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**PROVISIONAL ANSWER KEY**

Name of the post	Deputy Executive Engineer (Mechanical), Class-2 (GWRDC)
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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 here with on the website. Objections should be sent referring to the Question, Question No. & options of the Master Question Paper.
- 4) Suggestions regarding question nos. and options other than provisional answer key (Master Question Paper) shall not be considered.
- 5) Objections and answers suggested by the candidate should be in compliance with the responses given by him in his answer sheet. Objections shall not be considered, in case, if responses given in the answer sheet /response sheet and submitted suggestions are differed.
- 6) Objection for each question shall be made on separate sheet. Objection for more than one question in single sheet shall not be considered & treated as Cancelled.
- 7) Only Candidate who is present in the exam entitled to submit the objection/(s).
- 8) Candidate should attach copy of his/her OMR (Answer sheet) with objection/(s).

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

- 1) ઉમેદવારે વાંધા-સૂચનો નિયત કરવામાં આવેલ વાંધા-સૂચન પત્રકથી રજૂ કરવાના રહેશે.
- 2) ઉમેદવારે પ્રશ્ન પ્રમાણે વાંધા-સૂચનો રજૂ કરવા વેબસાઈટ પર પ્રસિધ્ધ થયેલ નિયત વાંધા-સૂચન પત્રકના નમૂનાનો જ ઉપયોગ કરવો.
- 3) ઉમેદવારે પોતાને પરીક્ષામાં મળેલ પ્રશ્નપુસ્તિકામાં છપાયેલ પ્રશ્નક્રમાંક મુજબ વાંધા-સૂચનો રજૂ ન કરતા તમામ વાંધા-સૂચનો વેબસાઈટ પર પ્રસિધ્ધ થયેલ પ્રોવિઝનલ આન્સર કી (માસ્ટર પ્રશ્નપત્ર)ના પ્રશ્નક્રમાંક મુજબ અને તે સંદર્ભમાં રજૂ કરવા.
- 4) માસ્ટર પ્રશ્નપત્રમાં નિર્દિષ્ટ પ્રશ્ન અને વિકલ્પ સિવાયના વાંધા-સૂચન ધ્યાને લેવામાં આવશે નહીં.
- 5) ઉમેદવારે જે પ્રશ્નના વિકલ્પ પર વાંધો રજૂ કરેલ છે અને વિકલ્પ રૂપે જે જવાબ સૂચવેલ છે એ જવાબ ઉમેદવારે પોતાની ઉત્તરવહીમાં આપેલ હોવો જોઈએ. ઉમેદવારે સૂચવેલ જવાબ અને ઉત્તરવહીનો જવાબ ભિન્ન હશે તો ઉમેદવારે રજૂ કરેલ વાંધા-સૂચનો ધ્યાને લેવાશે નહીં.
- 6) એક પ્રશ્ન માટે એક જ વાંધા-સૂચન પત્રક વાપરવું. એક જ વાંધા-સૂચન પત્રકમાં એકથી વધારે પ્રશ્નોની રજૂઆત કરેલ હશે તો તે અંગેના વાંધા-સૂચનો ધ્યાને લેવાશે નહીં.
- 7) માત્ર પરીક્ષામાં હાજર રહેલ ઉમેદવાર જ વાંધા-સૂચન રજૂ કરી શકશે.
- 8) ઉમેદવારે વાંધા-સૂચન સાથે પોતાની જવાબવહીની નકલ બિડાણ કરવાની રહેશે.

Website link for prescribed format (Suggestion Sheet):

[http://gpsc.gujarat.gov.in/Documents/AdvertisementDocument/2018-3-20\\_723.pdf](http://gpsc.gujarat.gov.in/Documents/AdvertisementDocument/2018-3-20_723.pdf)

001. નીચેના પૈકી કઈ નૃત્ય શૈલીની કથાવસ્તુમાં મુખ્યત્વે 'રામ-રાવણ યુદ્ધ', 'જટાયુ વધ', 'રાવણ-મંદોદરી સંવાદ' અને 'નળ-દમયંતી'ની કથા દ્રષ્ટિગોચર થાય છે?
- (A) કુચિપુડી (B) મણિપુરી  
(C) કથકલી (D) કથક
002. નવા વર્ષ સંબંધિત તહેવાર અને રાજ્ય/કેન્દ્ર શાસિત પ્રદેશની જોડી પૈકી કઈ જોડી સાચી નથી?
- (A) ઉગાદી (Ugadi or Yugadi) - કર્ણાટક, આંધ્રપ્રદેશ  
(B) ગુડી પડવો - મહારાષ્ટ્ર  
(C) નવવરીહ થાલ or નવરેહ - જમ્મુ અને કાશ્મિર  
(D) મિથીલા દિવસ - ઉત્તરપ્રદેશ
003. કાકાસાહેબ કાલેલકરની આત્મકથાનું નામ શું છે?
- (A) સ્મરણસંહિતા (B) હિમાલયનો પ્રવાસ  
(C) સ્મરણયાત્રા (D) જીવન વ્યવસ્થા
004. વિશ્વ વિખ્યાત "ટેમ્પલટન પ્રાઈસ (Templeton Prize) ફોર પ્રોગ્રેસ ઈન રિલીજીયન" નીચેના પૈકી કયા ભારતીય તત્ત્વવેત્તાને 1997 માં એનાયત કરી સન્માનિત કરાયા હતા?
- (A) જે. કૃષ્ણમૂર્તિ (B) શ્રી પાંડુરંગ શાસ્ત્રી આઠવલે  
(C) ડૉ. સર્વપલ્લી રાધાકૃષ્ણન (D) દાદા ધર્માધિકારી
005. 'લાખ લાખ દિવડાની આરતી' અને 'મારે તે ગામડે એક વાર આવજો' જેવા લોકપ્રિય ગીતો કઈ ગુજરાતી ફિલ્મના છે?
- (A) રાણકદેવી (B) જેસલ તોરલ  
(C) મનોરમા (D) અખંડ સૌભાગ્યવતિ
006. વિશ્વના અમૂર્ત સાંસ્કૃતિક વારસાની યાદીમાં યુનેસ્કો દ્વારા છેલ્લે શાનો સમાવેશ 15મો અમૂર્ત સાંસ્કૃતિક વારસા તરીકે જાહેર કરવામાં આવ્યો છે?
- (A) રામલીલા (B) છૌ નૃત્ય, ઓડિશા  
(C) ગરબાની પરંપરા, ગુજરાત (D) દુર્ગા પુજા, પશ્ચિમ બંગાળ
007. તાજેતરમાં ગુજરાતની પરંપરાગત હસ્તકલાને GI ટેગ આપવામાં આવ્યું છે જે પૈકી 'સુરત સાડેલી કાફ્ટ'ના સાંસ્કૃતિક વારસાને જાળવતા નીચેના પૈકી કયા પરિવારો/સમુદાયો જોડાયેલા છે?
- (A) મેઘવાલ અને મારા સમુદાય  
(B) પેટીગારા પરિવાર  
(C) સુજનીવાલા, ચિસ્તિયા અને મિયાં મુસ્તફા પરિવાર  
(D) છિપા-મુસ્લિમ સમુદાય

001. In which of the following dance styles, the Ram-Ravan war, Jatayu vadh, Ravan-Mandodari dialogue and Nal-Damayanti's story are mainly depicted?
- (A) Kuchipudi (B) Manipuri  
(C) Kathakali (D) Kathak
002. Which of the pairs of festival and State/Union Territory, related to new year is not correct?
- (A) Ugadi (Ugadi or Yugadi) – Karnataka, Andhra Pradesh  
(B) Gudi Padawo – Maharashtra  
(C) Navvarih Thal or Navreh – Jammu and Kashmir  
(D) Mithila Day – Uttar Pradesh
003. What is the name of Kakasaheb Kalelkar's autobiography?
- (A) Smaransanhita (स्मरणसंहिता)  
(B) Himalayno Pravasa (हिमालयनो प्रवास)  
(C) Smaranyatra (स्मरणयात्रा)  
(D) Jivan Vyavastha (जीवन व्यवस्था)
004. The world famous "Templeton Prize for Progress in Religion" was awarded to which of the following Indian philosophers in 1997?
- (A) J. Krishnamurti (B) Shri Pandurang Shastri Athavale  
(C) Dr. Sarvapalli Radhakrishnan (D) Dada Dharmadhikari
005. Popular songs like 'Lakh Lakh Divdani Arati' and 'Mare Te Gamade Ek Vaar Avajo' are from which Gujarati film?
- (A) Ranakdevi (B) Jesal Toral  
(C) Manorama (D) Akhand Saubhagyavati
006. Which has been finally declared as the 15<sup>th</sup> Intangible Cultural Heritage by UNESCO in the list of Intangible Cultural Heritages of the world?
- (A) Ramlila (B) Chhau dance, Odisha  
(C) Tradition of Garba, Gujarat (D) Durga Puja, West Bengal
007. Recently traditional handicraft of Gujarat have been given GI tag. Among which of the following families/communities are associated with preserving the cultural heritage of 'Surat Sadeli craft' ?
- (A) Meghwal and Mara community  
(B) Petigara families  
(C) Sujniwala, Chistia and Mia Mustafa family  
(D) Chhipa-Muslim community

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008. દક્ષિણ આફ્રિકાનો પ્રવાસી ઈબ્ન બતૂતા કોના શાસનકાળ દરમિયાન ભારત આવ્યો હતો?  
(A) હુમાયુ (B) અકબર  
(C) મુહમ્મદ બિન તુઘલક (D) અલ્લાઉદ્દીન ખિલજી
009. 'મિયાંકી તોડી', 'મિયાંકી મલ્હાર' તથા 'દરબારી કાન્હાડા' નામે રાગ અંગેના સંગીતગ્રંથોના રચયિતા કોણ હતા?  
(A) તાનસેન (B) બિસમિલ્લા ખાન  
(C) ઉસ્તાદ ઈશા (D) રસખાન
010. નીચેનામાંથી કયા વેદની રચના ગદ્ય-પદ્ય બંનેમાં થયેલી છે?  
(A) ઋગ્વેદ (B) યજુર્વેદ  
(C) સામવેદ (D) અથર્વવેદ
011. કાશ્મીરમાં કનિષ્કના શાસન દરમિયાન યોજાયેલી બૌદ્ધ પરિષદની અધ્યક્ષતા કોણે કરી હતી?  
(A) મહાકાશ્યપ (B) નાગાર્જુન  
(C) સૂદ્રક (D) વસુમિત્ર
012. નીચેનામાંથી કોની નિમણૂક અશોકે તેમના સામ્રાજ્યમાં ન્યાય ચલાવવા માટે કરી હતી?  
(A) શર્મના (B) કુમાર અમાત્ય  
(C) રાજુકા (D) ઉપરીકા
013. લોર્ડ લિટનના સમયગાળા દરમિયાન ઈલ્બર્ટ બિલનો વિવાદ કઈ બાબત સાથે સંકળાયેલ હતો?  
(A) ન્યાયિક સમાનતા (B) રાજકીય પ્રતિનિધિત્વ  
(C) આર્થિક ન્યાય (D) મહેસૂલ ફાળવણી
014. નીચેના પૈકી કયા સત્યાગ્રહથી વલ્લભભાઈ પટેલ 'સરદાર' તરીકે ભારતભરમાં જાણીતા થયા?  
(A) નાગપુર ઝંડા સત્યાગ્રહ (B) ધરાસણા સત્યાગ્રહ  
(C) બારડોલી સત્યાગ્રહ (D) બોરસદ સત્યાગ્રહ
015. નીચેના પૈકી ગુજરાતના કયા મેદાની પ્રદેશમાં "ગોઢ" અને "વઢિયાર" પંથકનો સમાવેશ થાય છે?  
(A) મધ્ય ગુજરાતનું મેદાન (B) ઉત્તર ગુજરાતનું મેદાન  
(C) દક્ષિણ ગુજરાતનું મેદાન (D) ચરોતરનું મેદાન
016. નીચેના પૈકી કયું/કયાં વિધાન સાચું/સાચાં છે?  
1. રૂપેણ નદી મહેસાણા જિલ્લાના ટૂંગા પર્વતમાંથી નીકળે છે.  
2. સરસ્વતી નદી કચ્છના મોટા રણમાં સમાય છે.  
3. સાબરમતી નદી કોપાલીની ખાડીમાં સમુદ્ર સંગમ પામે છે.  
(A) માત્ર 3 (B) માત્ર 1 અને 2  
(C) 1, 2 અને 3 (D) માત્ર 1 અને 3

008. South African traveller Ibn Battuta came to India during the reign of \_\_\_\_\_.  
(A) Humayun (B) Akbar  
(C) Muhammad bin Tughlaq (D) Alauddin Khilji
009. Who was the composer of the musical treatises on ragas named 'Miyanki Todi', 'Miyanki Malhar', and 'Darbari Kanhada'?  
(A) Tansen (B) Bismillah Khan  
(C) Ustad Isa (D) Raskhan
010. Which of the following Vedas is composed both in prose and verse?  
(A) Rigveda (B) Yajurveda  
(C) Samaveda (D) Atharvaveda
011. Who among the following presided over the Buddhist Council held during the reign of Kanishka at Kashmir?  
(A) Mahakashyap (B) Nagarjuna  
(C) Sudraka (D) Vasumitra
012. Who among the following was appointed by Ashoka to administer justice in his empire?  
(A) Sharmana (B) Kumar Amatya  
(C) Rajuka (D) Uparika
013. The Ilbert Bill controversy during Lord Lytton's period related to the concept of \_\_\_\_\_.  
(A) Judicial equality (B) Political representation  
(C) Economic Justice (D) Revenue allocation
014. Which of the following satyagraha made Vallabhbhai Patel known as 'Sardar' across India?  
(A) Nagpur Jhanda satyagraha (B) Dharasana satyagraha  
(C) Bardoli satyagraha (D) Borsad satyagraha
015. Which of the following plains region of Gujarat includes 'Godh' and 'Vadhiyar' Panthak?  
(A) Plain of Central Gujarat (B) Plain of North Gujarat  
(C) Plain of South Gujarat (D) Plain of Charotar
016. Which of the following statement(s) is/are correct?  
1. The Rupen river originates from the Toonga Mountains in Mehsana  
2. The Saraswati river is contained/merged in the great Desert of Kutch  
3. Sabarmati river meets the sea at Kopali Bay  
(A) Only 3 (B) 1 and 2 only  
(C) 1, 2 and 3 (D) 1 and 3 only

