

BCE-1

PROVISIONAL ANSWER KEY

Name of The Post	Executive Engineer (Mechanical), Class-1 (GWSSB)
Advertisement No	03/2021-22
Preliminary Test Held On	28-11-2021
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Instructions / સૂચન (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. નીચે આપેલી યાદી-I ને યાદી-II સાથે જોડો.

યાદી-I

1. ધીરુબેન પટેલ
2. મગનભાઈ બી. પટેલ
3. પીતાંબર નરસિંહભાઈ પટેલ
4. પન્નાલાલ નાનાલાલ પટેલ

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

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

યાદી-II

- a. વાંસનો અંકુર (Vamshano Ankura)
- b. વ્યામોહ જવનિકા (Vyamoh Javanika)
- c. આશાભરી
- d. ના છૂટકે

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

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

002. નીચેના પૈકી કયું પુસ્તક જૈન સાધુ હેમચંદ્ર દ્વારા લખવામાં આવ્યું છે ?

(A) પ્રબંધ (Prabandha)

(C) રત્નમાલા (Ratnamala)

(B) ચિંતામણી (Chintamani)

(D) દ્વયાશ્રય (Dvyashraya)

003. ભારતીય મંદિર સ્થાપત્યની નાગર શૈલીના સંદર્ભમાં અમલકા (amalaka) એ નો ઉલ્લેખ કરે છે.

(A) ગર્ભગૃહ ઉપરનો અર્ધ વર્તુળાકાર ગુંબજ (dome)

(B) પાંસળીદાર (ribbed) મસૂરાકાર (lenticular) અથવા ગોળાકાર (globoid) ભાગ જે શિખરના ટોચ પરનો તાજ હોય છે.

(C) મંદિરની સામેનો અર્ધ વર્તુળાકાર હોલ

(D) સુશોભન કરેલું pot-design (ઘડા આકારનું ચિત્ર), જે શિખરને આભૂષિત કરે છે.

004. સિંધુ ખીણની સંસ્કૃતિ બાબતે નીચેના પૈકી કયું વિધાન / કયા વિધાનો સત્ય છે ?

1. મોહંજો-દડો એ સિંધુ ખીણની સંસ્કૃતિનું સૌથી મોટું સ્થળ છે.

2. ધોલાવીરાનું સૌથી આકર્ષક અને અદ્વિતીય લક્ષણ એ તેની જળસંગ્રહ અને વ્યવસ્થાપન પ્રણાલી છે.

3. લોથલનું સૌથી વિશિષ્ટ લક્ષણ એ તેનો જહાજવાડો (dockyard) છે.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

(A) માત્ર 1 અને 3

(C) માત્ર 2 અને 3

(B) માત્ર 3

(D) 1, 2 અને 3

001. Match the following List -I with List-II

List-I

1. Dhiruben Patel
2. Maganbhai B Patel
3. Pitambar Narsinhbhai Patel
4. Pannalal Nanalal Patel

List-II

- a. Vamshano Ankura
- b. Vyamoh Javanika
- c. Ashabhari
- d. Na Chhutke

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

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

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

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

002. Which among the following books was written by Jain monk Hemachandra?

(A) Prabandha

(B) Chintamani

(C) Ratnamala

(D) Dvyashraya

003. With reference to the Nagara style of Indian temple architecture, amalaka refers to

(A) Semi-circular dome on garbhagriha

(B) Ribbed, lenticular or globoid part crowning the top of the shikhara

(C) Semi-circular hall in front of the temple

(D) Ornamental pot-design decorating the shikhara

004. Which of the following statements is/are correct regarding the Indus valley civilization?

1. Mohenjo-daro is the largest site of Indus Valley Civilization.

2. Most impressive and unique feature of Dholavira is its water harvesting and management system.

3. Most distinctive feature of Lothal is the dockyard

(A) 1 and 3 only

(B) 3 only

(C) 2 and 3 only

(D) 1, 2 and 3

005. નીચેના પૈકી કઈ જોડી / જોડીઓ યોગ્ય રીતે જોડાયેલી છે ?

કળાની શૈલી	ઉપયોગમાં લેવાયેલ પથ્થર
1. ગાંધાર	વાદળી - ભૂખરી અબરખ શિષ્ટ / ભૂખરા રેતાળ પથ્થર (Blue-grey mica schist / grey sandstone)
2. મથુરા	સફેદ આરસ (White marble)
3. અમરાવતી	ટપકાવાળાં રેતાળ પથ્થર (Spotted red sandstone)
4. સારનાથ	રેતાળ પથ્થર (Sandstone)

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

006. ગુજરાતમાં નવરાત્રીના તહેવારો તથા લગ્ન પ્રસંગોએ ગવાતો લોકપ્રિય 'સનેડો'નો ઉદ્ભવ ખાતે થયો.

- (A) રાજકોટ (B) પાટણ
(C) ડાંગ (D) લીમખેડા

007. Anton Chekhov લિખિત કૃતિ 'Uncle Vanya' નું ગુજરાતીમાં 'Vanya Mama' તરીકે ભાષાંતર એ કરેલ છે.

- (A) હસમુખ બારાડી (B) અનિલ દલાલ
(C) રંજના હરિશ (D) રીટા કોઠારી

008. નીચેના જૂથોને યોગ્ય રીતે જોડો.

A	B
a. નિખિલ બેનરજી	1. ગીતાર
b. બ્રિજભૂષણ કાબરા	2. સીતાર
c. પન્નાલાલ ઘોષ	3. તબલા
d. અલ્લારખાન	4. વાંસળી

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

009. ગુજરાતના નીચેના પૈકી કયા સ્થળે પાર્વતી અને નૃત્ય કરતાં ગણેશની શિલ્પકૃતિ જોવા મળે છે ?

- (A) શામળાજી (B) કોટયર્ક
(C) ટિંટોઈ (D) કલ્થલાલ (Kalthalal)

005. Which of the following pairs is/are correctly matched?

School of Art	Stone Used
1. Gandhara	: Blue-grey Mica schist/Grey Sandstone
2. Mathura	: White Marble
3. Amaravati	: Spotted Red Sandstone
4. Sarnath	: Sandstone

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

M

006. 'Sanedo' popularly sung at Navratri festivals and weddings in Gujarat has its origin from _____.

- (A) Rajkot (B) Patan
 (C) Dang (D) Limkheda

007. _____ translated 'Uncle Vanya' by Anton Chekhov into Gujarati as 'Vanya Mama'.

- (A) Hasmukh Baradi (B) Anila Dalai
 (C) Ranjana Harish (D) Rita Kothari

008. Match the groups

A

B

a. Nikhil Banerji

1. Guitar

b. Brijbhushan Kabra

2. Sitar

c. Pannalal Ghosh

3. Tabla

d. Allarakhan

4. Flute

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

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

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

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

009. In which of the following places of Gujarat, we have the sculpture of Parvati and dancing Ganesha?

- (A) Shamalaji (B) Kotyark
 (C) Tintoi (D) Kalthalal

010. સોમનાથ મંદિરની સ્થાપત્ય શૈલીએ નીચેના પૈકી કયા પ્રકારની છે ?

