconfined aquifer of porosity 28%, permeability 30 m/d and specific yield of 0.22 has an area of 50 km². If the water table falls by 0.10 m, then what would be the volume of water retained in aquifer?

- (A) 300000 m³ (B) 1100000 m³ (C) 1400000 m³ (D) None of the above

231. The radius of influence zone is given empirically as a function of drawdown within the pump well (S_w) and the aquifer hydraulic conductivity (k). For numerical value of $S_w = 12.5$ m and $k = 4 \times 10^{-6}$ m/s, the radius of influence zone would be

- (A) 56 m (B) 64 m (C) 75 m (D) 82 m

232. The minimum intensity of rainfall (in mm/h) from the rainfall hyetograph drawn with following data, would be

Time (in am)	Cumulative rainfall (mm)
7.00	0
7.30	7
8.00	10
8.30	20
9.00	35
9.30	45
10.30	50
11.00	54

- (A) 5 (B) 6 (C) 8 (D) Cannot be calculated

233. When Froude number of the incoming flow is more than 4.5 then which type of Indian Standards stilling basin is provided?
 (A) Type I (B) Type II
 (C) Type III (D) Type IV
234. A soil has a field capacity of 22% and wilting coefficient of 10%. The relative density of soil is 1.3 and the root zone depth is 50 cm. If irrigation water is applied when moisture content falls to 12%, then Net Irrigation Requirement (NIR) would be
 (A) 3.25 cm (B) 6.50 cm
 (C) 9.75 cm (D) 13.0 cm
235. A strip of land is irrigated with a tube well of discharge $0.03 \text{ m}^3/\text{s}$. If infiltration capacity of soil is 3.6 cm/h , then what would be the maximum area that can be irrigated with this tube well?
 (A) 30 m^2 (B) 300 m^2
 (C) 3000 m^2 (D) 3000 hac
236. The salt concentration in irrigation water should not exceed
 (A) 500 ppm (B) 2000 ppm
 (C) 2500 ppm (D) 3000 ppm
237. In design of concrete lined channel of triangular shape if the central depth of channel is 2.5 m then what would be the hydraulic mean depth? Assume side slopes of channel is 1 : 1.
 (A) 0.80 m (B) 1.25 m
 (C) 1.84 m (D) None of the above
238. Cotton is grown in a field of 4 km^2 with intensity of irrigation 60%. For cotton, the base period is 200 days and duty of canal water is 1200 hectares per cumec. The volume of water required is
 (A) 345.6 ha-m (B) 3456000 ha-m
 (C) 345.6 m^3 (D) 345600 m^3
239. A 200 kW power project has cost estimated as Rs 0.876 lakhs per year. Useful life of the project is 100 years and power consumer rate is Rs 0.20 per kWh (unit). The estimated benefit-cost ratio is
 (A) 0.5 (B) 1.0
 (C) 2.0 (D) None of the above
240. If the river actual length is 1500 m and linear distance between the two end points is 1000 m, then its tortuosity would be
 (A) 3.00 (B) 1.50
 (C) 0.67 (D) 0.33
241. Which of the following water-borne disease affects adversely the membrane covering spinal cord of human?
 (A) Polio (B) Syringomyelia
 (C) Meningitis (D) Bifid