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017. 'બ્લાસ્ટ', 'પાનનો જાળ', 'ગલત આંજિયો' વિગેરે કયા પાકના થતાં રોગો છે?
- (A) ડાંગર (B) બાજરી  
(C) મકાઈ (D) ઘઉં
018. બાહ્ય હિમાલયને કયા નામથી ઓળખવામાં આવે છે?
- (A) હિમાદ્રી (B) હિમાંચલ  
(C) શિવાલિક (D) બૃહદ હિમાલય
019. બેસાલ્ટ ખડકોના વિઘટનથી કયા પ્રકારની જમીનનું નિર્માણ થાય છે?
- (A) કાળી જમીન (B) બેસર જમીન  
(C) યુનાયુક્ત જમીન (D) રેગુર જમીન
020. તરતા ટાપુઓ (Floating islands) એ ભારતના કયા સરોવરની વિશિષ્ટ લાક્ષણિકતા છે?
- (A) નૈનીતાલ સરોવર (B) પુષ્કર સરોવર  
(C) લોકટાક (Loktak) સરોવર (D) ચિલ્કા સરોવર
021. ઉત્તર-પૂર્વીય રાજ્યોમાં નીચેનામાંથી કયું રાજ્ય બાંગ્લાદેશ સાથે જમીન સીમાથી જોડાયેલ નથી?
- (A) આસામ (B) અરુણાચલ પ્રદેશ  
(C) ત્રિપુરા (D) મિઝોરમ
022. મૂળભૂત ફરજોની સંકલ્પના કયા દેશના સંવિધાન પરથી લેવામાં આવી છે?
- (A) અમેરિકા (B) બ્રિટન  
(C) રશિયા (D) ઓસ્ટ્રેલીયા
023. નીચેના પૈકી કયું વિધાન ખોટું છે?
- (A) કોઈ પણ રાજ્યનો વિસ્તાર વધારી શકાય.  
(B) કોઈ પણ રાજ્યની સીમા બદલી શકાય છે.  
(C) રાજ્યનું નામ પરિવર્તિત કરી શકાય છે.  
(D) રાજ્યને આત્મસમર્પણ વડે વિદેશી શાસનને હસ્તાંતરિત કરી શકાય છે.
024. સાંસ્કૃતિક તથા શૈક્ષણિક અધિકારોમાં કયા અધિકારો સમાવિષ્ટ છે?
- (A) લઘુમતીઓને તેની શૈક્ષણિક સંસ્થાઓ સ્થાપવા/ચલાવવાનો અધિકાર  
(B) લઘુમતીઓને તેમની ભાષાને પ્રોત્સાહિત કરવાનો અધિકાર  
(C) પ્રવેશ મેળવવાની પ્રક્રિયામાં ધર્મ, જાતી, જ્ઞાતિ આદીના આધારે ભેદભાવ ન પામવાનો  
(D) ઉપર્યુક્ત તમામ

017. Which crop diseases are 'Blast', 'Leaf Trap' and 'Galat Anjio'?
- (A) Paddy (B) Millet  
(C) Maize (D) Wheat
018. By which name is the outer Himalayas known?
- (A) Himadri (B) Himanchal  
(C) Shivalik (D) Greater Himalayas
019. What type of soil is formed by the decomposition of basalt rocks?
- (A) Black soil (B) Basar land  
(C) Calcareous soil (D) Regur land
020. Floating Islands are a distinctive feature of which lake in India?
- (A) Nainital Lake (B) Pushkar Lake  
(C) Loktak Lake (D) Chilka Lake
021. Which of the following North-Eastern states is not connected by land border with Bangladesh?
- (A) Assam (B) Arunachal Pradesh  
(C) Tripura (D) Mizoram
022. The idea of Fundamental Duties is derived from:
- (A) The American Constitution  
(B) The British Constitution  
(C) The Russian Constitution  
(D) The Constitution of Australia
023. Which of the following statements is incorrect?
- (A) Area of any state can be increased  
(B) Boundaries of any state can be altered  
(C) Name of the state can be changed  
(D) A state can be surrendered or transferred to a foreign governance
024. Cultural and educational rights include:
- (A) Right of minorities to establish / administer their educational institutes  
(B) Right of minorities to promote their language  
(C) Right against discrimination for admission on grounds of religion, race, caste etc.  
(D) All of the above

025. રાજ્યનીતિના નિર્દેશક સિદ્ધાંતોને શાની અપેક્ષા છે?
- (A) સંવિધાનની સર્વોચ્ચતા સ્થાપિત કરવાની  
 (B) આપખુદશાહી વૃત્તિઓનું નિયંત્રણ કરવાની  
 (C) સંવિધાનને સામાજિક પરિવર્તનનું સાધન બનાવવાનું  
 (D) ઉપર્યુક્ત (A) અને (B)
026. આર્ટીકલ 51A હેઠળ મૂળભૂત ફરજોમાં સમાવિષ્ટ નથી:
- (A) સાર્વજનિક સંપત્તિની સુરક્ષા તથા હિંસાનો પ્રતિજ્ઞાપૂર્વક ત્યાગ  
 (B) સાર્વભૌમત્વ, એકતા અને અખંડિતતા જાળવી રાખવા  
 (C) બંધારણનું પાલન તથા તેના આદર્શોનો આદર કરવો  
 (D) બિનસાંપ્રદાયિકતા
027. નીચેનામાંથી કયો વિષય સુપ્રિમકોર્ટ અને હાઈકોર્ટના સામાન્ય (common) અધિકાર ક્ષેત્ર હેઠળ આવે છે?
- (A) રાજ્યો વચ્ચે પરસ્પર વિવાદો  
 (B) કેન્દ્ર અને રાજ્યો વચ્ચે વિવાદ  
 (C) મૂળભૂત અધિકારોનું રક્ષણ  
 (D) બંધારણના ઉલ્લંઘનથી રક્ષણ
028. ભારતમાં ચૂંટણીના સંદર્ભમાં, નીચેનામાંથી કયું VVPAT નું સાચું પૂર્ણ સ્વરૂપ છે?
- (A) Voter Verifiable Poll Audit Trail  
 (B) Voter Verifying Paper Audit Trail  
 (C) Voter Verifiable Paper Audit Trail  
 (D) Voter Verifiable Paper Account Trail
029. ભારતીય બંધારણ નો 79મો સુધારો શેનાથી સંબંધિત છે?
- (A) કેન્દ્ર - રાજ્ય સંબંધો  
 (B) બે રાજકીય પક્ષોની સ્થાપના  
 (C) મૂળભૂત અધિકારો  
 (D) લોકસભા અને રાજ્ય વિધાનસભામાં અનુ.જાતિ અને અનુ. જનજાતિનું આરક્ષણ
030. ગુજરાત અંદાજપત્ર 2024-25માં કઈ યોજના અંતર્ગત મેડિકલમાં અભ્યાસ કરતી 4500 વિદ્યાર્થિનીઓને સહાય કરવા 160 કરોડની જોગવાઈ કરવામાં આવી છે?
- (A) મુખ્ય મંત્રી યુવતી સ્વાવલંબન યોજના  
 (B) સી.એમ. યશસ્વી શિષ્યવૃત્તિ યોજના  
 (C) નમો સરસ્વતી યોજના  
 (D) મુખ્યમંત્રી કન્યા કેળવણી નિધિ યોજના



025. Directive Principles of State Policy seek:
- (A) to establish the supremacy of the Constitution
  - (B) to curb dictatorial tendencies
  - (C) to make the Constitution an instrument of social change
  - (D) (A) and (B) of the above
026. Fundamental Duties under Article 51A does not include:
- (A) safeguard public property and abjure violence
  - (B) uphold sovereignty, unity and integrity
  - (C) abide by Constitution and respect its ideals
  - (D) Secularism
027. Which of the following subjects comes under the common jurisdiction of the Supreme Court and the High Court?
- (A) Mutual disputes among states
  - (B) Dispute between Centre and states
  - (C) Protection of the Fundamental Rights
  - (D) Protection from the violation of the Constitution
028. In the context of election in India, which one of the following is the correct full form of VVPAT ?
- (A) Voter Verifiable Poll Audit Trail
  - (B) Voter Verifying Paper Audit Trail
  - (C) Voter Verifiable Paper Audit Trail
  - (D) Voter Verifiable Paper Account Trail
029. The 79<sup>th</sup> Amendments of the Indian Constitution is related to \_\_\_\_\_
- (A) Centre-State relations
  - (B) Establishment of two political parties
  - (C) Fundamental Rights
  - (D) Reservation of SCs and STs in the Lok Sabha and State Assemblies
030. In the Gujarat Budget 2024-25 under which scheme 160 crores has been provided to support 4500 female students studying in medical?
- (A) CM Yuvati Swavalamban Scheme
  - (B) CM Yashaswi Apprenticeship Scheme
  - (C) Namu Saraswati Yojana (scheme)
  - (D) Chief Minister Kanya Kelavani Nidhi Scheme

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031. 100% રાજ્ય પૂરસ્કૃત યોજના 'આપદા મિત્ર' શાના માટે ઘડી કાઢવામાં આવેલ છે?
- (A) હોનારત થી અસર પામેલ સમુદાયો તથા સંકલન એજન્સીઓને સહાય માટે  
(B) અસરકારક આપત્તિ પ્રતિકાર માટે કોમ્યુનિટી સ્વયંસેવકોને તાલીમ આપવા માટે  
(C) દિવ્યાંગ વ્યક્તિને કોઈ યોજનાનો લાભ આપવા માટે મદદરૂપ થવા સહાય આપવી  
(D) ટેબલેટ મેળવનાર વિદ્યાર્થીને સહાય અને સ્પર્ધાત્મક પરીક્ષા માટે કોચિંગ
032. નીચેનામાંથી કયા રાજ્યમાં વસ્તીગણતરી 2011 મુજબ સૌથી વધુ જાતિ ગુણોત્તર (sex ratio) છે?
- (A) તામિલનાડુ (B) આંધ્રપ્રદેશ  
(C) કર્ણાટક (D) ઓડિશા
033. રાષ્ટ્રીય સ્તરે માર્કેટિંગ કો-ઓપરેટિવ્સ માટે કઈ ટોચની સંસ્થા છે?
- (A) એફ. સી. આઈ. (FCI) (B) નાફેડ (NAFED)  
(C) રાષ્ટ્રીય સહકારી સંઘ (D) રાષ્ટ્રીય કૃષિ માર્કેટિંગ બોર્ડ
034. Sheqel/shekel કયા દેશનું ચલણ છે?
- (A) ઈઝરાયેલ (B) કેન્યા  
(C) ઈરાન (D) ઈરાક
035. કંપનીના ડિબેન્ચર ધારકો તેના છે .....
- (A) શેરહોલ્ડર્સ (B) લેણદારો  
(C) દેવાદારો (D) ડાયરેક્ટર્સ
036. ભારતમાં રાજકોષીય નીતિ આના દ્વારા ઘડવામાં આવે છે :
- (A) ભારતીય સિક્યોરિટીઝ એન્ડ એક્સચેન્જ બોર્ડ (SEBI)  
(B) નીતિ આયોગ  
(C) નાણાં મંત્રાલય  
(D) રિઝર્વ બેન્ક ઓફ ઈન્ડિયા
037. કયો પ્રોટોકોલ વિવિધ યજમાનો (hosts) વચ્ચે ઈ-મેઈલ સુવિધા પ્રદાન કરે છે?
- (A) SMTP (B) FTP  
(C) TELNET (D) SNMP

031. Why is the 100% State Subsidized Scheme 'Aapda Mitra' devised?
- (A) To assist disaster-affected communities and coordinating agencies  
(B) To train community volunteers for effective disaster resilience  
(C) Assisting a disabled person to benefit from a scheme  
(D) Assistance and coaching for competitive exams to the student receiving the tablet
032. Which among the following states has highest sex ratio as per census of 2011?
- (A) Tamil Nadu (B) Andhra Pradesh  
(C) Karnataka (D) Odisha
033. Which is the apex organisation for Marketing Co-operatives at the national-level?
- (A) FCI  
(B) NAFED  
(C) National Co-operative Union  
(D) National Agricultural Marketing Board
034. Sheqel/shekel is the currency of which country?
- (A) Israel (B) Kenya  
(C) Iran (D) Iraq
035. Debenture holders of a company are its \_\_\_\_\_.
- (A) shareholders (B) creditors  
(C) debtors (D) directors
036. Fiscal Policy in India is formulated by
- (A) The Securities and Exchange Board of India  
(B) The Niti Aayog  
(C) The Finance Ministry  
(D) The Reserve Bank of India
037. Which protocol provides e-mail facility among different hosts?
- (A) SMTP (B) FTP  
(C) TELNET (D) SNMP