(A) ઈન્ડો-આર્યન (Indo-Aryan)

(B) હોયસલ (Hoysal)

(C) નાગર (Nagar)

(D) પૂર્વ-ચૌલક્ય (Pre-Chaulakya)

011. જુગલબંદી કે જે એક નૃત્યકાર અને તબલા વાદક વચ્ચેનું સ્પર્ધાત્મક નાટક છે તે કયા પ્રશિષ્ટ નૃત્ય સાથે સંબંધિત છે ?

(A) મોહિની અટ્ટમ (Mohini attam)

(B) કથક (Kathak)

(C) કુચીપુડી (Kuchipudi)

(D) ઓડીસી (Odissi)

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

1. આર્ય સમાજની સ્થાપના ઈ.સ. 1835માં થઈ હતી.

2. પોતાના સામાજિક સુધારા કાર્યક્રમને સમર્થન આપવા લાલા લજપત રાયે વેદોના સત્તાધિકારને સમર્થન કરતી આર્ય સમાજની અપીલનો વિરોધ કર્યો હતો.

3. કેશવચંદ્ર સેનની આગેવાની હેઠળ, બ્રહ્મોસમાજે સ્ત્રી કેળવણી માટે ઝુંબેશ ચલાવી.

4. શરણાર્થીઓ સાથે કાર્ય કરવા માટે વિનોબા ભાવે એ સર્વોદય સમાજની સ્થાપના કરી.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

(A) માત્ર 1 અને 2

(B) માત્ર 1, 2 અને 3

(C) માત્ર 3 અને 4

(D) માત્ર 2, 3 અને 4

013. પ્રાચીન ભારતના નીચેના પૈકી કયા પુસ્તકમાં શુંગ વંશના સ્થાપકના પુત્રની પ્રણય કહાની છે ?

(A) માલવિકાગ્નિમિત્ર

(B) સ્વપ્નવાસવદત્ત

(C) મેઘદૂત

(D) રત્નાવલિ

014. વેદાંત શૈલી (Vedanta School) બાબતે નીચેના પૈકી કયું વિધાન / કયા વિધાનો સત્ય છે ?

(A) શંકરાચાર્ય એ મોક્ષ પ્રાપ્તિના મુખ્ય સાધન તરીકે જ્ઞાનને લક્ષ્યમાં લીધું છે.

(B) રામાનુજને મોક્ષ પ્રાપ્તિ માટે શ્રદ્ધા પ્રત્યે મમત્વ રાખવું (loving the faith) અને ભક્તિ પ્રસ્થાપિત કરવી (Practising devotion) એ બાબતોને લક્ષ્યમાં લીધી છે.

(C) (A) તથા (B) બન્ને

(D) (A) અથવા (B) એક પણ નહીં

015. નીચેના પૈકી કોણ એ ભક્તિ (પરંપરા)ના પ્રથમ સંત હતા જેમણે તેમના ઉપદેશ (message) ના પ્રચાર માટે હિન્દીનો ઉપયોગ કર્યો હતો ?

(A) દાદુ

(B) કબીર

(C) રામાનંદ

(D) તુલસીદાસ

010. Which of the following is the architectural style of Somnath Temple?

- (A) Indo-Aryan (B) Hoysal
(C) Nagar (D) Pre-Chaulakya

011. Jugalbandi, a competitive play between the dancer and tabla player, is related to which classical dance form?

- (A) Mohiniattam (B) Kathak
(C) Kuchipudi (D) Odissi

012. Which of the following statements is/are correct?

1. Arya Samaj was founded in 1835.
2. Lala Lajpat Rai opposed the appeal of Arya Samaj to the authority of the Vedas in support of its social reform programme.
3. Under Keshab Chandra Sen, the Brahmo Samaj campaigned for women's education.
4. Vinoba Bhave founded the Sarvodaya Samaj to work among refugees.

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

013. Which one of the following books of ancient India has love story of the son of the founder of Sunga dynasty?

- (A) Malavikagnimitra
(B) Swapnavasavadatta
(C) Meghadoota
(D) Ratnavali

014. Which of the following statements is/are correct regarding the Vedanta school?

- (A) Shankaracharya considered knowledge to be the main means of attaining salvation.
(B) Ramanujan considered loving the faith and practising devotion as the path of salvation.
(C) Both (A) and (B)
(D) Neither (A) nor (B)

015. Who among the following was the first Bhakti saint to use Hindi for the propagation of his message?

- (A) Dadu (B) Kabir
(C) Ramananda (D) Tulsidas

016. મહાત્મા ગાંધીના નેતૃત્વ હેઠળ ગુજરાત સભાએમાં મહત્વની ભૂમિકા ભજવી.

- (A) ખેડાના ખેડૂતોનું આંદોલન (B) અમદાવાદ મિલ કામદારોનું આંદોલન
(C) બારડોલીમાં ખેડૂતોની ચળવળ (D) મીઠાનો સત્યાગ્રહ

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

1. ભારતીય રાષ્ટ્રીય કોંગ્રેસનું પ્રથમ અધિવેશન કલકત્તામાં યોજાયું હતું.
2. ભારતીય રાષ્ટ્રીય કોંગ્રેસનું બીજું અધિવેશન દાદાભાઈ નવરોજીના અધ્યક્ષ પદ હેઠળ યોજાયું હતું.
3. ભારતીય રાષ્ટ્રીય કોંગ્રેસ તથા મુસ્લીમ લીગ બંને એ 1916માં તેમનું સત્ર લખનૌ ખાતે યોજાયું હતું અને લખનૌ કરાર પૂર્ણ તૈયાર કર્યો હતો.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

018. બારડોલી સત્યાગ્રહમાં પરિણમ્યો.

1. મહેસૂલ ચૂકવણીમાં 30% ના વધારાને ઓછો (reduction) કરવો
2. જપ્ત કરાયેલી જમીનો તથા મિલકતોનું પુનઃસ્થાપન
3. કાલીપરજ (Kaliparaj) માટે અલગ પરગણાની રચના
4. ઉજલીપરજ (Ujaliparaj) માટે નોકરીમાં આરક્ષણની નાબૂદી

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

019. ગુજરાતમાં આવનાર સૌ પ્રથમ યુરોપીયન સત્તા કઈ હતી ?

- (A) ફ્રેંચ (B) બ્રિટીશ
(C) ડચ (D) પોર્ટુગીઝ

020. બંધારણ સભાની સૌ પ્રથમ માંગ એ દ્વારા કરવામાં આવી.

- (A) 1934 માં ભારતીય રાષ્ટ્રીય કોંગ્રેસ દ્વારા
(B) ભારતીય રાષ્ટ્રીય કોંગ્રેસના કરાંચી સત્ર દરમિયાન
(C) અસહકારની ચળવળ પરત ખેંચાઈ ત્યાર બાદ
(D) સાયમન કમિશન ભારત પહોંચ્યું ત્યાર બાદ

016. The Gujarat Sabha under the leadership of Mahatma Gandhi played a leading role in the:

- ☒ (A) Agitation of the Kheda peasants
- (B) Agitation of Ahmedabad mill workers
- (C) Peasants movements in Bardoli
- (D) Salt Satyagraha

017. Which of the following statements is/are correct?

1. The first session of the Indian National Congress was held in Calcutta.
2. The second session of the Indian National Congress was held under the Presidentship of Dadabhai Naoroji.
3. Both Indian National Congress and Muslim League had their sessions at Lucknow in 1916 and concluded the Lucknow Pact.