242. How many times more acidic a rain having $\text{pH} = 5.6$ will be in comparison to a neutral rain having $\text{pH} = 7$?
- (A) 1.25 (B) 1.40
(C) 10 (D) 25
243. If the population of a town in 3 consecutive decades was 1 lakh, 1.1 lakh and 1.2 lakh, respectively, then the population of this town in the fourth consecutive decade according to the geometric method would be
- (A) 1.25 lakh (B) 1.33 lakh
(C) 1.9 lakh (D) 2.1 lakh
244. A 20 ml, 2N HCl is equivalent to _____ of HCl.
- (A) 36.5 mg (B) 146 mg
(C) 730 mg (D) 1460 mg
245. Excessive aeration during the water treatment
- (A) improves the quality of water (B) makes the water salty
(C) leads to corrosion of metal (D) increases the alkalinity
246. In Hazen-William equation for pipe flow, the velocity of flow varies with (Where R = hydraulic mean radius, and S = bed slope)
- (A) $R^{0.54}$ (B) $R^{0.63}$
(C) $S^{0.50}$ (D) $S^{0.63}$
247. In modified Winkler's method of measurement of dissolved oxygen in wastewater, the alkaline iodide sodium azide solution is used. According to IS: 3025-1989 (Part-38), how much mass of NaN_3 as sodium azide is used in the standard solution of alkaline iodide?
- (A) 5 g (B) 10 g
(C) 13.5 g (D) 15 g
248. According to IS: 8419, the minimum specific gravity of sand particles used in filtration media in filtration process of water should be
- (A) 2.25 (B) 2.35
(C) 2.50 (D) 2.65
249. The usual size of residential ferrule bore varies from
- (A) 1 mm to 5 mm (B) 10 mm to 50 mm
(C) 100 mm to 500 mm (D) 1000 mm to 5000 mm
250. In a city with a population of 70,000 water is drawn for domestic purpose from a bell-mouth intake in a canal which runs only for 10 hours a day with flow depth of 1.5 m. If the average consumption per person is 150 litres/day, then the intake load would be
- (A) $30.9 \text{ m}^3/\text{s}$ (B) 242 litres/s
(C) 321 litres/s (D) None of the above

251. As per Solid Waste Management Rules, 2016, combustible waste should have minimum calorific value:
- (A) 500 kcal/kg (B) 1000 kcal/kg
(C) 1500 kcal/kg (D) 2000 kcal/kg
252. As per Solid Waste Management Rules, 2016, every waste generator should segregate the waste into which of the following three separate streams:
- (i) Biodegradable (ii) Non-biodegradable
(iii) Combustible (iv) Non-combustible
(v) Domestic hazardous waste (vi) Industrial waste
- (A) (i), (ii) & (v) (B) (iii), (iv) & (vi)
(C) (i), (ii) & (vi) (D) (iii), (iv) & (v)
253. How many bins of 200 litre capacity required to collect waste in a trip from 100 households, if each household generates 1000 grams of waste per day. Density of waste can be assumed as 500 kg/m^3 ?
- (A) 1 (B) 2 (C) 3 (D) 4
254. Which of the following is a disposal method in Solid Waste Management?
- (A) Composting (B) Recycling
(C) Street Sweeping (D) Landfillin
255. The inert waste in Solid Waste Management should be
- (i) Non-biodegradable (ii) Non-recyclable
(iii) Non-combustible
- (A) Only (i) (B) (i) & (ii)
(C) (ii) & (iii) (D) (i), (ii) & (iii)
256. Which of the following is not a part of “solid waste” as per Solid Waste Management Rules, 2016?
- (A) Agriculture waste (B) Sanitary waste
(C) Construction and Demolition waste (D) Commercial waste
257. Leachate is associated with
- (A) Recycling of dry waste (B) Composting
(C) Incineration (D) Pyrolysis
258. All Bio-Medical Waste should be segregated into four different colour coded bags/containers as per Bio-Medical Waste Management Rules, 2016. Which are the following colours used in different bags / containers?
- (A) Red, Blue, Orange, Green (B) Yellow, Blue, White, Green
(C) Yellow, Red, White, Blue (D) Green, Red, Yellow, Colourless
259. Which of the following is not adopted for processing of Bio-Medical Waste as per Bio-Medical Waste Management Rules, 2016?
- (A) Composting (B) Incineration
(C) Plasma Pyrolysis (D) Deep Burial