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038. નીચેનામાંથી કયું રસાયણ ફોટોગ્રાફીમાં ઉપયોગી છે?
- (A) એલ્યુમિનિયમ હાઈડ્રોક્સાઈડ  
(B) પોટેશિયમ નાઈટ્રેટ  
(C) સિલ્વર બ્રોમાઈડ  
(D) સોડિયમ ક્લોરાઈડ
039. રોકેટનું કાર્ય નીચેના પૈકી કયા સિદ્ધાંત પર આધારિત છે?
- (A) વીજળી (electricity) (B) કેપલર્સનો નિયમ  
(C) ન્યુટનનો નિયમ (D) વેગનું સંરક્ષણ
040. પ્રોસ્ટેટ કેન્સર, બ્રેઈન ટ્યૂમર, ગર્ભાશયના કેન્સર નાબૂદી માટે ઉપયોગમાં લેવામાં આવતી પ્રણાલી કઈ છે?
- (A) આર્સેનિક-74  
(B) બ્રેચી થેરાપી (Brachytherapy)  
(C) પેટ પ્રણાલી (PET therapy)  
(D) કેમોથેરાપી (Chemotherapy)
041. ઈનસેટ મિટિયોરોલોજિક ડેટા પ્રોસેસિંગ સિસ્ટમ કયાં સ્થાપવામાં આવી છે?
- (A) ન્યુ દિલ્હી (B) બેંગલુરુ  
(C) ચેન્નઈ (D) હૈદરાબાદ
042. સંરક્ષણ ઉત્પાદનના સ્વદેશીકરણને પ્રોત્સાહન આપવા કયું પોર્ટલ લોન્ચ કર્યું છે?
- (A) સ્માર્ટ (SMART)  
(B) SACRED  
(C) ઉમંગ (UMANG)  
(D) સૃજન (SRIJAN)
043. બાહ્યકાશમાં (Outerspace) જીવનના અભ્યાસને શું કહે છે?
- (A) એડોબાયોલોજી (B) એક્સોબાયોલોજી  
(C) લાઈફોલોજી (D) સ્પેસોલોજી
044. તાજેતરમાં 7મી ભારત-ફ્રાન્સ જોઈન્ટ મિલીટરી કવાયત 'એક્સ-શક્તિ' 2024 કયાં યોજાઈ હતી?
- (A) રાજસ્થાન (B) ઉત્તરાખંડ  
(C) મેઘાલય (D) ઓડિશા
045. ગુજરાત વિશ્વકોશ દ્વારા વીર નર્મદ સાહિત્ય ગૌરવ પુરસ્કાર 2024 કોને એનાયત કરાયો?
- (A) કુન્દનિકા કાપડિયા (B) વર્ષા અડાલજા  
(C) ધીરુબેન પટેલ (D) શરીફા વીજળીવાળા

038. Which of the following chemicals is useful in photography?
- (A) Aluminium hydroxide (B) Potassium nitrate  
(C) Silver bromide (D) Sodium chloride
039. The working of a rocket is based on which of the following principles?
- (A) Electricity (B) Kepler's Law  
(C) Newton's Law (D) Conservation of momentum
040. Which is the system used to eliminate prostate cancer, brain tumor and uterine cancer?
- (A) Arsenic-74 (B) Brachytherapy  
(C) PET therapy (D) Chemotherapy
041. Where is INSET meteorological data processing system installed?
- (A) New Delhi (B) Bangalore  
(C) Chennai (D) Hyderabad
042. Which portal has been launched to promote indigenization of defence products?
- (A) SMART (B) SACRED  
(C) UMANG (D) SRIJAN
043. What is the study of life in outerspace called?
- (A) Endobiology (B) Exobiology  
(C) Lifeology (D) Spaceology
044. Where was the 7<sup>th</sup> India-France joint military exercise 'X-Shakti' 2024 held recently?
- (A) Rajasthan (B) Uttarakhand  
(C) Meghalaya (D) Odisha
045. Who has been awarded Veer Narmad Sahitya Gaurav Puraskar 2024 by Gujarat Vishwakosh?
- (A) Kundanika Kapadiya (B) Varsha Adalja  
(C) Dhiruben Patel (D) Sharifa Vijliwala

**M**

046. ભારતના 'મિશન ઈશાન' (Mission ISHAN) નો ઉદ્દેશ શું છે?
- (A) સમુદ્રી સીમામાં વધારો  
(B) 'વન નેશન, વન એર સ્પેસ'નું અમલીકરણ  
(C) રેલવેની કામગીરીનું કેન્દ્રીકરણ  
(D) દેશભરમાં ઈન્ટરનેટ કનેક્ટિવિટી પહોંચાડવી
047. નીચેના પૈકી કયા દેશે વિદેશ મંત્રાલય માટે વિક્ટોરિયા શી નામના AI જનરેટેડ પ્રવક્તા રજૂ કર્યા છે?
- (A) રશિયા (B) ચીન  
(C) ઈઝરાયેલ (D) યુકેન
048. આસામના ગુવાહાટીમાં કામાખ્યા દેવી મંદિરમાં ચોમાસામાં કયો વાર્ષિક મેળો યોજાય છે?
- (A) માઘ બિહુ or ભોંગાલી બિહુ મેળો  
(B) રોંગાલી અથવા બોહાગ બિહુ  
(C) અંબુબાચી મેળો  
(D) માજૂલી મહોત્સવ મેળો
049. બેડમિન્ટન વર્લ્ડ ફેડરેશન (BWF) વર્લ્ડ જુનિયર બેડમિન્ટન ચેમ્પિયનશિપ 2025નું આયોજન કયાં કરાશે?
- (A) ઈટાનગર (B) રાંચી  
(C) ભુવનેશ્વર (D) ગુવાહાટી
050. GST એપેલેટ ટ્રિબ્યુનલ (GSTAT)ના અધ્યક્ષ તરીકે કોની નિમણૂંક કરવામાં આવી છે?
- (A) સંજયકુમાર મિશ્રા  
(B) નરસિંહ પંચમ યાદવ  
(C) જસ્ટિસ દિનેશ કુમાર  
(D) જસ્ટિસ એમ. એન. ભંડારી
051. A પ્રકારના નાસ્તાનો ભાવ 500 ગ્રામના રૂા. 100 થાય છે અને B પ્રકારના નાસ્તાનો ભાવ 400 ગ્રામના રૂા. 160 છે. જો બેલા A પ્રકારનો નાસ્તો 750 ગ્રામ અને B પ્રકારનો નાસ્તો 250 ગ્રામ ખરીદે તો તેને કુલ કેટલી રકમ ચૂકવવી પડશે?
- (A) રૂા. 250 (B) રૂા. 330  
(C) રૂા. 350 (D) રૂા. 260
052. એક ચાના બગીચામાં 1 ચો.કિમી વિસ્તારમાંથી ચાની પત્તી ચૂંટતા 50 વ્યક્તિઓને 20 દિવસ લાગે છે. 4 ચો.કિમી વિસ્તારમાંથી 80 વ્યક્તિઓને ચાની પત્તી ચૂંટતા કેટલા દિવસ લાગે?
- (A) 200 દિવસ (B) 100 દિવસ  
(C) 50 દિવસ (D) 25 દિવસ

046. What is the objective of India's Mission ISHAN?
- (A) Rise in sea-level  
(B) Implementation of 'One Nation, One Airspace'  
(C) Centralization of railway operations  
(D) Extending internet connectivity across the country
047. Which of the following countries has introduced an AI-generated spokesman named Victoria Shi for the ministry of External Affairs?
- (A) Russia (B) China  
(C) Israel (D) Ukraine
048. Which annual fair is held in monsoon at the Kamakhya Devi temple in Guwahati, Assam?
- (A) Magh Bihu or Bhongali Bihu Mela  
(B) 'Rongali' or 'Bohag Bihu' Mela  
(C) Ambubachi Mela  
(D) Majuli Festival Fair
049. Where will be held the Badminton World Federation (BWF) World Junior Badminton Championship 2025?
- (A) Itanagar (B) Ranchi  
(C) Bhubaneswar (D) Guwahati
050. Who has been appointed as the Chairman of GST Appellate Tribunal (GSTAT)?
- (A) Sanjaykumar Mishra (B) Narsinh Pancham Yadav  
(C) Justice Dinesh Kumar (D) Justice M. N. Bhandari
051. Half kilogram of snack A costs Rs. 100/- and 400 gm of snack B costs Rs. 160/-. If Bela purchases 750 gm of A and 250 gm of B, what amount is she supposed to pay?
- (A) Rs. 250/- (B) Rs. 330/-  
(C) Rs. 350/- (D) Rs. 260/-
052. In a tea estate, it takes 20 days for 50 people to pluck tea leaves from a square kilometer area. Find the time taken by 80 people to pluck tea leaves from 4 square kilometer area.
- (A) 200 days (B) 100 days  
(C) 50 days (D) 25 days

053. કોઈ એક ચોક્કસ પૂર્ણસંખ્યાના 17 ગણામાંથી 6 બાદ કરીએ તો તે જ પૂર્ણસંખ્યાના વર્ગથી સાત ગણી સંખ્યા મળે તો તે પૂર્ણસંખ્યા શોધો.  
 (A) 2 (B) 3  
 (C) -2 (D) 4
054. શ્રીમાન X ની ઉંમર તેમના દીકરો Y નો જન્મ થયો ત્યારે 29 વર્ષ હતી, અને તેમના પૌત્ર Z નો જન્મ થયો ત્યારે 57 વર્ષ હતી. જ્યારે શ્રીમાન Y ની ઉંમર 48 વર્ષ હોય ત્યારે ત્રણેય વ્યક્તિ શ્રીમાન X, શ્રીમાન Y અને શ્રીમાન Z ની ઉંમરનો કુલ સરવાળો શોધો.  
 (A) 134 વર્ષ (B) 137 વર્ષ  
 (C) 146 વર્ષ (D) 145 વર્ષ
055. સરેરાશ વૈશ્વિક તાપમાનમાં દર દશ વર્ષે 2°C ના દરથી વધારો જોવા મળે છે. જો વર્ષ 2000 નું સરેરાશ તાપમાન 27.32°C હોય તો વર્ષ 2024નું સરેરાશ તાપમાન કેટલું હશે?  
 (A) 31.32°C (B) 31.40°C  
 (C) 31.36°C (D) 32.12°C
056. અપૂર્વને ઓફિસથી ઘરે પાછા ફરતી વખતે અનુક્રમે 3, 4 અને 5 રસ્તા ધરાવતાં ત્રણ સિગ્નલ પસાર કરવા પડે છે. સિગ્નલ પ્રત્યેક રસ્તા માટે અનુક્રમે 36, 25 અને 20 સેકન્ડ માટે ખુલે છે. અપૂર્વને ઘરે પહોંચતા સુધીમાં મહત્તમ કેટલા સમય સુધી રાહ જોવી પડશે?  
 (A) 3 મિનિટ 47 સેકન્ડ (B) 1 મિનિટ 21 સેકન્ડ  
 (C) 5 મિનિટ 8 સેકન્ડ (D) 2 મિનિટ 27 સેકન્ડ
057. A અને B કોઈ એક નિશ્ચિત સ્થાનથી પોતાની સફર શરૂ કરે છે. A તેની ડાબી બાજુએ 2 કિમી ચાલીને પછી ઉત્તર દિશામાં 3 કિમીનું અંતર કાપે છે, જ્યારે B દક્ષિણ દિશામાં 4 કિમી ચાલીને તેની ડાબી બાજુએ 2 કિમીનું અંતર કાપે છે. તેમના અંતિમ સ્થાન વચ્ચેનું અંતર શોધો?  
 (A) 1 કિમી (B) 7 કિમી  
 (C) 5 કિમી (D) શોધી શકાય નહીં
058. આપેલ શ્રેણીમાં ખુટતું પદ શોધો.  
 P-1, \_\_\_\_, R-27, S-256, T-3125  
 (A) Q-8 (B) Q-2  
 (C) Q-6 (D) Q-4
059. નીચે આપેલ પ્રચારસૂત્ર માટે નિશ્ચિત સાંકેતિક સંખ્યા આપવામાં આવેલ છે.  
 “Save Precious Water” - 347  
 “Water means Life” - 675  
 “Life is Precious” - 614  
 પ્રચાર સૂત્ર “Save Precious Life” માટે કઈ સાંકેતિક સંખ્યા હોઈ શકે?  
 (A) 643 (B) 716  
 (C) 754 (D) 647



053. Seven times square of an integer is same as six times taken away from seventeen times the same integer. Find that number.
- (A) 2 (B) 3  
(C) - 2 (D) 4
054. Mr. X was 29 years old when his son Mr. Y was born and was 57 when his grandson Mr. Z was born. What is the sum of their ages when Mr. Y is 48 years old?
- (A) 134 years (B) 137 years  
(C) 146 years (D) 145 years
055. The average global temperature is known to rise at the rate of  $2^{\circ}\text{C}/\text{decade}$ . If the mean temperature in the year 2000 was  $27.32^{\circ}\text{C}$ , what would be the average temperature in 2024?
- (A)  $31.32^{\circ}\text{C}$  (B)  $31.40^{\circ}\text{C}$   
(C)  $31.36^{\circ}\text{C}$  (D)  $32.12^{\circ}\text{C}$
056. While travelling from office to home, Apurva is required to cross 3 traffic signals with 3, 4 and 5 sides each that turn green for 36, 25 and 20 seconds respectively. Find the maximum waiting time for Apurva to reach home.
- (A) 3 min 47 sec (B) 1 min 21 sec  
(C) 5 min 8 sec (D) 2 min 27 sec
057. A and B start from a common point. A moves 2 km left and then 3 km north, whereas B moves 4 km south and then turns left up to 2 km. Find the distance between their final positions.
- (A) 1 km (B) 7 km  
(C) 5 km (D) Can't be determined
058. Find the missing element in the following series:  
P-1, \_\_\_, R-27, S-256, T-3125
- (A) Q-8 (B) Q-2  
(C) Q-6 (D) Q-4
059. In a certain code,  
347 is "Save Precious Water",  
675 is "Water means Life"  
614 is "Life is Precious"  
Then what will "Save Precious Life" be decoded as?
- (A) 643 (B) 716  
(C) 754 (D) 647

**M**

060. જો  $A + B$  દર્શાવે છે કે  $A, B$  ના પિતા છે,  $A \times B$  દર્શાવે છે કે  $A, B$  નો ભાઈ છે અને  $A \circ B$  દર્શાવે છે કે  $A, B$  ની માતા છે. તો  $P \times T + K$  માટે નીચે આપેલ વિકલ્પોમાંથી કયો વિકલ્પ સાચો બનશે?