- (A) 1 and 2 only
- ☒ (C) 2 and 3 only
- (B) 2 only
- (D) 1, 2 and 3

018. The Bardoli Satyagraha resulted in _____.

1. Reduction of 30% rise in revenue payment.
2. Restoration of the confiscated lands and properties.
3. Creation of separate paragana for Kaliparaj.
4. Cancellation of job reservation for Ujaliparaj.

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

019. Who among the following were the first European power to arrive in Gujarat?

- (A) French
- (B) British
- (C) Dutch
- ☒ (D) Portuguese

020. The demand for Constituent Assembly was first made _____.

- ☒ (A) By the Indian National Congress in 1934
- (B) At Karachi Session of the Indian National Congress
- (C) After the Non-cooperation movement was withdrawn
- (D) After the Simon Commission reached India.

021. ગુજરાતમાં સોલંકી શાસન વિશે નીચેના પૈકી કયું વિધાન / કયા વિધાનો સત્ય છે ?

1. દસ્તાવેજ વિભાગ (Record department) – અક્ષપાતાલ (Akhsapatal)
2. બંદર વિભાગ (Port department) – વેલાકુલ (Velakul)
3. મહેલ વિભાગ (Palace department) – દૂતક (Dutak)
4. નાણાં વિભાગ (Finance department) – શ્રી કરણ (Shri Karan)

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

022. ઈન્દુલાલ યાજ્ઞિક વિશે નીચેના પૈકી કયા વિધાનો સત્ય છે ?

1. તેમણે અંગ્રેજી ભાષાનું સામાયિક Young India મુંબઈથી પ્રકાશિત કર્યું હતું.
2. તેમણે ગાંધીજી દ્વારા નેતૃત્વ કરવામાં આવેલ ખેડા સત્યાગ્રહમાં ભાગ લીધો હતો.
3. તેમણે અખિલ ભારતીય કિસાન સભાની રચનામાં સક્રિય આગેવાની લીધી હતી અને તેના પ્રથમ સત્રમાં ભાગ લીધો હતો.
4. તેમણે નૂતન મહાગુજરાત જનતા પરિષદની સ્થાપના કરી હતી.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

023. નીચેના પૈકી ગુજરાત સલ્તનતના કયા શાસકે ઈ.સ. 1479માં પ્રાચીન જૂનાગઢનું નામ બદલીને મુસ્તફાબાદ કરી દીધું હતું ?

- (A) સુલતાન અહમદશાહ (B) મુઝફ્ફર શાહ પહેલો
(C) સુલતાન મહમૂદ બેગડો (D) બહાદુર શાહ

024. નીચેના પૈકી કયું વિધાન સત્ય છે ?

1. પલ્લવોની રાજધાની કાંચી હતી.
2. પલ્લવોની મુદ્રા (emblem) બળદ (bull) હતી.
3. પલ્લવ રાજા મહેન્દ્ર વર્મને નૃત્ય ઉપર પુસ્તક લખ્યું હતું.
4. ચોલા શાસકોએ વૈષ્ણવ વાદના અનુયાયીઓ હતા.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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



- 

(B) 1, 2 and 4 only

(D) 1, 2, 3 and 4 only



- 

(B) 3 and 4 only

(D) 1, 2, 3 and 4



- (B) Muzaffar Shah I
- (D) Bahadur Shah



- 

(B) 2 and 3 only

(D) 1, 2, 3 and 4

025. નીચેના પૈકી કોના શાસન કાળ દરમ્યાન મુંબઈના ગવર્નર દ્વારા મેજર એલક્ઝાન્ડર વોકર (Major Alexander Walker) ને વડોદરાના પ્રથમ પ્રમુખ (first President of Baroda) તરીકે નિયુક્ત કરવામાં આવ્યા ?
- (A) સયાજીરાવ ગાયકવાડ બીજા (B) આનંદરાવ ગાયકવાડ
(C) ગણપતરાવ ગાયકવાડ (D) ખાંડેરાવ ગાયકવાડ
026. ઈસ્ટ ઈન્ડિયા કંપનીના નીચેના પૈકી કયા ગવર્નર જનરલે ભારતના દેશી રજવાડાઓની બાબતમાં બિન હસ્તક્ષેપ (Non-intervention) ની નીતિ અપનાવી હતી ?
- (A) Lord Barlow (B) Lord Cornwallis
(C) Sir John Shore (D) Lord Minto
027. જે તે રાજ્યમાં થયેલી ખેડૂત ચળવળો અંગે નીચે આપેલી જોડીઓમાંથી કઈ જોડી યોગ્ય રીતે જોડાયેલી નથી ?
- (A) પબના કૃષિ લીગ (Pabna Agrarian league) – મહારાષ્ટ્ર
(B) મોપ્લાહ બળવો (Moplah Rebellion) – કેરળ
(C) બારડોલી સત્યાગ્રહ – ગુજરાત
(D) એકતા ચળવળની કિસાન સભા – ઉત્તર પ્રદેશ
028. 1942ની હિંદ છોડો ચળવળ વિશે નીચેના પૈકી કઈ બાબત સત્ય નથી ?
- (A) મહાત્મા ગાંધી દ્વારા તેનું નેતૃત્વ કરવામાં આવ્યું હતું.
(B) તે સ્વયંસ્ફુરિત ચળવળ હતી.
(C) તેણે એકંદરે જાતાં શ્રમિક વર્ગને આકર્ષિત કરી ન હતી.
(D) તે અહિંસક ચળવળ હતી.
029. હરપ્પન સંસ્કૃતિની મુદ્રા (seals) અને / અથવા ટેરાકોટા કળા (terracotta art) ઉપર નીચેના પૈકી કયા પ્રાણીનું નિરૂપણ કરવામાં આવતું ન હતું ?
- (A) ગાય (B) હાથી
(C) ગેંડો (D) વાઘ
030. અલ્બેરૂની ના મત અનુસાર, કુશાણોના અનુગામીઓ કે જેમણે ઉત્તર ભારતમાં 10મી અને 11મી સદીમાં શાસન કર્યું હતું તેઓ હતા.
- (A) ઘઢવાલ (Ghadvalas)
(B) ઉત્તરીય કલાચુરી (Northern Kalachuris)
(C) હિંદુશાહી (Hindushahis)
(D) દક્ષિણીય કલાચુરી (Southern Kalachuris)