260. Basel Convention is related to
(A) Radio-active waste (B) Hazardous Waste
(C) Bio-Medical Waste (D) Nuclear Waste
261. The activated carbon is very effective in removing certain organic chemicals that cause odour in water. The process is known as:
(A) Adsorption (B) Absorption
(C) Filtration (D) Sterilization
262. Which of the following are connected to softening of the water:
(i) Precipitation of magnesium hydroxide
(ii) Precipitation of calcium carbonate
(iii) Addition of Alum
(iv) Aeration
(A) (i) & (ii) (B) (iii) & (iv)
(C) (i), (ii) & (iii) (D) (i), (ii), (iii) & (iv)
263. The role of surge tank in water supply is mostly related to which of the following:
(A) For proper mixing of chlorine
(B) To raise the pressure in long water supply mains
(C) To decrease the water hammer effect
(D) To prevent the overflow of water
264. Which of the following is not a property of slow sand filter
(A) More space is required as compared to other filter
(B) More efficient in removing turbidity
(C) Water from plain sedimentation tank is used
(D) Filter media is cleaned through back-washing
265. Which of the following is not used to determine residual chlorine in water supply?
(A) Orthotolidine (B) Starch-Iodide
(C) Zeolite (D) D.P.D.
266. Nalgonda method of water treatment is used for removal of:
(A) Fluoride content (B) Bacterial content
(C) Carbon content (D) Excess Chlorine
267. Which of the following is not correct with respect to the use of Cast Iron pipes in water supply schemes?
(i) Very poor in corrosion resistant
(ii) Service life of pipes are as high as 100 years
(iii) Likely to break during transportation
(A) Only (i) (B) (i) and (ii)
(C) (ii) and (iii) (D) (i), (ii) and (iii)

268. Which of the following is not an advantage of using Zeolite process over the Lime Soda Process for softening of water:
- (A) The pH of the treated water remains unaltered
 (B) Partial bacterial disinfection
 (C) No post-treatment of water required
 (D) No formation of Sludge
269. Mass Curve Method is used to understand the balancing storage capacity of distribution reservoirs. The Mass Curve is drawn based on:
- (A) inflow only
 (B) outflow only
 (C) inflow and outflow
 (D) inflow, outflow and population
270. While designing plumbing fixtures in a building, Fixture Unit of Fixture A is 1 and Fixture B is 4. This means that
- (A) Fixture B is 4 times stronger than Fixture A.
 (B) Fixture B will put 4 times the load on water supply system in comparison to Fixture A
 (C) Fixture B is 4 times more compatible to the system in terms of its usability, affordability, and adoptability in comparison to Fixture A
 (D) Flow rate of Fixture B is 4 times that of Fixture A
271. As per the National Ambient Air Quality Standards 2009, which of the statements are correct?
- (i) Limits for Daily averaged concentration of SO_2 is same for Residential and Ecologically sensitive areas
 (ii) Limits for Daily averaged concentration of NO_2 is same for Residential and Ecologically sensitive areas
 (iii) Limits for annually averaged concentration of SO_2 is different for Residential and Ecologically sensitive areas
 (iv) Limits for annually averaged concentration of NO_2 is different for Residential and Ecologically sensitive areas
- (A) (i) and (ii) (B) (iii) and (iv)
 (C) (i) and (iii) (D) (i), (ii), (iii) and (iv)
272. Beta attenuation method is used to estimate which of the following pollutants?
- (A) CO (B) O_3
 (C) NH_3 (D) None of the above

273. For Annual average estimation, arithmetic mean of ____ measurements a year at a particular site should be taken.
(A) 52 (B) 104
(C) 156 (D) 208
274. Which of the following Pollutant is not a part of National Air Quality Ambient Standards, 2009?
(A) CO₂ (B) CO
(C) Nickel (D) Arsenic
275. Effectiv height of the chimney is equal to
(A) Height of the chimney + plume rise
(B) Height of the chimney – plume rise
(C) Height of the chimney + plume rise + thermal rise
(D) Height of the chimney + plume rise + pressure rise
276. According to Pasquill Stability law, the atmospheric stability can be divided into _____ number of categories.
(A) 3 (B) 4
(C) 5 (D) 6
277. In a Gaussian Dispersion Model, the lateral dispersion coefficient are dependent on
(i) Atmospheric Stability (ii) Downwind distance
(iii) The surface roughness
(A) Only (i) (B) (i) and (ii)
(C) (i) and (iii) (D) (i), (ii) and (iii)
278. If a tape is 0.3% too short, then the correction per tape length is
(A) 0.03 m (B) 0.06 m
(C) 0.09 m (D) 0.10 m
279. Correction due to wrong alignment of the tape
(A) is always positive
(B) is always negative
(C) can be positive or negative
(D) depends on whether the alignment is wrong to the left or right side of the line
280. The zero graduation in a prismatic compass is marked in the
(A) North end of the circle (B) South end of the circle
(C) East end of the circle (D) West end of the circle
281. The prismatic compass gives the
(A) quadrantal bearing of lines
(B) whole circle bearing of lines
(C) angle between the previous line and the forward line
(D) deflection angle between the lines meeting at the station