- (A)  $K, T$  ના પિતા છે. (B)  $T, K$  ની માતા છે.  
(C)  $P, K$  ના પિતા છે. (D)  $P, K$  ના કાકા છે.

★ નીચે આપેલ સંખ્યાઓને ધ્યાનમાં લઈને પ્રશ્ન-061 થી પ્રશ્ન-063 ના ઉત્તર આપો.  
293 637 485 769 382

061. જો આપેલ સંખ્યાઓના અંકોને ચડતાક્રમમાં ગોઠવી નવી સંખ્યા બનાવવામાં આવે તો મધ્ય સ્થાન પરની સંખ્યા કઈ સંખ્યા પરથી બનશે?

- (A) 637 (B) 485  
(C) 769 (D) 382

062. આપેલ દરેક સંખ્યાઓમાં સૌથી મોટા બેકી અંકને 2 વડે ભાગવાથી બનતી નવી સંખ્યાઓમાંથી સૌથી નાની સંખ્યા કઈ મૂળ સંખ્યામાંથી બનશે?

- (A) 637 (B) 382  
(C) 293 (D) 485

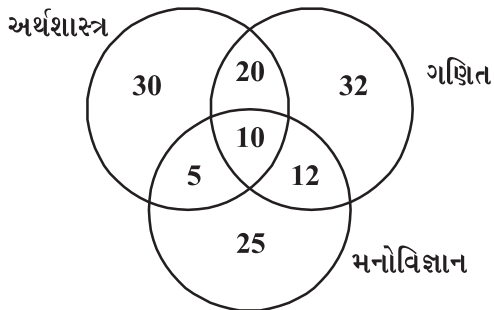
063. પ્રશ્ન 061 પ્રમાણે બનતી નવી સંખ્યાઓમાંથી સૌથી મોટી સંખ્યા અને સૌથી નાની સંખ્યાનો તફાવત શોધો.

- (A) 440 (B) 441  
(C) 220 (D) 531

064. પહેલી 80 બેકી પ્રાકૃતિક સંખ્યાઓનો સરવાળો શોધો?

- (A) 6480 (B) 6482  
(C) 6560 (D) 6540

★ અહીં આપેલ વેનઆકૃતિ અર્થશાસ્ત્ર, ગણિત અને મનોવિજ્ઞાનમાં અભ્યાસ કરતાં વિદ્યાર્થીઓની સંખ્યા દર્શાવે છે. પ્રશ્ન-065થી પ્રશ્ન-068 આ વેનઆકૃતિ પર આધારિત છે.



065. અર્થશાસ્ત્ર અથવા ગણિત અથવા બંને વિષયનો અભ્યાસ કરતાં વિદ્યાર્થીઓ પરંતુ મનોવિજ્ઞાનનો અભ્યાસ ન કરતાં હોય તેવા વિદ્યાર્થીઓની સંખ્યા શોધો.

- (A) 97 (B) 82  
(C) 94 (D) 87

060. If  $A + B$  denotes "A is B's father",  $A \times B$  denotes "A is B's brother" and  $A \circ B$  denotes "A is B's mother". Then which of the following is true for  $P \times T + K$ ?

- (A) K is T's father (B) T is K's mother  
 (C) P is K's father (D) P is K's uncle

★ Consider the numbers listed below and answer Q.No. 061 to Q.No. 063.

293 637 485 769 382

061. If all the digits in each of the given numbers are arranged in ascending order within the number, which number will give the middle number?

- (A) 637 (B) 485  
 (C) 769 (D) 382

062. If the largest even digit in each of the numbers is divided by 2, the smallest number so obtained is from the number \_\_\_\_.

- (A) 637 (B) 382  
 (C) 293 (D) 485

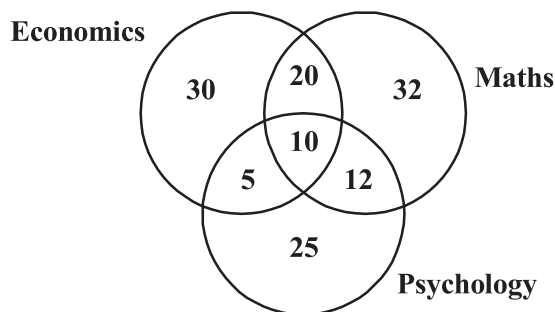
063. As per the formation of numbers in Q.No. 061 above, the difference between the highest and the least number is:

- (A) 440 (B) 441  
 (C) 220 (D) 531

064. Find the sum of first 80 even natural numbers.

- (A) 6480 (B) 6482  
 (C) 6560 (D) 6540

★ The given Venn diagram represents the number of students studying Economics, Mathematics and Psychology. Answer Q.No. 065 to Q.No. 068 from this Venn diagram



065. Identify the number of students who study Economics or Mathematics or both but not Psychology.

- (A) 97 (B) 82  
 (C) 94 (D) 87

**M**

066. અર્થશાસ્ત્ર અને મનોવિજ્ઞાન બંને વિષયનો અભ્યાસ કરતાં વિદ્યાર્થીઓની સંખ્યા શોધો.  
(A) 15 (B) 65  
(C) 27 (D) 30
067. માત્ર એક જ વિષયનો અભ્યાસ કરતાં વિદ્યાર્થીઓની સંખ્યા શોધો.  
(A) 47 (B) 10  
(C) 25 (D) 87
068. ઓછામાં ઓછા બે વિષયનો અભ્યાસ કરતાં વિદ્યાર્થીઓની સંખ્યા શોધો.  
(A) 37 (B) 47  
(C) 10 (D) 87
069. કોઈ પણ બે સંખ્યાઓ જેનો ગુણાકાર 300 હોય અને ઓછામાં ઓછો તફાવત ધરાવતી હોય, તેનો સરવાળો શોધો?  
(A) 40 (B) 35  
(C) 37 (D) 33
070. 422.323 - ની કિંમતમાં શતકના સ્થાન પરનો અંક શોધો?  
(A) 4 (B) 1  
(C) 7 (D) 3
071. એક સંખ્યાને 84 વડે ભાગવાથી 28 શેષ મળે છે. જો તે જ સંખ્યાને 14 અને 21 વડે ભાગવામાં આવે તો અનુક્રમે કેટલી શેષ મળે?  
(A) 0 અને 7 (B) 0 અને 2  
(C) 2 અને 4 (D) 1 અને 2
072. આપેલ શૃંખલામાં કઈ સંખ્યા ખોટી છે?  
0, 1, 7, 19, 36, 61, 91  
(A) 19 (B) 36  
(C) 61 (D) ઉપરોક્ત ત્રણ પૈકી એક પણ નહીં
073. આપેલ શૃંખલા પૂર્ણ કરો.  
8, 16, 48, 192, \_\_\_\_  
(A) 576 (B) 768  
(C) 960 (D) 1920

066. Find the number of students who study both Economics and Psychology.

- (A) 15 (B) 65  
(C) 27 (D) 30

067. Find the number of students who study only one subject.

- (A) 47 (B) 10  
(C) 25 (D) 87

068. How many students study at least two subjects?

- (A) 37 (B) 47  
(C) 10 (D) 87

069. Find the sum of two numbers, whose product is 300 and the difference is minimum.

- (A) 40 (B) 35  
(C) 37 (D) 33

070. Find the digit at hundred's place in the value of 422.323

- (A) 4 (B) 1  
(C) 7 (D) 3

071. A number when divided by 84 leaves a remainder of 28. Find the remainders in order when the same number is divided by 14 and 21.

- (A) 0 and 7 (B) 0 and 2  
(C) 2 and 4 (D) 1 and 2

072. Identify the wrong number in the given sequence:

0, 1, 7, 19, 36, 61, 91

- (A) 19 (B) 36  
(C) 61 (D) None

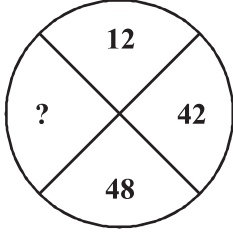
073. Complete the given sequence:

8, 16, 48, 192, \_\_\_\_\_

- (A) 576 (B) 768  
(C) 960 (D) 1920

**M**

074. આપેલ વિકલ્પોમાંથી પ્રશ્નાર્થ ચિન્હના સ્થાને કયો વિકલ્પ સાચો બનશે?



- (A) 96 (B) 69  
(C) 28 (D) 63

075. કાવ્યાની નાની બહેન બીજલ રાશિ કરતાં મોટી છે. પૂજા આર્યા કરતાં નાની છે પરંતુ કાવ્યાથી મોટી છે. તો આ છોકરીઓમાંથી કોણ સૌથી મોટી અને કોણ સૌથી નાની છોકરી હશે?

- (A) આર્યા અને પૂજા (B) કાવ્યા અને રાશિ  
(C) આર્યા અને રાશિ (D) પૂજા અને રાશિ

076. કોઈ એક નિશ્ચિત રકમ પર આપેલ વ્યાજ દરે 3 વર્ષ પછી સાદું વ્યાજ સાથે રૂ. 777/- મળે છે અને 5 વર્ષ પછી સાદા વ્યાજ સાથે રૂ. 795/- મળે છે. મૂળ રકમ શોધો?

- (A) રૂ. 750/- (B) રૂ. 745/-  
(C) રૂ. 725/- (D) રૂ. 760/-

077. એક ટીવી રૂ. 32,000 માં ખરીદ્યું. જો તેની કિંમતમાં દર વર્ષે 5% ના દરે અવમૂલ્યન થતું હોય તો ત્રણ વર્ષ પછી ટીવીની કિંમત કેટલી હશે?

- (A) રૂ. 27,576/- (B) રૂ. 28,000/-  
(C) રૂ. 28,880/- (D) રૂ. 27,436/-

078. એક વેપારી કોઈ એક વસ્તુને રૂ. 11,500/- માં વેચે તો તેને 8% નું નુકસાન થાય છે. જો તે વસ્તુ પર તેને 8% નો ફાયદો જોઈતો હોય તો તેણે તે વસ્તુને કેટલી કિંમતે વેચવી જોઈએ?

- (A) રૂ. 13,500/- (B) રૂ. 12,420/-  
(C) રૂ. 14,000/- (D) રૂ. 13,600/-

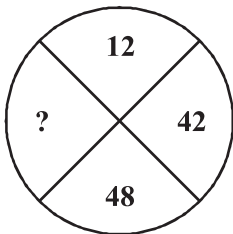
079. જો કોઈ વસ્તુની પડતર કિંમત તેની વેચાણ કિંમતના 80% હોય તો નફો ટકાવારીમાં શોધો?

- (A) 20% (B) 25%  
(C) 10% (D) 12.5%

080. જો શ્રેણી 12, 15, 7, 17, 9 અને  $x$  નો મધ્યસ્થ 13 હોય તો  $x$  ની કિંમત શોધો?

- (A) 16 (B) 13  
(C) 14 (D) શોધી શકાય નહીં

074. Find the correct option that replaces the question mark:



- (A) 96  
(B) 69  
(C) 28  
(D) 63

075. Kavya's younger sister Bijal is elder than Rashi. Pooja is younger than Arya, but elder than Kavya. Determine the eldest and youngest among them.

- (A) Arya and Pooja  
(B) Kavya and Rashi  
(C) Arya and Rashi  
(D) Pooja and Rashi

076. A sum of money at a given rate of simple interest amounts to Rs. 777/- in 3 years and to Rs. 795/- in 5 years. The sum is:

- (A) Rs. 750/-  
(B) Rs. 745/-  
(C) Rs. 725/-  
(D) Rs. 760/-

077. A television was bought for Rs. 32,000/-, its value gets depreciated by 5% per annum. Find the value of the television after 3 years.

- (A) Rs. 27,576/-  
(B) Rs. 28,000/-  
(C) Rs. 28,880/-  
(D) Rs. 27,436/-

078. A dealer bears a loss of 8% if he sells an article for Rs. 11,500/-. At what price must he sell so as to gain 8% on that article?

- (A) Rs. 13,500/-  
(B) Rs. 12,420/-  
(C) Rs. 14,000/-  
(D) Rs. 13,600/-

079. If the cost price of an article is 80% of its selling price, what is the percentage of profit?

- (A) 20%  
(B) 25%  
(C) 10%  
(D) 12.5%

080. If the median of 12, 15, 7, 17, 9 and  $x$  is 13, find the value of  $x$ .

- (A) 16  
(B) 13  
(C) 14  
(D) Can't be determined

**M**

081. બધી જોડણી સાચી હોય તેવો વિકલ્પ પસંદ કરો.