025. Major Alexander Walker was appointed as the first President of Baroda by the Governor of Bombay during the period of
- (A) Sayajirao Gaekwad II
(B) Anandrao Gaekwad
(C) Ganpatrao Gaekwad
(D) Khanderrao Gaekwad
026. Who among the following Governor General of East India Company followed a policy of non-intervention in the affairs of the native states of India?
- (A) Lord Barlow (B) Lord Cornwallis
(C) Sir John Shore (D) Lord Minto
027. Which of the following peasant movements is wrongly matched with the state in which it was launched?
- (A) Pabna Agrarian League - Maharashtra
(B) Moplah Rebellion - Kerala
(C) Bardoli Satyagraha - Gujarat
(D) Kisan Sabha of Ekta Movements - Uttar Pradesh
028. Which one of the following observations is INCORRECT about the Quit India Movement of 1942?
- (A) It was led by Mahatma Gandhi
(B) It was a spontaneous movement
(C) It did not attract the labour class in general
(D) It was a non-violent movement
029. Which one of the following animals was not represented on the seals and/or terracotta art of the Harappan culture?
- (A) Cow (B) Elephant
(C) Rhinoceros (D) Tiger
030. According to Alberuni the successors of Kushanas who ruled over north India in the 10th and 11th centuries, were _____.
- (A) Ghadvalas (B) Northern Kalachuris
(C) Hindushahis (D) Southern Kalachuris

031. ગુજરાત રાજ્ય બાબતે નીચેના પૈકી કયું વિધાન / કયા વિધાનો સત્ય છે ?

1. તે દેશના અન્ય કોઈપણ રાજ્ય કરતાં સૌથી વધુ લાંબો દરિયા કિનારો ધરાવે છે.

2. તે એશિયામાં સૌથી મોટી દૂધની ડેરી ધરાવે છે.

3. તે એશિયાઈ સિંહોનું એક માત્ર નિવાસ સ્થાન છે અને હાલમાં સિંહોના પ્રાકૃતિક નિવાસસ્થાન માટેનું આફ્રિકાની બહાર આવેલું એક માત્ર સ્થાન છે.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

(A) માત્ર 2

(B) માત્ર 1 અને 2

(C) માત્ર 2 અને 3

(D) 1, 2 અને 3

032. ગુજરાત રાજ્યમાં છેલ્લા 110 વર્ષ (1901-2011) દરમિયાન વસ્તી વૃદ્ધિ દર કેટલો હતો ?

(A) 495%

(B) 564%

(C) 450%

(D) 510%

033. નીચેના પૈકીનું કયું બંદર એ ગુજરાતમાં રાસાયણિક અને પેટ્રોરસાયણ ઉત્પાદનોના સંચાલન માટે સૌથી મોટા બંદર તરીકે વિકસાવવામાં આવ્યું છે ?

(A) કંડલા

(B) ઓખા

(C) દહેજ

(D) ઉપરોક્ત પૈકી એક પણ નહીં

034. કોરોમાંડલ સાગર કિનારા બાબતે નીચેના પૈકી કયું વિધાન સત્ય નથી ?

(A) તે કિષ્કા નદીના મુખ ત્રિકોણ પ્રદેશ (delta) થી કેમોરીનની ભૂધિર (Cape Comorin) ની ટોચ સુધી વિસ્તરેલો છે.

(B) કોરોમાંડલના સાગર કિનારા પર લાગુન (ખારા પાણીના સરોવર) (lagoons)નો અભાવ જોવા મળે છે.

(C) આ સ્થળે કોઈ ભેખડ (cliff) નથી.

(D) કોરોમાંડલના સાગર કિનારે સ્થાનિક રીતે કયાલ (kayals) તરીકે જાણીતા ખારા પાણીના સરોવર (lagoons)ની હારમાળા જોવા મળે છે.

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

1. ચોમાસાના આગમન કરતાં તેની સમાપ્તિની ઘટના ખૂબ ઝડપી છે.

2. ચોમાસાના આગમન કરતાં તેની સમાપ્તિની ઘટના એ ખૂબજ ધીમી છે.

3. ચોમાસા ક્ષેત્રમાં વરસાદ અતિશય સંજોગો આધીન અને અતિશય વધઘટ થતો હોય 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

031. Which of the following statements is/are correct regarding the State of Gujarat?

1. It has the longest shore than any other state in the country.
2. It has the largest milk dairy in Asia.
3. It is the only home of Asiatic lions outside Africa; it is the only present natural habitat of lions.

(A) 2 only (B) 1 and 2 only
(C) 2 and 3 only (D) 1, 2 and 3

032. What was the growth rate of population during last 110 years (1901-2011) in Gujarat state?

(A) 495% (B) 564%
(C) 450% (D) 510%

033. Which one of the following sea ports has been developed as biggest port for handling chemicals and petrochemicals products in Gujarat?

(A) Kandla (B) Okha
(C) Dahej (D) None of the above

034. Which of the following statements is INCORRECT regarding Coromandel coast?

- (A) It extends from Krishna delta to the tip of Cape Comorin
(B) On Coromandel coast there is lack of lagoons
(C) There is no cliff within sight
(D) A series of lagoons known locally as kayals are found at Coromandel coast

035. Which of the following statements is/are correct?

1. The withdrawal of monsoon is much more rapid phenomena than its arrival
2. The withdrawal of monsoon is much more gradual phenomena than its arrival
3. Within monsoon region there is high reliability and high variability of rainfall

(A) 1 and 2 only
(B) 1 and 3 only
(C) 2 and 3 only
(D) 1, 2 and 3

036. આદિવાસી જાતિઓની વસ્તી ધરાવતા જિલ્લાઓ બાબતે નીચેના પૈકી કઈ જોડીઓ યોગ્ય રીતે જોડાયેલી છે ?

- | | |
|--------------|------------------------|
| આદિવાસી જાતિ | — વસ્તી ધરાવતા જિલ્લાઓ |
| 1. કોકના | — નવસારી, વલસાડ, ડાંગ |
| 2. ગામીત | — સુરત |
| 3. પટેલીયા | — સુરત, વડોદરા |
| 4. રાઠવા | — છોટાઉદેપુર |

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

037. ગુજરાતની ભૌગોલિક લાક્ષણિકતાઓ બાબતે નીચેના પૈકી કયા વિધાનો સત્ય છે ?

1. ગુજરાતની ઉત્તર સરહદેથી મકરવૃત્ત પસાર થાય છે તેથી રાજ્ય અતિશય ગરમ અથવા ઠંડી આબોહવા ધરાવે છે.
2. ગુજરાત એ વન હેઠળ આશરે 19.66 લાખ હેક્ટર જમીન ધરાવે છે.
3. ભેજવાળા પાનખર જંગલો એ ડાંગ અને સુરત ક્ષેત્રના વ્યારા વિભાગમાં જોવા મળે છે.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

038. ગુજરાતમાં વન્ય પ્રાણી અભયારણ્ય બાબતે નીચેના પૈકી કયું વિધાન / કયા વિધાનો સત્ય છે ?