282. Magnetic declination enables us to
- (A) find true bearing of lines
 - (B) determine the correct functioning of magnetic needle
 - (C) test and adjust a prismatic compass
 - (D) find local attraction at a place
283. In a theodolite survey, a face-left observation means
- (A) the vertical circle of the instrument is on the left side of the observer
 - (B) the left side vernier is read for the angle value
 - (C) the station being observed is on the left side of the observer
 - (D) the survey is happening on the left side of the observer
284. The index frame of a Theodolite is
- (A) A-frame attached to the telescope
 - (B) the vernier circle of the horizontal circle
 - (C) the T-shaped frame carrying the vernier of the vertical circle
 - (D) the base of the theodolite having the levelling head
285. For a closed traverse of 8 sides, the sum of external angles is
- (A) 540° (B) 1080° (C) 1440° (D) 1800°
286. If some parameters of a closed survey are missing, it is possible to determine
- (A) any three quantities using the conditions of a closed traverse
 - (B) any number of quantities using the conditions of a closed traverse
 - (C) any two quantities if they are of adjacent lines
 - (D) any two quantities of a closed traverse
287. A plumb line is a line
- (A) lying on a level surface
 - (B) lying on a horizontal plane
 - (C) perpendicular to a level surface
 - (D) that joins two points on ground
288. In reduction of levels using the Height of Instrument method, Height of instrument refers to the
- (A) height of the line of sight over the instrument station
 - (B) height of the centre of telescope from the plane of foot screws
 - (C) reduced level of the line of sight
 - (D) reading on the staff from the instrument
289. The correction due to refraction and curvature have
- (A) the same sign
 - (B) the opposite sign
 - (C) the opposite sign sometimes
 - (D) the same sign sometimes

290. Correction for curvature is done due to the
(A) curved surface of the lens in the theodolite
(B) chromatic aberration
(C) spherical aberration
(D) curved nature of a level surface
291. 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 from plans and maps
(D) finding the slope of a given terrain
292. If we draw contour lines of a plane surface, they will appear as
(A) curved lines spaced far apart
(B) curved closed lines
(C) straight lines uniformly spaced
(D) straight lines inclined at an angle to the edges of the surface
293. The Ceylon Ghat tracer is used to
(A) trace locations in maps
(B) find slopes and location points on a gradient
(C) find horizontal distances
(D) find horizontal angles
294. Eidograph is used
(A) for drawing profile of the ground
(B) for drawing cross-section of the ground
(C) to redraw maps at a smaller or larger scale
(D) drawing lines on the plane table
295. The additive constant in the distance formula by tacheometry is given by
(A) focal length of the objective lens divided by the distance from the objective lens to the vertical axis
(B) focal length of the objective lens multiplied by the distance from the objective lens to the vertical axis
(C) sum of the focal length of the objective lens and the distance from the objective lens to vertical axis.
(D) the distance between the diaphragm and the objective lens
296. By using an anallactic lens in a theodolite,
(A) the multiplying constant is made 100
(B) the additive constant is made 0
(C) we get a clearer image of the staff
(D) the cross wires are seen more clearly

297. In designing transitions curves, one fundamental requirement is that
- (A) there must be enough frictional force generated for stability
 - (B) super-elevation provided must be on the outer side of the track
 - (C) the circular curve following the transition curve must have large radius
 - (D) the radius of curvature must vary as the length from the beginning**
298. Trigonometric levelling is
- (A) the same as ordinary levelling
 - (B) levelling where precise instruments are used
 - (C) levelling where precise methods are used
 - (D) where elevations are obtained from vertical angles and staff readings**
299. The term sounding in survey of water bodies refers to
- (A) the use of a sound meter to find water levels
 - (B) the determination of depth of water at different points**
 - (C) getting horizontal control points in water body
 - (D) getting vertical control points in water body
300. A Topographic survey involves measuring
- (A) elevation of points
 - (B) horizontal distances of points from a reference station or line
 - (C) distances, directions and elevations**
 - (D) vertical angles
-