- (A) નાત્યભિમાન, ઉચ્ચગામિતા, સમૃદ્ધિમાન, બુદ્ધિમન્ત  
(B) નાત્યભિમાન, ઉચ્ચગામિતા, સમૃદ્ધિવાન, બુદ્ધિવન્ત  
(C) નાત્યભિમાન, ઉચ્ચગામીતા, સમૃદ્ધિવાન, બુદ્ધિમન્ત  
(D) નાત્યાભિમાન, ઉચ્ચગામિ, સમૃદ્ધિવાન, બુદ્ધિવન્ત

082. નીચે આપેલાં જૂથ ધ્યાને લઈ સમાનાર્થી શબ્દો વિશે યોગ્ય વિકલ્પ પસંદ કરો.

1. અંજસા, જલદી, ઝટ, તરત
2. વિતત, વિતથ, વિસ્તરેલું, વ્યાપેલું
3. વૈનીતક, પાલખી, અંબાડી, સુખપાલ
4. જાહેરખબર, વિખ્યાપન, વિજ્ઞાપન, જાહેરખબર

(A) ફક્ત 1 અને 2 યોગ્ય છે.

(B) ફક્ત 3 અને 4 યોગ્ય છે.

(C) ફક્ત 1, 3 અને 4 યોગ્ય છે.

(D) ફક્ત 1 અને 4 યોગ્ય છે.

083. નીચે આપેલાં જૂથ ધ્યાને લઈ વિરુદ્ધાર્થી શબ્દો વિશે યોગ્ય વિકલ્પ પસંદ કરો.

1. આકારો × જાકારો
2. જાકારો × આવકારો
3. મિત્ર × અરાતિ
4. અરાતિ × દોસ્તાર

(A) ફક્ત 2 યોગ્ય છે.

(B) ફક્ત 2 અને 3 યોગ્ય છે.

(C) ફક્ત 2, 3 અને 4 યોગ્ય છે.

(D) 1, 2, 3 અને 4 બધા જ યોગ્ય છે.

084. નીચે આપેલા રૂઢિપ્રયોગ અને તેના અર્થ માટે યોગ્ય વિકલ્પ પસંદ કરો.

રૂઢિપ્રયોગ                      અર્થ

1. છેડા છોડી નાખવા = સંબંધ તોડી નાખવો
2. છેડા છોડી નાખવા = હિંમત હારી જવી
3. છેડે ગાંઠ વાળવી = યાદ રાખવું
4. છેડે ગાંઠ વાળવી = નિશ્ચય કરવો

(A) ફક્ત 1, 2 અને 4 યોગ્ય છે.

(B) ફક્ત 1 અને 4 યોગ્ય છે.

(C) 1, 2, 3 અને 4 બધા જ યોગ્ય છે.

(D) ફક્ત 1, 3 અને 4 યોગ્ય છે.



085. નીચે આપેલી કહેવતોને ધ્યાને લઈ તેના વિશે સાચો વિકલ્પ પસંદ કરો.

1. સો જોશી ને એક ડોશી
2. ભૂંડાનો શાપ ન લાગે
3. સો કાંકરે એક કાંકરો વાગે
4. અનુભવ ઉત્તમ શિક્ષક છે.

(A) 2 અને 4 સમાનાર્થી કહેવતો છે, 1 અને 3 વિરુદ્ધાર્થી કહેવતો છે.

(B) 1 અને 2 સમાનાર્થી કહેવતો છે, 2 અને 4 વિરુદ્ધાર્થી કહેવતો છે.

(C) 1 અને 4 સમાનાર્થી કહેવતો છે, 2 અને 3 વિરુદ્ધાર્થી કહેવતો છે.

(D) 1 અને 3 સમાનાર્થી કહેવતો છે, 1 અને 2 વિરુદ્ધાર્થી કહેવતો છે.

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

સામાસિક શબ્દ - પ્રકાર

1. સિતેતર - પંચમી તત્પુરુષ
2. પ્રીત્યર્થે - ચતુર્થી તત્પુરુષ
3. રાજયક્ષમા - ષષ્ઠી તત્પુરુષ
4. ઈશ્વરનિર્મિત - દ્વિતીયા તત્પુરુષ

(A) ફક્ત 1 અને 3 યોગ્ય છે.

(B) ફક્ત 2 અને 3 યોગ્ય છે.

(C) ફક્ત 1, 2 અને 3 યોગ્ય છે.

(D) 1, 2, 3 અને 4 બધા જ યોગ્ય છે.

087. નીચે આપેલી સંધિ વિશે સાચો વિકલ્પ પસંદ કરો.

1. અક્ષ + ઊહિની = અક્ષોહિણી
2. સ્વ + ઈરિણી = સ્વૈરિણી
3. મૃત + પાત્ર = મૃત્પાત્ર
4. અ + છિદ્ર = અછિદ્ર

(A) ફક્ત 1 અને 2 સાચા છે.

(B) ફક્ત 1 અને 3 સાચા છે.

(C) 1, 2, 3 અને 4 બધા જ સાચા છે.

(D) 1, 2, 3 અને 4 બધા જ ખોટા છે.

088. નીચે આપેલી ઉદાહરણ ધ્યાને લઈ અલંકારના પ્રકારનો યોગ્ય વિકલ્પ પસંદ કરો.

1. પંખીઓએ કલશોર કર્યો ભાઈ, ધરતીને સૂરજ ચૂમ્યો,  
કૂથલી લઈને સાંજનો સમીર આજ વનેવન ધૂમ્યો.
2. ત્યાં પંક માંહી મહિષીધણ સુસ્ત બેઠું,  
દાદૂર જેની પીઠ પે રમતાં નિરાંતે.
3. બચાવ્યું એટલું એળે અહીં તો લૂંટવ્યું એટલી લડાણ.
4. અરે રે, કાગડો દહીંથરું લઈ ગયો !

- (A) 1. અંત્યાનુપ્રાસ, 2. વર્ણાનુપ્રાસ, 3. પ્રાસસાંકળી, 4. રૂપક  
(B) 1. સજ્જવારોપણ, 2. સ્વભાવોક્તિ, 3. વિરોધાભાસ, 4. વિષમ  
(C) 1. સજ્જવારોપણ, 2. ઉપમા, 3. અનન્વય, 4. વિષમ  
(D) 1. અંત્યાનુપ્રાસ, 2. સ્વભાવોક્તિ, 3. અનન્વય, 4. વિષમ

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

1. ‘રજની મહી સખી ઘણીક વેળા, નયન મળે નહીં, ઊંઘ જાય ચાલી.  
કરી તુજ શિરકેશ સર્વ ભેળા, વદન સુધાકરને રહું નિહાળી’
2. ‘નરમદા કહે વીનવી તમો મદદ દીનને દેઈને રમો.’
3. ‘ત્રિકાલનું જ્ઞાન હતું કુમારને, નજીક આંખે નિરખે થનારને  
સ્વપક્ષનો ધૂત વિષે પરાજય, વળી દિસે દ્રૌપદીમાનનો ક્ષય’.
4. ‘નિર્જળ ગામ નવાણ ગળાવો’

- (A) 1. પુષ્પિતાગ્રા, 2. લલિત, 3. વંશસ્થ, 4. દોષક  
(B) 1. સવેયા, 2. સ્ત્રગ્ધરા, 3. વંશસ્થ, 4. ઈન્દ્રવજ્ર  
(C) 1. પુષ્પિતાગ્રા, 2. સ્ત્રગ્ધરા, 3. વંશસ્થ, 4. ઉપેન્દ્રવજ્ર  
(D) 1. શાર્દૂલવિકીરિત, 2. સ્ત્રગ્ધરા, 3. વંશસ્થ, 4. ઈન્દ્રવજ્ર

090. નીચેની વિગતોને ધ્યાને લઈ યોગ્ય વિકલ્પ પસંદ કરો.

1. રૂઢિપ્રયોગનો અર્થ : ઊલટી માળા ફેરવવી = શાપ દેવો
2. વિરુદ્ધાર્થી શબ્દ : નઘરોળ × જડ
3. સમાનાર્થી શબ્દ : કૃત્સ્ન = પાપી
4. છંદ : મંદાકાંતા – ‘લાગ્યા ઘાને વિસરી શકવા કાંઈ સામર્થ્ય ના છે.’

- (A) ફક્ત 1 અને 2 સાચા છે. (B) ફક્ત 1 અને 4 સાચા છે.  
(C) ફક્ત 1, 3 અને 4 સાચા છે. (D) ફક્ત 4 સાચું છે.

091. Mind your own business. The adjective in the sentence is \_\_\_\_\_.

- (A) mind (B) your  
(C) own (D) business

092. He could not speak a sentence in English. (Add question tag)  
(A) Couldn't he? (B) Could he?  
(C) Would he? (D) Can't he?
093. \_\_\_\_\_ by hunger, he stole a piece of bread.  
(A) Driving (B) Had driven  
(C) Drove (D) Driven
094. Does the society respect you? (Change the voice)  
(A) Are you respected?  
(B) Are you being respected?  
(C) Are you not respected by the society?  
(D) Do you get respected by the society?
095. Nishit is the tallest boy in the class. (Change into positive degree)  
(A) Nishit is as tall as any other boy in the class  
(B) No other boy in the class is taller than Nishit  
(C) No other boy in the class is as tall as Nishit  
(D) No other boy is tallest in the class
096. I have only \_\_\_\_\_ friends.  
(A) few (B) a few  
(C) a little (D) many
097. \_\_\_\_\_ of the two men \_\_\_\_\_ strong.  
(A) Neither / is (B) Each / is  
(C) Either / are (D) Everyone / is
098. The true gentleman is courteous and affable \_\_\_\_\_ his neighbours.  
(A) of (B) to  
(C) about (D) at
099. By the time I reached the airport, the flight \_\_\_\_\_.  
(A) took off (B) has taken off  
(C) had taken off (D) takes off
100. Find out the sentence with adjective.  
(A) The boy was punished  
(B) The lazy boy was punished  
(C) The boy was not punished but praised  
(D) The boy was punished as well as praised

**M**

101. What is entropy?  
(A) Entropy is a measure of the network done by a system  
(B) Entropy is a measure of the heat transfer of energy into a system  
**(C) Entropy is a measure of the disorder of a system**  
(D) Entropy is a measure of the potential energy of a system
102. It is impossible to construct a device which, operating in a cycle, will produce no effect other than transfer of heat from a cooler to a hotter body. This is:  
(A) Kelvin statement **(B) Clausius statement**  
(C) Planck statement (D) Conservation of energy
103. During throttling process:  
(A) pressure does not change  
(B) internal energy does not change  
(C) entropy does not change  
**(D) enthalpy does not change**
104. If temperature of the source is increased, the efficiency of Carnot engine  
**(A) Increases**  
(B) Decreases  
(C) Remains Constant  
(D) First increases and then becomes constant
105. A Carnot engine works between the temperature  $227^\circ\text{C}$  and  $127^\circ\text{C}$ . If the work output of the engine is  $10^4\text{ J}$ , then the amount of heat rejected to the sink will be:  
(A)  $1 \times 10^4\text{ J}$  (B)  $2 \times 10^4\text{ J}$   
**(C)  $4 \times 10^4\text{ J}$**  (D)  $5 \times 10^4\text{ J}$
106. 110 joule of heat is added to a gaseous system, whose internal energy is 40 J. Then the amount of external work done is  
(A) 150 J **(B) 70 J**  
(C) 110 J (D) 40 J
107. The heat absorbed or rejected during a polytropic process is  
**(A)  $\left(\frac{\gamma-n}{\gamma-1}\right) \times \text{work done}$**  (B)  $\left(\frac{\gamma-n}{\gamma-1}\right)^2 \times \text{work done}$   
(C)  $\left(\frac{\gamma-n}{\gamma-1}\right)^{1/2} \times \text{work done}$  (D)  $\left(\frac{\gamma-n}{\gamma-1}\right)^3 \times \text{work done}$

108. An isentropic process is always  
(A) irreversible and adiabatic  
(B) reversible and isothermal  
(C) frictionless and irreversible  
(D) reversible and adiabatic
109. If dry saturated steam is admitted to a steam turbine following an isentropic process, at the exit of the turbine, it will be a  
(A) Superheated steam  
(B) Dry saturated steam  
(C) Liquid condensate  
(D) Wet steam
110. The ideal cycle on which steam engine works is  
(A) Carnot cycle  
(B) Rankine cycle  
(C) Otto cycle  
(D) Joule cycle
111. In adiabatic expansion of a system in which its temperature changes from a value  $T_1$  to  $T_2$  the entropy will  
(A) Increase  
(B) Decrease  
(C) Remain unchanged  
(D) May increase or decrease depending upon the ratio  $T_1/T_2$
112. CRYOGENICS is \_\_\_\_\_  
(A) A type of tank  
(B) Study of materials and phenomena at low temperature  
(C) Study of radioactive elements  
(D) None of these
113. In a steam power plant, the enthalpy of steam at the inlet and outlet of steam turbine in the Rankine cycle are 4000 kJ/kg and 2500 kJ/kg, respectively. Neglecting the pump work, the steam consumption rate (in kg/kW h) will be  
(A) 2.4  
(B) 1.5  
(C) 3  
(D) 4.5
114. A cycle consisting of two constant pressures and two isentropic processes is known as  
(A) Carnot cycle  
(B) Stirling cycle  
(C) Otto cycle  
(D) Brayton cycle
115. Thermal conductivity of solid metals with rise in temperature normally  
(A) Increases  
(B) Decreases  
(C) Remains constant  
(D) Unpredictable