1. કચ્છના નાના રણમાં ઘુડખર (wild ass) નું અભયારણ્ય આવેલું છે.
2. થોળ સરોવર પક્ષી અભયારણ્ય પાસે સિંહ જોવા મળે છે.
3. મીટીયાલા વન્ય પ્રાણી અભયારણ્યમાં સારસ (cranes) જોવા મળે છે.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

039. Intensification of Forest Management Scheme (IFMS) વિશે નીચેના પૈકી કયું વિધાન / કયા વિધાનો સત્ય છે ?

1. IFMS એ માત્ર દાવાનળ (forest fire) નિયંત્રણ અને વ્યવસ્થાપનનું કાર્ય કરે છે.
2. તે પવિત્ર વૃક્ષોના રક્ષણ અને સંરક્ષણ બાબતનું કાર્ય પણ કરે છે.
3. આ યોજના United Nations Development Programme (UNDP) ની સહાયથી લાગુ કરવામાં આવેલ છે.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

036. Which of the following pairs are correctly matched regarding districts having concentration of Tribes?

Tribes	Districts of concentration
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1. Kokna	- Navsari, Valasad, Dang
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2. Gamit	- Surat
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3. Patelia	- Surat, Vadodara
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4. Rathwa	- Chhotaudhepur
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(A) 1, 2, 3 and 4

(B) 1, 2 and 4 only

(C) 1 and 3 only

(D) 2, 3 and 4 only

037. Which of the following statements are correct regarding the Geographical features of Gujarat?

1. As the Tropic of Capricorn passes through the Northern border of Gujarat, the state has an intensely hot or cold climate

2. Gujarat has about 19.66 lakh hectares of land under forest

3. Moist Deciduous Forests in Gujarat are seen in Dang and parts of Vyara in Surat division

(A) 2 and 3 only

(B) 1 and 2 only

(C) 1 and 3 only

(D) 1, 2 and 3

038. Which of the following statements is/are correct regarding wildlife sanctuaries in Gujarat?

1. Wild Ass sanctuary is located in Little Rann of Kachchh

2. Lion is found near Thol Lake Bird sanctuary

3. Cranes are found in Mitiyala wildlife sanctuary

(A) 1 and 2 only

(B) 1 only

(C) 2 and 3 only

(D) 1, 2 and 3

039. Which of the following statements is/are correct regarding Intensification of Forest Management Scheme (IFMS)?

1. IFMS deals with forest fire control and management only.

2. It also works for protection and conservation of sacred groves.

3. The project was launched with the assistance of United Nations Development Programme (UNDP).

(A) 2 only

(B) 1 and 2 only

(C) 2 and 3 only

(D) 1, 2 and 3 only

040. લુણી નદી બાબતે નીચેના પૈકી કયું / કયા વિધાન / વિધાનો સત્ય નથી ?

1. લુણી નદીએ ઉત્તર પશ્ચિમ ભારતના થરના રણમાં સૌથી લાંબી નદી છે.
 2. તે અજમેર પાસે અરવલ્લીની હારમાળામાં આવેલ પુષ્કરની ખીણમાંથી ઉદ્ભવે છે.
 3. આ નદી ગુજરાતમાં કચ્છના રણની ભેજવાળી (marshy) જમીનમાં ભળી જાય છે.
 4. આ નદી પાટણ, બનાસકાંઠા, સાબરકાંઠા અને સુરેન્દ્રનગરમાંથી પસાર થાય છે.
- નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

041. નીચેના પૈકી કઈ નદી મુખ આગળની ખાડી (estuary) ધરાવે છે ?

- (A) મહાનદી (B) દામોદર
(C) કિષ્કિન્ધા (D) તાપી

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

- (A) ગુજરાતના પૂર્વ-ઉત્તર ભાગનો કચ્છ પ્રદેશ એ બોકસાઈટ, જીપ્સમ, અકીક અને ચૂનાના પથ્થર જેવી ખનીજોથી સમૃદ્ધ છે.
(B) ગુજરાતનો દ્વિપકલ્પ, સૌરાષ્ટ્ર એ ત્રણે બાજુએ સમુદ્રના પાણીથી ઘેરાયેલો છે.
(C) ગુજરાત એ વન હેઠળ આશરે 19.66 લાખ હેક્ટર જમીન ધરાવે છે.
(D) ઉપરોક્ત તમામ

043. ભારતનું નીચેના પૈકી કયું રાજ્ય આ દેશની સૌથી પ્રાચીનતમ ખડક રચનાઓ ધરાવે છે ?

- (A) કર્ણાટક (B) બિહાર
(C) ઉત્તર પ્રદેશ (D) આસામ

044. નીચેના પૈકીની કઈ પર્વતમાળા તેના બે ઢોળાવો પર બે અલગ અલગ પ્રકારની વનસ્પતિ (નિત્ય લીલા જંગલો અને પાનખર જંગલો) ધરાવે છે ?

- (A) અરવલ્લી (B) પશ્ચિમ ઘાટ
(C) વિંધ્ય (D) પૂર્વ ઘાટ

045. ગુજરાતની નીચેના પૈકી કઈ આદિવાસી જાતિ “Khandeshi Bhil” તરીકે પણ જાણીતી છે ?

- (A) ચોધરા (Chodhara) (B) ચૌધરી (Choudhari)
(C) બાવચા (Bawcha) (D) બરડા (Barda)

040. Which of the following statements are INCORRECT regarding river Luni?

1. Luni is largest river in the Thar desert in north-west India
2. It originates in the Pushkar valley of the Aravalli Range, near Ajmer
3. The River ends in the marshy lands of Rann of Kutch in Gujarat
4. This river flows in Patan, Banaskantha, Sabarkanta, and Surendranagar

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

041. Among the following rivers which river has an estuary?

- (A) Mahanadi (B) Damodar
- (C) Krishna ☒ (D) Tapi

042. Which of the following statements is/are correct?

- (A) The region of Kutch in the north-eastern part of Gujarat is rich in its mineral wealth like Bauxite, gypsum, agate, limestone etc
- (B) Saurashtra, the Peninsular Gujarat, is bounded on three sides by waters of sea
- (C) Gujarat has about 19.66 lakh hectares of land under forest
- ☒ (D) All of the above

043. Among the following states of India, which one has the oldest rock formations of this country?

- ☒ (A) Karnataka (B) Bihar
- (C) Uttar Pradesh (D) Assam

044. Which one of the following mountain chains has two dissimilar types of vegetation (evergreen forests and deciduous forests) on its two slopes?

- (A) Aravallis ☒ (B) Western Ghats
- (C) Vindhyas (D) Eastern Ghats

045. Which of the following tribes in Gujarat is also known as “Khandeshi Bhil”?

- (A) Chodhara (B) Choudhari
- (C) Bawcha ☒ (D) Barda

046. બીજી પંચવર્ષીય યોજના બાબતે નીચેના પૈકી કયું વિધાન / કયા વિધાનો સત્ય નથી ?