**M**

116. Heat transfer takes place as per  
(A) Zeroth law of thermodynamics  
(B) First law of thermodynamics  
(C) Second law of thermodynamics  
(D) Kirchhoff's law
117. In convection heat transfer from hot flue gases to water tube, even though flow may be turbulent, a laminar flow region (boundary layer of film) exists close to the tube. The heat transfer through this film takes place by  
(A) Convection  
(B) Radiation  
(C) Conduction  
(D) Both convection and conduction
118. The rate of energy emission from unit surface area through unit solid angle, along a normal to surface is known as  
(A) Emissivity  
(B) Transmissivity  
(C) Reflectivity  
(D) Intensity of radiation
119. A grey body is one whose absorptivity  
(A) Varies with temperature  
(B) Varies with wavelength of the incident ray  
(C) Is equal to its emissivity  
(D) None of the above
120. Fourier's law of heat conduction is valid for  
(A) One dimensional cases only  
(B) Two dimensional cases only  
(C) Three dimensional cases only  
(D) Irregular surfaces
121. Joule sec is the unit of  
(A) Universal gas constant  
(B) Kinematic viscosity  
(C) Thermal conductivity  
(D) Planck's constant
122. The thermal diffusivities for gases are generally  
(A) More than those for liquids  
(B) Less than those for liquids  
(C) More than those for solids  
(D) Same as for liquids

123. Thermal diffusivity of a substance is  
(A) Directly proportional to thermal conductivity  
(B) Inversely proportional to density of substance  
(C) Inversely proportional to specific heat  
(D) All of the above
124. Heat transfer by radiation mainly depends upon  
(A) Its temperature  
(B) Nature of the body  
(C) Kind and extent of its surface  
(D) All of the above
125. For a given set of operating pressure limits of a Rankine cycle, the highest efficiency occurs for  
(A) Superheated cycle  
(B) Reheat cycle  
(C) Regenerative cycle  
(D) Saturated cycle
126. The work ratio of a gas turbine is a function of  
(A) temperature ratio and pressure ratio  
(B) temperature ratio  
(C) pressure ratio  
(D) None of the above
127. The dimensionless numbers used for analyzing the transient heat conduction problems in a plane wall, cylinder and sphere is \_\_\_\_\_  
(A) Nusselt Number and Fourier Number  
(B) Reynolds Number and Biot Number  
(C) Biot Number and Fourier Number  
(D) Nusselt Number and Biot Number
128. The time required by a thermocouple to reach its 63.2 per cent of the value of initial temperature difference is called its \_\_\_\_\_  
(A) thermocouple junction  
(B) sensitivity  
(C) change in temperature  
(D) response of thermocouple
129. A sphere, a cube and a disc, all of the same material, quality and volume are heated to 900 K and left in air. Which of these have the lowest rate of cooling?  
(A) Cube  
(B) Disc  
(C) Sphere  
(D) All will have the same rate of cooling

**M**

130. The forced convection heat transfer coefficient of a plate depends on which of the following?

- (A) gravity
- (B) velocity and conductivity of fluid
- (C) conductivity of plate material
- (D) Resistivity of plate material

131. Ratio of convective mass transfer to the mass diffusion rate is called

- (A) Sherwood number
- (B) Schmidt number
- (C) Rayleigh number
- (D) Strouhal number

132. Stoke is the unit of

- (A) mass density
- (B) kinematic viscosity
- (C) viscosity
- (D) velocity gradient

133. The resultant hydrostatic force acts through a point known as

- (A) centre of gravity
- (B) centre of buoyancy
- (C) centre of pressure
- (D) None of the above

134. The Bernoulli's equation can take the form

(A)  $\frac{P}{\rho g} + \frac{v^2}{2g} + z = \text{constant}$

(B)  $\frac{P}{\rho g} + \frac{v}{2g} + z = \text{constant}$

(C)  $\frac{P}{\rho g} + \frac{v^2}{g} + z = \text{constant}$

(D)  $\frac{P}{\rho g} + \frac{v}{g} + z = \text{constant}$

135. The formation of vapour and air pockets in liquid results in phenomenon called:

- (A) Erosion
- (B) Cavitation
- (C) Turbulence
- (D) Whirling

136. For the laminar flow through a circular pipe

- (A) the maximum velocity = 1.5 times the average velocity
- (B) the maximum velocity = 2.0 times the average velocity
- (C) the maximum velocity = 2.5 times the average velocity
- (D) None of the above



137. The loss of head due to sudden expansion of a pipe is given by

(A)  $h_L = \frac{(v_1 - v_2)^2}{2g}$

(B)  $h_L = \frac{v_1^2 - v_2^2}{2g}$

(C)  $h_L = \frac{0.5 v_1^2}{2g}$

(D)  $h_L = \frac{0.5 v_2^2}{2g}$

138. For a viscous flow through circular pipes, certain curves are shown in Fig. 1, curve B is for

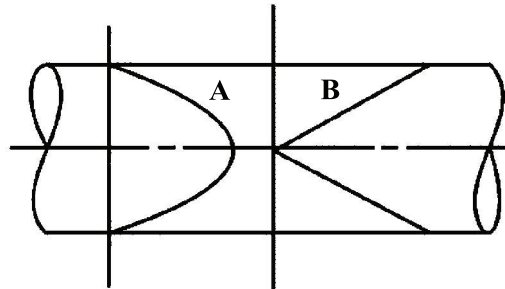


Fig 1

(A) shear stress distribution

(B) velocity distribution

(C) pressure distribution

(D) None of the above

139. The overall efficiency of a turbine is the ratio of

(A) Power at the inlet of turbine to the power at the shaft

(B) Power at the shaft to the power given to the runner

(C) Power at the shaft to the power at the inlet of turbine

(D) None of the above

140. The unit discharge ( $Q_u$ ) and unit speed ( $N_u$ ) curves for different turbines are shown in Fig. 2. Curve A is for

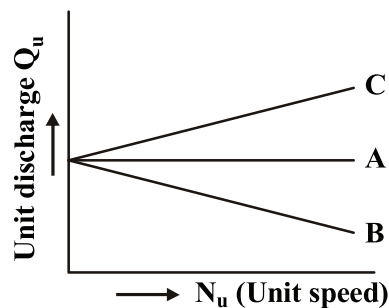


Fig 2

(A) Francis Turbine

(B) Kaplan Turbine

(C) Pelton Turbine

(D) Propeller Turbine

**M**

141. Hydraulic coupling is a device used for  
(A) transmitting same torque to the driven shaft  
(B) transmitting increased torque to the driven shaft  
(C) transmitting decreased torque to the driven shaft  
(D) None of the above
142. The flow of water, leaving the impeller, in a centrifugal pump casing is  
(A) Forced vortex flow  
(B) Free vortex flow  
(C) Centrifugal flow  
(D) Radial flow
143. Moderator in nuclear plants is used to  
(A) Reduce temperature  
(B) Extract heat from nuclear reaction  
(C) Control the reaction  
(D) Cause collision with the fast-moving neutrons to reduce their speed
144. Electron-volt is unit of  
(A) Atomic power  
(B) Energy  
(C) Voltage  
(D) Radioactivity
145. Which of the following can be used as a coolant in nuclear plant?  
(A) Light or heavy water  
(B) Molten lead  
(C) Carbon dioxide  
(D) Freon
146. Carbonisation of the coal is the process of  
(A) Pulverizing coal in inert atmosphere  
(B) Heating wood in a limited supply of air at temperature below 300° C  
(C) Strongly heating coal continuously for about 48 hours in the absence of air in a closed vessel  
(D) Enriching carbon in the coal
147. The coal requirement per kW hour generation in the thermal power plant is of the order of  
(A) 0.1 to 0.2 kg  
(B) 0.2 to 0.4 kg  
(C) 0.6 to 0.8 kg  
(D) 1.0 to 1.5 kg
148. Locomotive type boiler is  
(A) Horizontal multitubular water tube boiler  
(B) Water wall enclosed furnace type  
(C) Vertical tubular fire-tube boiler  
(D) Horizontal multitubular fire-tube boiler

149. Lancashire boiler is of  
(A) Stationary fire-tube type  
(B) Horizontal type  
(C) Natural circulation type  
(D) All of the above
150. The impurities are removed from the boiler with the help of  
(A) stop valve  
(B) blow-off cock  
(C) safety valve  
(D) fusible plug
151. The gas in the cooling chamber of a closed cycle gas turbine is cooled at  
(A) Constant volume  
(B) Constant pressure  
(C) Constant temperature  
(D) None of these
152. Intercooling in gas turbine results in  
(A) Increase in net output but decrease in thermal efficiency  
(B) Increase in thermal efficiency but decrease in net output  
(C) Increase in both thermal efficiency and net output  
(D) Decrease in both thermal efficiency and net output
153. In vapour compression cycle, the condition of the refrigerant before entering the compressor is  
(A) Saturated liquid  
(B) Wet vapour  
(C) Superheated vapour  
(D) Dry saturated vapour
154. Critical temperature is the temperature above which  
(A) A gas will never liquify  
(B) A gas will immediately liquify  
(C) Water will evaporate  
(D) Water will never evaporate
155. A diesel engine has a compression ratio of 16 and cut-off takes place at 6% of the stroke. What will be the cut-off ratio?  
(A) 1.5  
(B) 1.9  
(C) 2.5  
(D) 2.9
156. Knocking tendency in a SI engine reduces with increasing  
(A) Compression ratio  
(B) Wall temperature  
(C) Supercharging  
(D) Engine speed

**M**

157. An ideal gas with heat capacity ratio of 2 is used in an ideal Otto cycle which operates between minimum and maximum temperatures of 200 K and 1800 K. What is the compression ratio of the cycle for maximum work output?  
(A) 1.5 (B) 2 (C) 3 (D) 4
158. Stirling cycle has these processes  
(A) Two reversible isobars and two reversible isotherms  
(B) Two reversible isobars and two reversible isentropics  
(C) Two reversible isochores and two reversible isotherms  
(D) Two reversible isochores and two reversible isentropics
159. The air standard efficiency of the Otto cycle is  
(A)  $\eta = 1 - r^{\gamma-1}$  (B)  $\eta = 1 - \frac{1}{r^{\gamma-1}}$   
(C)  $\eta = 1 - \frac{r}{r^{\gamma-1}}$  (D)  $\eta = 1 - r^{\gamma}$
160. For same output, same speed and same compression ratio, the thermal efficiency of a two-stroke cycle petrol engine as compared to that for four-stroke cycle petrol engine is  
(A) More (B) Less  
(C) Same (D) None of the above
161. A four-stroke petrol engine theoretically operates on  
(A) Otto Cycle  
(B) Brayton Cycle  
(C) Joule Cycle  
(D) Bell Coleman Cycle
162. In a diesel engine, the duration between the time of injection and time of ignition is called  
(A) Period of ignition  
(B) Explosion period  
(C) Pre-ignition period  
(D) Delay period
163. Which of the following is not a type of excavating equipment?  
(A) Bulldozer (B) Dragline  
(C) Power Shovel (D) Crane

164. In the context of an aircraft refrigeration cycle, what is the temperature of the air at the exit of the cooling turbine in the absence of moisture condensation?
- (A) Saturated temperature  
 (B) Dry air rated temperature (DART)  
 (C) Super-saturated temperature  
 (D) Dry air temperature (DAT)
165. The ideal gas-refrigeration cycle is the same as the
- (A) Brayton cycle  
 (B) Reversed Brayton cycle  
 (C) Vapour compression refrigeration cycle  
 (D) Vapour absorption refrigeration cycle
166. Which of the following is NOT a component of the Bell Coleman cycle?
- (A) Condenser  
 (B) Compressor  
 (C) Cooler  
 (D) Expander
167. If shafts are in parallel, then the angle of twist and torque, respectively, is:
- (A)  $\theta = \theta_1 = \theta_2$  and  $T_1 = T_2 = T$   
 (B)  $\theta = \theta_1 + \theta_2$  and  $T = T_1 + T_2$   
 (C)  $\theta = \theta_1 = \theta_2$  and  $T = T_1 + T_2$   
 (D)  $\theta = \theta_1 + \theta_2$  and  $T_1 = T_2 = T$
168. Wet bulb temperature at 100% RH is \_\_\_\_\_ dry bulb temperature
- (A) equal to  
 (B) lower than  
 (C) higher than  
 (D) inverse of
169. Different quantities of moist air in two different states at constant pressure are mixed to get moist air at 0.008 kg/kg of dry air. If specific humidity are 0.006 and 0.012 kg/kg of dry air which are getting mixed, what is the ratio of mass flow rate of these air in which they are mixed respectively?
- (A) 4 : 3  
 (B) 2 : 1  
 (C) 1 : 2  
 (D) 3 : 2
170. The relative humidity of ambient air at 300 K is 50% with a partial pressure of water vapour equal to  $P_v$ . The saturation pressure of water at 300 K is  $P_{sat}$ . The correct relation for the air-water mixture is
- (A)  $P_v = 2 P_{sat}$   
 (C)  $P_v = 0.5 P_{sat}$   
 (B)  $P_v = P_{sat}$   
 (D)  $P_v = 0.622 P_{sat}$
171. Mass flow ratio of  $NH_3$  in comparison to Freon-12 for the same refrigeration load and same temperature limits is of the order of
- (A) 1:1  
 (B) 1:9  
 (C) 9:1  
 (D) 1:3