1. તેમાં લાંબા ગાળાના આર્થિક લાભ માટે મૂડી માલ (capital goods) અને ભારે ઉદ્યોગો તરફના પરિવર્તનને લક્ષ્યમાં લીધું હતું.
 2. બીજી યોજના એ 'Mahalanobis Plan' ના ઉપનામે પણ ઓળખાય છે.
 3. તેમાં વાર્ષિક રાષ્ટ્રીય આવકમાં 4.5 પ્રતિશતની વૃદ્ધિનો લક્ષ્યાંક હતો.
- નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

(A) માત્ર 2 અને 3

(B) માત્ર 3

(C) માત્ર 1 અને 2

(D) ઉપરોક્ત પૈકી એક પણ નહીં

047. Multi-dimensional Poverty Index (બહુ-પરિમાણીય ગરીબી સૂચકાંક)ની ગણતરી કરતી વખતે નીચેના પૈકી કયા સૂચક (Indicator) નો પણ ઉપયોગ થાય છે ?

(A) વીજળીની ઉપલબ્ધતા

(B) ટેલીફોનની ઉપલબ્ધતા

(C) માતૃ મૃત્યુ દર

(D) ઉચ્ચ શિક્ષણની ઉપલબ્ધતા

048. સંતુલિત અંદાજપત્ર (Balanced Budgeting) નો અર્થ શૂન્ય સાથેનું અંદાજપત્ર

1. મુદ્રીકૃત ખાધ (Monetized Deficit)
2. નાણાંકીય ખાધ (Fiscal Deficit)
3. રાજકોષીય ખાધ (Revenue Deficit)
4. પ્રાથમિક ખાધ (Primary Deficit)

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

(A) માત્ર 1

(B) માત્ર 2 અને 3

(C) માત્ર 3

(D) માત્ર 1 અને 4

049. એક ચલણના અન્ય ચલણના સંદર્ભમાં મૂલ્યમાં વધારાને દ્વારા સમજાવી શકાય છે.

(A) ઘસારો (depreciation)

(B) અવમૂલ્યન (devaluation)

(C) પુનઃમૂલ્યાંકન (revaluation)

(D) મૂલ્યવૃદ્ધિ (appreciation)

050. કુળાવામાં વધારો થવાથી નીચેના પૈકી કયા જૂથની વ્યક્તિઓને ફાયદો થાય છે ?

1. પગારદાર વર્ગ (salary class persons)
2. પેન્શનરો
3. શેર ધારકો
4. દેવા દારો

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

(A) માત્ર 2, 3 અને 4

(B) માત્ર 1, 3 અને 4

(C) માત્ર 1, 2 અને 3

(D) માત્ર 3 અને 4

046. Which of the following statements is/are INCORRECT regarding Second Five Year Plan?

1. It reflected a shift towards developing capital goods and heavy industry for long-term economic benefit.
2. 2nd plan was nicknamed the 'Mahalanobis Plan'
3. Targeted annual national income growth of 4.5 percent

- (A) 2 and 3 only (B) 3 only
 (C) 1 and 2 only (D) None of the above

047. While calculating Multi-dimensional Poverty Index which one of the following indicators is also used?

- (A) Access to Electricity
 (B) Access to Telephone
 (C) Maternal Mortality Rate
 (D) Access to Higher Education

048. The Balanced Budgeting means a Budget with Zero _____.

1. Monetized Deficit
2. Fiscal Deficit
3. Revenue Deficit
4. Primary Deficit

- (A) 1 only (B) 2 and 3 only
 (C) 3 only (D) 1 and 4 only

049. An increase in the value of one currency in terms of another can be best explained by the term _____.

- (A) Depreciation (B) Devaluation
 (C) Revaluation (D) Appreciation

050. With rising inflation which among the following group of persons will benefit?

1. Salary class persons
2. Pensioners
3. Shareholders
4. Debtors

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

051. નીચેના પૈકી કયા ભારતની નાણાકીય નીતિ (monetary policy) ના ઘટકો છે ?

1. નીતિ દર (Policy rate)
2. ખુલ્લા બજારની ક્રિયાઓ (Open market operations)
3. જાહેર દેવા
4. જાહેર અનામત

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

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

052. નીચેની યાદી-I ને યાદી-II સાથે જોડો.

- | યાદી-I | યાદી-II (BPL વસ્તી) |
|----------------------------|---------------------|
| a. તેંડુલકર સમિતિ | 1. 50% |
| b. NC સક્સેના સમિતિ | 2. 77% |
| c. અર્જુન સેન ગુપ્તા સમિતિ | 3. 37% |

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

- (A) a - 3, b - 2, c - 1 (B) a - 1, b - 2, c - 3
(C) a - 2, b - 3, c - 1 (D) a - 2, b - 1, c - 3

053. કામદારોમાં નોકરી માટે જરૂરી કૌશલ્યોનો અભાવ હોય તે કારણથી પેદા થતી બેરોજગારીએ પ્રકારની બેરોજગારીનું ઉદાહરણ છે.

- (A) ચક્રીય (cyclic) (B) માળખાગત (structural)
(C) અસ્થાયી (frictional) (D) છૂપી (પ્રચ્છન્ન) (disguised)

054. Fiscal Responsibility and Budget Management (FRBM) (રાજકોષીય જવાબદારી અને અંદાજપત્રનું સંચાલન) વિશે ભલામણો આપવા માટે નીચેના પૈકી કઈ સમિતિની રચના કરવામાં આવી છે ?

- (A) અલ્લઘ સમિતિ (B) દીપક સમિતિ
(C) ઉર્જત પટેલ સમિતિ (D) એન. કે સિંઘ સમિતિ

055. નીચેના પૈકી કઈ સંસ્થાએ ભૂકંપની સંભાવનાઓના આધારે ભારતને ચાર ક્ષેત્રોમાં જૂથબદ્ધ કરેલ છે ?

- (A) આંકડા શાસ્ત્ર અને કાર્યક્રમ અમલીકરણ વિભાગ (Department of Statistics and Programme Implementation)
(B) કેન્દ્રીય આંકડાશાસ્ત્રીય સંસ્થા (Central Statistical Organization)
(C) ભારતીય માનક કાર્યાલય (Bureau of Indian Standards)
(D) ઉપરોક્ત પૈકી એક પણ નહીં

051. Which of the following is/are the components of monetary policy of India?

1. Policy rate
2. Open market operations
3. Public debt
4. Public reserve

(A) 1, 2, 3 and 4

☒ (B) 1 and 2 only

(C) 2, 3 and 4 only

(D) 1, 3 and 4 only

052. Match the following

List I (Committee)

List II (BPL Population)

a. Tendulkar Committee

1. 50%

b. NC Saxena Committee

2. 77%

c. Arjun Sen Gupta Committee

3. 37%

☒ (A) a-3, b-2, c-1

(B) a-1, b-2, c-3

(C) a-2, b-3, c-1

(D) a-2, b-1, c-3

053. The unemployment caused due to the workers lacking the requisite job skills is an example of _____ unemployment.

(A) Cyclic

☒ (B) Structural

(C) Frictional

(D) Disguised

054. Which of the following committees has been constituted to give recommendations on Fiscal Responsibility and Budget Management (FRBM)?

(A) Alagh Committee

(B) Dipak Committee

(C) Urijit Patel Committee

☒ (D) N.K. Singh Committee

055. Which of the following bodies has grouped India into four zones as per their propensities of seismicity?

(A) Department of Statistics and Programme Implementation

(B) Central Statistical Organization

☒ (C) Bureau of Indian Standards

(D) None of the above

056. બાહ્ય દેવામાં સમાવિષ્ટ થાય છે.

1. વિશ્વ બેંક તથા IMF પાસેથી લીધેલ લોન
 2. ઔદ્યોગિક દેશો પાસેથી લીધેલી લોન
 3. વિદેશી બેંકો પાસેથી લીધેલી લોન
- 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

057. નીચેના પૈકી કયું ભારતીય જામીનગીરી અને વિનિમય બોર્ડ (Securities and Exchange Board of India) નું કાર્ય નથી ?

(A) સ્ટોક એક્સચેન્જોના કામકાજની દેખરેખ રાખવી

(B) વ્યાપારી બેંકો (merchant banks) અને મ્યુચ્યુઅલ ફંડોનું નિયમન

(C) નવી મૂડી સમસ્યાઓનું વીમાલેખન

(D) તંદુરસ્ત મૂડી બજારના વિકાસને પ્રોત્સાહન

058. જોખમી મૂડી (venture capital) નો અર્થ શું થાય ?

(A) ઉદ્યોગોને આપવામાં આવતી ટૂંકાગાળાની મૂડી

(B) નુકસાની કરતી વખતે ઉદ્યોગોને આપવામાં આવતું ભંડોળ

(C) ઉદ્યોગોની ફેરબદલી (replacement) અને નવીનીકરણ (renovation) માટે પૂરું પાડવામાં આવતું ભંડોળ

(D) નવા ઉદ્યોગ સાહસિકોને પૂરી પાડવામાં આવેલી લાંબાગાળાની સ્ટાર્ટ અપ મૂડી

059. ‘Gold Monetization’ યોજના બાબતે નીચેના પૈકી કયું વિધાન / કયા વિધાનો સત્ય છે ?

1. આ યોજના અંતર્ગત કોઈ વ્યક્તિ કે સંસ્થા બેંકમાં કિંમતી ધાતુ જમા કરાવીને રોકડ અથવા સોનાના સ્વરૂપમાં વ્યાજ મેળવી શકે છે.

2. તેના પર મેળવેલ વ્યાજને આવકવેરા અને મૂડી લાભ કરમાંથી મુક્તિ આપવામાં આવી છે.

3. આ યોજના અંતર્ગત સોનાની બચત (Gold savings) માટે લઘુત્તમ અવધિ બે વર્ષ છે.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

(A) માત્ર 1

(B) માત્ર 1 અને 2

(C) માત્ર 2 અને 3

(D) 1, 2 અને 3

056. External debt comprises _____

1. Loans taken from World Bank and IMF
2. Loans taken from industrial countries
3. Loans taken from foreign banks

- ☒ (A) 1, 2 and 3
- (B) 2 and 3 only
- (C) 1 and 3 only
- (D) 1 and 2 only

057. Which of the following is NOT a function of the Securities and Exchange Board of India (SEBI)?

- (A) Supervising the working of the stock exchanges
- (B) Regulating merchant banks and mutual funds
- ☒ (C) Underwriting new capital issues
- (D) Promoting the development of a healthy capital market

058. What does venture capital mean?

- (A) A short-term capital provided to industries
- (B) Funds provided to industries at times of incurring losses
- (C) Funds provided for replacement and renovation of industries
- ☒ (D) A long-term start-up capital provided to new entrepreneurs

059. Which of the following statements is/are correct regarding 'Gold Monetization' scheme?

1. Under this scheme a person or entity can earn interest in either cash or gold units, by depositing the precious metal with the banks
 2. Interest earned on it exempted from income tax and capital gains tax
 3. Under this scheme, the minimum period for Gold Savings account is two years
- (A) 1 only
- ☒ (B) 1 and 2 only
- (C) 2 and 3 only
- (D) 1, 2 and 3

060. ભારતના અર્થતંત્ર બાબતે નીચેની જોડીને યોગ્ય રીતે જોડો.

- | | |
|-------------------------------------|-------------------------|
| a. પીળી ક્રાંતિ (Yellow revolution) | i. તેલીબીયાં (oilseeds) |
| b. શ્વેત ક્રાંતિ (White revolution) | ii. દૂધ |
| c. ગોલીય ક્રાંતિ (Round revolution) | iii. ઈંડુ |
| d. રજત ક્રાંતિ (Silver revolution) | iv. બટાકા |
- નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

(A) a - iv, b - ii, c - iii, d - i

(B) a - i, b - ii, c - iv, d - iii

(C) a - iii, b - ii, c - iv, d - i

(D) a - i, b - iv, c - ii, d - iii

061. માનવ મસ્તિષ્કનો નીચેના પૈકીનો કયો ભાગ ખોરાકને ગળવામાં અને ઉલટી કરવાની બાબતનું નિયમન કરે છે ?

(A) અનુમસ્તિષ્ક (Cerebellum)

(B) બૃહદ મસ્તિષ્ક (Cerebrum)

(C) લંબ મજ્જા (Medulla oblongata)

(D) સેતુ (Pons)

062. ભારત સરકારની યાદી અનુસાર કુલ 4 પ્રાણી સૃષ્ટિ અને 18 જાતિઓ ભારતમાં લુપ્ત થઈ ગઈ છે. નીચેના પૈકી કયું પ્રાણીએ આ પ્રાણી સૃષ્ટિની યાદીમાં સમાવિષ્ટ છે ?

(A) ચિત્તા (Cheetah)

(B) સુમંત્રન ગેંડા (Sumantran Rhionoceros)

(C) ગુલાબી માથાવાળું બતક (Pink headed duck)

(D) ઉપરોક્ત તમામ

063. નીચેના પૈકી કયું વિધાન / કયા વિધાનો સત્ય નથી ?

(A) LEO અથવા Near Earth Orbit (NEO) એ પૃથ્વીની ફરતે આવેલી, 160 થી 2000 કિ.મી.ની ઊંચાઈ વચ્ચેની ભ્રમણ કક્ષા છે.

(B) LEO નો ભ્રમણ સમયગાળો ઓછો-આશરે 84 થી 127 મીનીટ વચ્ચેનો હોય છે.

(C) (A) તથા (B) બન્ને

(D) (A) અથવા (B) એક પણ નહીં

064. Nano technology બાબતે નીચેના પૈકી કયું વિધાન સત્ય છે ?

1. તે એવી ટેકનોલોજી છે કે જેમાં પદાર્થો અને ઉપકરણોને અણુ-અણુની રચના દ્વારા વિકસાવવામાં આવે છે.

2. નેનોમીટરના માપ (scale) પર ભૌતિક ગુણધર્મો બદલાય છે.

3. નેનોમીટરના માપ (scale) પર રાસાયણિક ગુણધર્મ ક્યારેય બદલાતા નથી.