**M**

172. On the pressure-enthalpy diagram, condensation and desuperheating is replaced by a horizontal line because the process
- (A) Involves no change in volume
  - (B) Takes place at constant temperature
  - (C) Takes place at constant entropy
  - (D) Takes place at constant pressure
173. The C.O.P. of the refrigeration cycle with increase in evaporator temperature, keeping condenser temperature constant, will
- (A) Increase
  - (B) Decrease
  - (C) Remains unaffected
  - (D) Unpredictable
174. Spray humidifying is the process of adding moisture to the air by passing it through
- (A) Chiller
  - (B) Air-conditioning plant
  - (C) Washers
  - (D) None of the above
175. Boiling temperature of Fr-12 is
- (A)  $-33.33^{\circ}\text{C}$
  - (B)  $-78.5^{\circ}\text{C}$
  - (C)  $-29.8^{\circ}\text{C}$
  - (D)  $-40.7^{\circ}\text{C}$
176. A slotted head screw is torqued to 4 Nm using a screw driver having a blade of 5 mm width. The couple force exerted by the blade edges on the screw slot is
- (A) 40 N
  - (B) 800 N
  - (C) 400 N
  - (D) 100 N
177. The ratio of normal stress of each face of a solid cube to volumetric strain is called
- (A) Poisson's ratio
  - (B) bulk modulus
  - (C) modulus of rigidity
  - (D) modulus of elasticity
178. A rod of length ( $l$ ) tapers uniformly from a diameter  $D_1$  to a diameter  $D_2$  and carries an axial tensile load  $P$ . The extension of the rod would be
- (A)  $\frac{\pi PL}{4ED_1D_2}$
  - (B)  $\frac{4PL}{\pi ED_1D_2}$
  - (C)  $\frac{\pi EL}{4D_1D_2}$
  - (D)  $\frac{4PEL}{\pi D_1D_2}$
179. A simply supported beam of span ( $l$ ) carries a point load ( $W$ ) at the centre of the beam. The bending moment diagram will be a
- (A) parabola with maximum ordinate at the centre of the beam
  - (B) parabola with maximum ordinate at one end of the beam
  - (C) triangle with maximum ordinate at the centre of the beam
  - (D) triangle with maximum ordinate at one end of the beam.

180. A simply supported beam carries a uniformly distributed load of  $w$  N per unit length over the whole span ( $l$ ), the bending moment at the supported ends will be
- (A)  $\frac{wl}{2}$  (B)  $\frac{wl^2}{8}$   
 (C)  $\frac{wl}{4}$  (D) zero
181. Under tensile test, a test piece of a material is having 40% elongation whereas another test piece of the same dimension but of different material is having 25% elongation. Then the ductility of the first material as compared to that of second material is
- (A) Less (B) Same  
 (C) More (D) None of the above
182. The expression  $El \frac{d^3y}{dx^3}$  at a section of a member represents
- (A) shear force (B) rate of loading  
 (C) bending moment (D) slope
183. If the deflection at the free end of a uniformly loaded cantilever beam of length 1 m is equal to 7.5 mm, then the slope at the free end is
- (A) 0.015 radians  
 (B) 0.01 radians  
 (C) 0.02 radians  
 (D) 0.03 radians
184. Every cross-section of a shaft, which is subjected to a twisting moment, is under
- (A) compressive stress (B) shear stress  
 (C) tensile stress (D) bending stress
185. Polar moment of inertia of a hollow circular shaft is equal to
- (A)  $\frac{\pi[D^3 - d^3]}{32}$  (B)  $\frac{\pi[D^4 - d^4]}{32}$   
 (C)  $\frac{\pi[D^3 - d^3]}{64}$  (D)  $\frac{\pi[D^4 - d^4]}{64}$
186. Choose the correct statement
- (A) Shafts of the same material and length having the same polar modulus have the same strength.  
 (B) For a shaft of a given material, the magnitude of polar modulus is a measure of its strength in resisting torsion.  
 (C) From a number of shafts of the same length and material, the shaft with greatest polar modulus will resist the maximum twisting moment.  
 (D) All of the above.

**M**

187. The hoop stress in case of thick cylinders  
(A) is uniformly distributed  
(B) varies from maximum at the outer circumference to minimum at inner circumference  
(C) varies from maximum at the inner circumference to minimum at outer circumference  
(D) None of the above
188. The maximum axial compressive load which a column can take without failure by lateral deflection is called  
(A) critical load  
(B) buckling load  
(C) crippling load  
(D) any one of the above
189. Slenderness ratio is defined as the ratio of  
(A) equivalent length of the column to the minimum radius of gyration  
(B) length of the column to the minimum radius of gyration  
(C) length of the column to the area of cross-section of the column  
(D) minimum radius of gyration to the area of cross-section of the column
190. Two identical springs labelled as 1 and 2 are arranged in series and subjected to force  $F$  as shown in Fig. 3

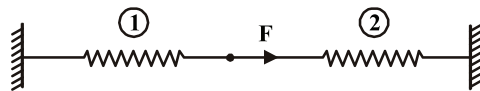


Fig 3

Assume that each spring constant is  $k$ . The strain energy stored in spring 1 is

- (A)  $\frac{F^2}{2k}$       (B)  $\frac{F^2}{4k}$       (C)  $\frac{F^2}{8k}$       (D)  $\frac{F^2}{16k}$
191. The principal stresses  $\sigma_1$ ,  $\sigma_2$  and  $\sigma_3$  at a point respectively are 80 MPa, 30 MPa and  $-40$  MPa. The maximum shear stress is  
(A) 25 MPa  
(B) 35 MPa  
(C) 55 MPa  
(D) 60 MPa
192. If the diameter of a long column is reduced by 20%, the percentage of reduction in Euler's buckling load is  
(A) 4  
(B) 36  
(C) 49  
(D) 59
193. In a perfectly elastic collision  
(A) Both Linear momentum and K.E. are conserved  
(B) Only momentum is conserved  
(C) Only K.E. is conserved  
(D) None of the above



194. A man jumps 2 m on the surface of earth. How high he will jump on a planet whose radius is 64 km and mean density same as that of the earth?  
(A) 200 m (B) 400 m  
(C) 1 m (D) None of the above
195. The number of instantaneous centres for 8-link kinematic chain is \_\_\_\_\_  
(A) 8 (B) 16  
(C) 24 (D) 28
196. The law of conservation of linear momentum can be derived from \_\_\_\_\_  
(A) Newton's first law  
(B) Newton's second law  
(C) Newton's third law  
(D) None of the above
197. A body moves through a distance of 8 metres under the action of a force of 10 Newton. The gain in kinetic energy is \_\_\_\_\_  
(A) 80 J (B) 40 J  
(C) 120 J (D) None of the above
198. A man can throw a ball upto a maximum height of  $x$  metres. The maximum distance he can throw the ball on the horizontal plane is \_\_\_\_\_  
(A)  $2x$  metres (B)  $x$  metres  
(C)  $3x$  metres (D) None of the above
199. The bar AB weighs 10 kg per meter and is supported by cable AC and a pin at B. Reaction at B is (take  $g = 10 \text{ m/s}^2$ )  
(A) 200 N, vertical  
(B) 200 N, at  $30^\circ$  to horizontal  
(C) 100 N, vertical  
(D) 100 N, at  $60^\circ$  to horizontal
200. For a redundant frame, the number of members ( $m$ ) and the number of joints ( $j$ ) are related as  
(A)  $m = 2j$  (B)  $m < 2j - 3$   
(C)  $m = 2j - 3$  (D)  $m > 2j - 3$
201. Which of the following is an analytical method for finding out forces in a frame?  
(A) Method of pins  
(B) Method of frames  
(C) Method of joints  
(D) Method of hinges

**M**

202. When two elements of a pair are connected such that, they can only turn about a fixed axis of another element, they are called \_\_\_\_\_  
(A) a turning pair (B) a spherical pair  
(C) a screw pair (D) a sliding pair
203. Which one of the following is a higher pair?  
(A) Turning pair (B) Screw pair  
(C) Sliding pair (D) Belt and pulley
204. Which of the following would constitute a link?  
(A) Piston, piston rings and gudgeon pin  
(B) Piston rod and cross head  
(C) Piston, crankpin and crankshaft  
(D) Piston, piston rod and cross head
205. Oldham's coupling is the  
(A) Second inversion of double slider crank chain  
(B) Third inversion of double slider crank chain  
(C) Second inversion of single slider crank chain  
(D) Third inversion of slider crank chain
206. In an involute gear, normal to the involute is tangent to the  
(A) Pitch circle (B) Base circle  
(C) Addendum circle (D) Dedendum circle
207. For non-parallel non-intersecting shafts power can be transmitted with the help of  
(A) Pair of helical gear (B) Pair of spur gear  
(C) Pair of spiral gear (D) Oldham coupling
208. Helical gears have their teeth  
(A) Straight over the wheel rim  
(B) Inclined to the wheel rim  
(C) Curved over the wheel rim  
(D) Cut on the surface of the frusta of cone
209. The height of a simple watt governor is proportional to \_\_\_\_\_, where N is the speed.  
(A) N (B) 1/N (C) N<sup>2</sup> (D) 1/N<sup>2</sup>
210. Which of the following governors is also known as dead weight type governor?  
(A) Porter governor (B) Watt governor  
(C) Hartnell governor (D) Pickering governor

211. Partial balancing in locomotives results in:  
(A) hammer blow  
(B) variation of tractive effort  
(C) swaying couple  
(D) All of the above
212. Isotropic materials are those which have the same  
(A) Elastic properties in all directions  
(B) Stresses induced in all directions  
(C) Thermal properties in all directions  
(D) Density throughout
213. Delta iron occurs in the temperature range  
(A) Between 400°C and 600°C  
(B) Between 600°C and 900°C  
(C) Between 900°C and 1400°C  
(D) Between 1400°C and 1539°C
214. What is the relation between stress and strain, as material behaves elastically?  
(A) Stress is inversely proportional to Strain  
(B) Stress is inversely proportional to square of Strain  
(C) Stress is directly proportional to Strain  
(D) Stress is directly proportional to square of Strain
215. In a compression test, the fracture in cast iron specimen would occur along  
(A) An oblique plane  
(B) The axis of load  
(C) Perpendicular to the axis of load  
(D) Would not occur
216. Mohr's circle can be used to determine the following stress on inclined surface  
(A) Principal stress  
(B) Normal stress  
(C) Tangential stress  
(D) All of the above
217. During the impact loading the stress developed as compared to gradually applied load is  
(A) 1.5 times  
(B) 2 times  
(C) 2.5 times  
(D) 3 times
218. Maximum shear stress in a Mohr's circle is  
(A) Equal to radius of Mohr's circle  
(B) Greater than radius of Mohr's circle  
(C) Less than radius of Mohr's circle  
(D) None of the above

**M**

219. Which of the following welding processes uses non-consumable electrode?  
(A) LASER welding (B) MIG welding  
(C) TIG welding (D) Plasma welding
220. Arc stability is better with  
(A) AC welding (B) DC welding  
(C) Both AC and DC welding (D) Rectified supply
221. Forge welding is best suited for  
(A) Stainless steel  
(B) High carbon steel  
(C) Cast iron  
(D) Wrought iron
222. In arc welding operations, the current value is decided by  
(A) Thickness of plate  
(B) Length of welded portion  
(C) Voltage across the arc  
(D) Size of the electrode
223. \_\_\_\_\_ is a widely used flux in the brazing process  
(A) NaCl (B) Borax  
(C) Slag (D) Lead
224. If  $V$  is the volume of metal in a casting and  $A$  is its surface area, then time of solidification will be proportional to  
(A)  $V/A$  (B)  $V/A^2$   
(C)  $V^2/A$  (D)  $V^2/A^2$
225. Undercutting is the operation of cutting  
(A) Below the specified zone  
(B) A deep groove  
(C) A spiral  
(D) A groove next to shoulder
226. The angle between the lathe centres in degrees is  
(A) 60 (B) 30 (C) 45 (D) 15
227. In electro-discharge machining, the tool is made of  
(A) Tungsten carbide  
(B) Brass or copper  
(C) Properly heated alloy steel  
(D) Stainless steel

228. Ultrasonic machining removes material by  
(A) Direct vibration of tool with workpiece  
(B) Using abrasive slurry between tool and work  
(C) Vibrating air in the vicinity of tool and workpiece and making no contact  
(D) All of the above
229. Best coolant and lubricant for brass, copper, bronze and monel metal is  
(A) Water, soluble oils or sulphur-based mineral oils  
(B) Mineral and fatty oils  
(C) Soluble oil  
(D) None of the above
230. CMM stands for  
(A) Centre marker machine  
(B) Central geometry measuring machine  
(C) Centroid measuring machine  
(D) Coordinate measuring machine
231. \_\_\_\_\_ is concerned with the time required to perform each activity under the Production Planning and Control Process.  
(A) Loading (B) Sequencing  
(C) Routing (D) Scheduling
232. Computer-integrated manufacturing is largely an automated manufacturing management of integration of function such as  
(A) CAD/CAM, robotics, material handling  
(B) CAD/CAM, robotics, automated material handling and many other production functions  
(C) It is just an extension of FMS manufacturing technology  
(D) None of these
233. \_\_\_\_\_ code is used in programming in absolute coordinates.  
(A) G90 (B) G32 (C) G54 (D) G10
234. Which of the following characterizes the dispersion of the results obtained in a series of measurements of the same value of a quantity measured?  
(A) Absolute error  
(B) Relative error  
(C) Root mean square deviation  
(D) Variation of indication

**M**

235. The taper of internal dovetail can be measured with the help of  
(A) Sine bar  
(B) Combination set  
(C) Balls of standard dimensions and slip gauges  
(D) Dial gauges
236. Basic shaft and basic hole are those whose upper deviation and lower deviation respectively are  
(A) + ve, - ve  
(B) - ve, + ve  
(C) Minimum, maximum  
(D) Zero, Zero
237. In interferometric methods, the path difference between one bright band and the next is varied by  
(A) Half wavelength  
(B) Two half wavelengths  
(C) One quarter wavelength  
(D) Two wavelengths
238. For grade IT7, value of tolerance is equal to  
(A)  $7i$                       (B)  $10i$                       (C)  $16i$                       (D)  $25i$
239. Expressing a dimension as  $18.3_{-0.02}^{+0.00}$  mm is the case of  
(A) Unilateral tolerance  
(B) Bilateral tolerance  
(C) Limiting dimensions  
(D) All of the above
240. The property of a material which enables it to resist fracture due to high impact loads is known as  
(A) Toughness                      (B) Endurance  
(C) Strength                      (D) Elasticity
241. If a material fails below its yield point, failure would be due to  
(A) Straining  
(B) Fatigue  
(C) Creep  
(D) Sudden loading
242. Cold working  
(A) Increases the fatigue strength  
(B) Decreases the fatigue strength  
(C) Has no influence on fatigue strength  
(D) None of the above.

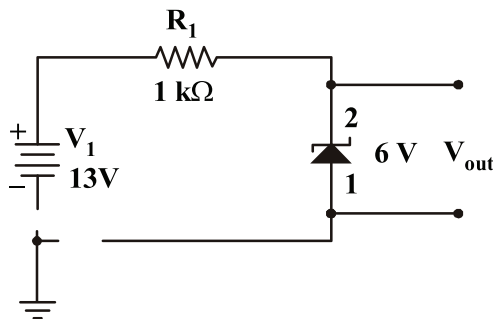
243. Form coefficient of spring is  
(A) Ratio of coil diameter to wire diameter  
(B) Load required to produce unit deflection  
(C) Its capability of storing energy  
(D) Concerned with the strength of wire of spring
244. A rivetted joint may fail due to  
(A) Shearing of the rivet  
(B) Tearing off the plate at an angle  
(C) Crushing of rivet  
(D) All of the above
245. Stretching in a belt can be controlled by  
(A) Reducing stress in the belt  
(B) Decreasing belt length  
(C) Increasing centre distance  
(D) Reducing belt velocity
246. The type of tooth profile used for gears in watches and clocks is  
(A) Involute  
(B) Cycloidal  
(C) Hypocycloid  
(D) Epicycloid
247. A simply supported beam, where the shear force is zero, the bending moment will be  
(A) Zero  
(B) Maximum  
(C) Minimum  
(D) None of the above
248. The maximum efficiency of a screw jack having square threads and friction angle of  $30^\circ$  will be  
(A) 33%                      (B) 11%                      (C) 20%                      (D) 30%
249. When a closed coiled helical spring is compressed, its wire is subjected to  
(A) Tension  
(B) Shear  
(C) Compression  
(D) All of the above
250. The deflection of a cantilever beam under load  $W$  is  $x$ . If its width is halved, then the deflection under load  $W$  will be  
(A)  $2x$                       (B)  $x/2$                       (C)  $4x$                       (D)  $x/4$
251. In the flange coupling, the two flanges are coupled together by means of bolts fitted in  
(A) reamed holes  
(B) machined holes  
(C) threaded holes  
(D) gasketed holes

**M**

252. Most commercial compound dc generator is normally supplied by manufacturers as over compound machines because
- (A) Degree of compounding can be adjusted by diverters across series field
  - (B) They have ideally best for HVDC
  - (C) Cost effective than shunt
  - (D) Zero percent regulation
253. In a salient pole synchronous motor, the developed reluctance torque attains the maximum value when the load angle in electrical degrees is
- (A) 0                      (B) 45                      (C) 60                      (D) 90
254. A 200 V, 10 A motor could be rewound for 100 V, 20 A by using \_\_\_\_\_ as many turns per coil of wire, having \_\_\_\_\_ the cross-sectional area.
- (A) twice, half
  - (B) thrice, one-third
  - (C) half, twice
  - (D) four times, one-fourth
255. Ratio of the rotor reactance X to the rotor resistance R for a two-phase servomotor
- (A) Is equal to that of a normal induction motor
  - (B) Is less than that of a normal induction motor
  - (C) Is greater than that of a normal induction motor
  - (D) May be less or greater than that of a normal induction motor
256. The average power delivered to an impedance  $(4 - j3) \Omega$  by a current  $5\cos(100\pi t + 100) \text{ A}$  is
- (A) 44.2 W                      (B) 50 W                      (C) 62.5 W                      (D) 125 W
257. With which of the following, a circuit breaker must be equipped for remote operation?
- (A) Inverse time trip
  - (B) Time-delay trip
  - (C) Shunt trip
  - (D) All of the above
258. A three-phase voltage source inverter with ideal devices operating in  $180^\circ$  conduction mode is feeding a balanced star-connected resistive load. The DC voltage input is  $V_{dc}$ . The peak of the fundamental component of the phase voltage is
- (A)  $V_{dc} / \pi$                       (B)  $2V_{dc} / \pi$                       (C)  $3V_{dc} / \pi$                       (D)  $4V_{dc} / \pi$
259. When does the circuit breaker automatically operate in the line?
- (A) Whenever the switch and the relay has to be operated
  - (B) When the line is to be tested
  - (C) Whenever the fault occurs in the line
  - (D) When power is to be supplied



260. A three-phase induction motor has 4 poles and operates with a slip of 0.04 with 50 Hz supply for a certain load. The speed of the rotor magnetic field with respect to stator is:  
 (A) 1440 rpm (B) 60 rpm  
 (C) 1500 rpm (D) 0 rpm
261. In an induction motor, if the rotor is locked, then the rotor frequency of induction motor will be  
 (A) Equal to the supply frequency  
 (B) Less than the supply frequency  
 (C) More than the supply frequency  
 (D) Zero
262. The number of depletion layers in a transistor is \_\_\_\_\_.  
 (A) Two (B) Three  
 (C) Four (D) Five
263. What is the current through the Zener diode?



- (A) 0 mA  
 (B) 7 mA  
 (C) 8.3 mA  
 (D) 13 mA
264. In a bipolar junction transistor, the current gain  $\beta$   
 (A) increases exponentially with the increase in temperature  
 (B) decreases with the increase in temperature  
 (C) increases with the increase in temperature  
 (D) does not change with the change in temperature
265. Under low level injection assumption, the injected minority carrier current for an extrinsic semiconductor is essentially the  
 (A) Diffusion current (B) Drift current  
 (C) Recombination current (D) Induced current
266. The slack on various events at critical path on a PERT/CPM chart \_\_\_\_\_  
 (A) Decreases continuously (B) Increases continuously  
 (C) Remains constant (D) Unpredictable

**M**

267. CPM is oriented to \_\_\_\_\_
- (A) Time
  - (B) Cost
  - (C) Activity
  - (D) Objective
268. Slack represents the difference between the
- (A) Proposed allowable time and the earliest expected time
  - (B) Normal allowable time and the latest expected time
  - (C) Latest allowable time and the normal expected time
  - (D) Latest allowable time and the earliest expected time
269. The activity with minimum \_\_\_\_\_ should be crashed first.
- (A) cost slope
  - (B) cost index
  - (C) crash cost
  - (D) normal cost
270. Simplex problem is considered as infeasible when
- (A) All the variables in entering column are negative
  - (B) Variables in the basis are negative
  - (C) Artificial variable is present in basis
  - (D) Pivotal value is negative
271. If  $x$  is a decision variable of LPP and unrestricted in sign, then this variable can be converted into  $x = x' - x''$  so as to solve the LPP by simplex method, where:
- (A)  $x' \leq 0$  and  $x'' \geq 0$
  - (B)  $x' \geq 0$  and  $x'' \leq 0$
  - (C)  $x'$  and  $x'' \leq 0$
  - (D)  $x'$  and  $x'' \geq 0$
272. Based on final table of simplex LPP is said to have alternate solution if in  $(C_j - Z_j)$  row
- (A) One or more basic variable has zero value
  - (B) Entering variable has negative coefficient
  - (C) Below a non-basic variable there is zero
  - (D) Optimum function value is zero
273. How many occupied cells must a transportation matrix with 8 rows and 7 columns have so that it does not degenerate?
- (A) 15
  - (B) 55
  - (C) 56
  - (D) 14

274. Vogel's approximation method is connected with  
(A) Assignment problem (B) Inventory problem  
(C) Transportation problem (D) PERT
275. Queuing theory deals with the problem of  
(A) Material handling  
(B) Effective use of machines  
(C) Reducing the waiting time  
(D) Better utilization of man service
276. SIMO charts are used in  
(A) Method study  
(B) Micromotion study  
(C) Process analysis  
(D) Layout analysis
277. In India, there is a \_\_\_\_\_ for the establishment of work committee under the Industrial Disputes Act, 1947  
(A) Mandatory provision  
(B) Statutory provision  
(C) Laws  
(D) Bylaws
278. The organization of all the constituent unions in a particular state refers to \_\_\_\_\_  
(A) Plant-level federation  
(B) Local-level federation  
(C) Regional-level federation  
(D) National-level federation
279. Most suitable method used for drilling boreholes in hard soils or soft rock strata is:  
(A) Auger boring  
(B) Percussion drilling  
(C) Rotary drilling  
(D) Wash boring
280. Undisturbed soil samples are required for:  
(A) consolidation test  
(B) specific gravity test  
(C) shrinkage limit test  
(D) hydrometer test

**M**

281. The purpose of a Well Point System is  
(A) Desilting  
 (B) Dewatering  
(C) Resisting Soil Pressures  
(D) Forming underwater foundation
282. The amount and location of boreholes depend mainly on the condition of the \_\_\_\_\_  
(A) ground surface (B) atmosphere  
(C) groundwater  (D) subsoil condition
283. The information to be made available for certain heavy purchases through the newspaper is called:  
(A) Guideline (B) Terms and conditions  
(C) Purchased notice  (D) Tender Notice
284. A tender is a written information/invitation:  
(A) sent to private institutions only  
 (B) sent to potential suppliers of goods & services  
(C) sent to buyers for goods & services  
(D) sent for govt. institutions only
285. Tenders should be written in a language that is \_\_\_\_\_  
(A) stylish  (B) brief and to the point  
(C) round about a lengthy (D) informal
286. Depending upon the type of contract which of the following is not a type of tender?  
(A) Item Rate Tender  
(B) Percentage Rate Tender  
 (C) Selected Tender  
(D) Lump sum Tender
287. Which of the following are included in tender documents?  
(A) Tender Notice (B) Tender Form  
(C) Conditions of Contract  (D) All of the above
288. Identify the incorrect form of cash with respect to the modes of cash accepted in the Public Works Department from the options given below:  
(A) Cash Book (B) Receipts  
(C) Imprest  (D) Permanent Advance

289. Which is the estimate that is conducted when additional works are done after completion of original works?
- (A) Cube Rate Estimate
  - (B) Materials Estimate
  - (C) Plinth Area Estimate
  - (D) Supplementary Estimate
290. In which type of contract, the contractors have to quote rate of each item of work without reference to any schedule of rates?
- (A) Item rate contract
  - (B) Percentage rate contract
  - (C) Schedule rate contract
  - (D) Lump sum contract
291. The person who takes lease is known as
- (A) lease
  - (B) lessor
  - (C) lesser
  - (D) lessee
292. Unemployment arising due to mismatch between job availability in the market and skills of available worker is called:
- (A) Seasonal
  - (B) Structural
  - (C) Economical
  - (D) Frictional
293. What does PHEV stand for?
- (A) Plug-in Hybrid Electronic Vehicles
  - (B) Plug-in Hybrid Electric Vehicles
  - (C) Plug-out Hybrid Electronic Vehicles
  - (D) Plug-out Hybrid Electric Vehicles
294. The Electrolyte for Lead Acid battery is
- (A) Ammonium chloride
  - (B) Hydrochloric acid
  - (C) Sodium chloride
  - (D) Dilute sulfuric acid
295. The thermoelectric generator works on the principle
- (A) Seebeck effect
  - (B) Thomson effect
  - (C) Peltier effect
  - (D) Joule effect

**M**

296. Use of internet to connect a wide variety of devices, machines and sensors for empowering brick and mortar stores by giving them the same access to data that online stores have, is a facility falls under which of the following technologies ?
- (A) Artificial Intelligence
  - (B) Deep Learning
  - (C) Machine Learning
  - (D) Internet of Thing
297. An agent can improve its performance by
- (A) Learning
  - (B) Responding
  - (C) Observing
  - (D) Perceiving
298. Revolving joint of the robot is referred to as
- (A) L joint
  - (B) O joint
  - (C) T joint
  - (D) V joint
299. The following measures are carried out by internal state sensors of the end effector
- (A) Position
  - (B) Position and Velocity
  - (C) Velocity and Acceleration
  - (D) Position, Velocity and Acceleration
300. 8086 microprocessor has \_\_\_\_\_ data lines and \_\_\_\_\_ address lines.
- (A) 16, 16
  - (B) 12, 16
  - (C) 16, 20
  - (D) 20, 16
-