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

(A) 1, 2 અને 3

(B) માત્ર 1 અને 3

(C) માત્ર 2 અને 3

(D) માત્ર 1 અને 2

060. Match the following related to Indian economy

- | | |
|----------------------------|----------------------------|
| a. Yellow revolution | i. oilseed |
| b. White revolution | ii. Milk |
| c. Round revolution | iii. Egg |
| d. Silver revolution | iv. Potato |
| (A) a-iv, b-ii, c-iii, d-i | (B) a-i, b-ii, c-iv, d-iii |
| (C) a-iii, b-ii, c-iv, d-i | (D) a-i, b-iv, c-ii, d-iii |

061. Which one of the following parts of human brain is the regulating centre for swallowing and vomiting?

- | | |
|-----------------------|--------------|
| (A) Cerebellum | (B) Cerebrum |
| (C) Medulla oblongata | (D) Pons |

062. According to Government of India total 4 fauna and 18 species have gone extinct in India, which of the following is there in the fauna list?

- (A) Cheetah
 (B) Sumantran Rhionoceros
 (C) Pink Headed Duck
 (D) All of the above

063. Which of the following statements is/are INCORRECT?

- (A) The LEO or Near Earth Orbit (NEO) is an orbit around Earth with an altitude between 160 and 2000 Kms
 (B) The orbital period in LEO is less between 84 and 127 minutes
 (C) Both (A) and (B)
 (D) Neither (A) nor (B)

064. Which of the following statements are correct regarding Nano technology?

1. It is a technology for creating materials and devices atom by atom
 2. Physical properties change at the nanometer scale
 3. Chemical property never changes at the nanometer scale
- (A) 1, 2 and 3
 (B) 1 and 3 only
 (C) 2 and 3 only
 (D) 1 and 2 only

065. રક્ત કણો (Red Blood Cells - RBCs) ની આયુ મર્યાદા હોય છે.
 (A) 60 દિવસ (B) 70 દિવસ
 (C) 120 દિવસ (D) 150 દિવસ
066. જ્યારે દૂધમાંથી મલાઈ અલગ કરવામાં આવે છે ત્યારે દૂધની ઘનતા
 (A) ઘટે છે (B) વધે છે.
 (C) ફેરફાર થતો નથી (D) વધુ સ્નિગ્ધ (viscous) બને છે
067. ભારતીય વૈજ્ઞાનિક સર જગદીશચંદ્ર બોઝ તેમના કયા ક્ષેત્રના કાર્ય માટે પ્રખ્યાત છે ?
 (A) રેડિયો તથા સૂક્ષ્મ તરંગ પ્રકાશ વિજ્ઞાન
 (B) પ્રાથમિક કણોના ઉષ્માગતિકીય ગુણધર્મો
 (C) (A) તથા (B) બન્ને
 (D) (A) અથવા (B) એક પણ નહીં
068. આપણા આહારમાં આયોડીનનું થોડુંક પ્રમાણ માટે જરૂરી છે.
 (A) પેલાગ્રાને રોકવા
 (B) રૂધિરના જામવાની ક્રિયાને ઉદ્દીપન કરવા
 (C) પિચ્યુટરી ગ્રંથિને ઉદ્દીપન કરવા
 (D) થાઈરોઈડ ગ્રંથિની નિષ્ક્રિયતાને સમતોલ (compensate) કરી આપે છે
069. હૃદય રોગના અચાનક હુમલાના કિસ્સામાં, માનવ હૃદયને પુનઃ કાર્યાન્વિત કરવા માટે નીચેના પૈકીનું કયું પગલું સૌ પ્રથમ અમલમાં મૂકવાની સલાહ આપવામાં આવે છે ?
 (A) ચહેરા પર પાણીનો છંટકાવ કરવો
 (B) હૃદય પર બાહ્ય માલિશ કરવી
 (C) પીવા માટે ઠંડુ પાણી આપવું
 (D) મોંઢાથી મોંઢાનું પુર્ન સંજોવન કરવું
070. તમામ એસીડમાં સર્વ સામાન્ય તત્વ હોય છે.
 (A) ઓક્સીજન (B) સલ્ફર
 (C) હાઈડ્રોજન (D) ઉપરોક્ત પૈકી એક પણ નહીં

065. Lifespan of Red Blood Cells (RBCs) is _____.
(A) 60 days (B) 70 days
(C) 120 days (D) 150 days
066. When cream is separated from milk, the density of milk _____.
(A) Decreases
(B) Increases
(C) Remains unchanged
(D) Becomes more viscous
067. Indian scientist, Sir Jagadish Chandra Bose is famous for his work in which field?
(A) Radio and Microwave optics
(B) Thermodynamic properties of elementary particles
(C) Both (A) and (B)
(D) Neither (A) nor (B)
068. Small amounts of iodine are necessary in our diet to _____.
(A) Prevent pellagra
(B) Stimulate clotting of blood
(C) Stimulate pituitary gland
(D) Compensate for underactivity of the thyroid gland
069. On a sudden cardiac arrest, which of the following is advised as a first step to revive the functioning of human heart?
(A) Sprinkling water on the face
(B) Giving external cardiac massage
(C) Giving cool water to drink
(D) Mouth to mouth resuscitation
070. An element common to all acids is _____.
(A) Oxygen (B) Sulphur
(C) Hydrogen (D) None of the above

071. ધ્વનિ અને પ્રકાશ વિશે નીચેના પૈકી કયું વિધાન સત્ય છે ?
- (A) પ્રકાશએ ગતિ ઊર્જાનું સ્વરૂપ છે જ્યારે ધ્વનિએ સ્થિતિ ઊર્જાનું સ્વરૂપ છે.
 (B) હવામાં ધ્વનિ કરતાં પ્રકાશ વધુ ઝડપથી પ્રસરણ પામે છે.
 (C) ધ્વનિએ તરંગોથી પ્રસરણ પામે છે જ્યારે પ્રકાશ એ તરંગોથી પ્રસરતો નથી.
 (D) પ્રકાશનું પરાવર્તન થઈ શકે છે જ્યારે ધ્વનિનું પરાવર્તન થઈ શકતું નથી.
072. નીચેના પૈકી કયા સમુદાયમાં, એકમ વિસ્તાર દીઠ જાતિઓની સંખ્યા વધુ હશે ?
- (A) સમશીતોષ્ણ જંગલો (B) પાનખર જંગલો
 (C) ઉષ્ણકટિબંધીય વરસાદી જંગલો (D) ટેગા જંગલો
073. હાયગો ફ્રેમવર્ક (Hyogo framework) ના સુધારેલા સંસ્કરણ તરીકે આપત્તિ જોખમ ઘટાડવા પર સંયુક્ત રાષ્ટ્રની ત્રીજી વિશ્વ પરિષદમાં શું માળખું અપનાવવામાં આવ્યું ?
- (A) Sendai framework
 (B) Nevada framework
 (C) Khatmandu framework
 (D) Fukunshima framework
074. Ex-Situ સંરક્ષણની વિવિધ પદ્ધતિઓમાં સમાવિષ્ટ છે.
- (A) બીજ બેંક (Seed Bank) (B) પેશી સંવર્ધન (Tissue Culture)
 (C) વનસ્પતિ ઉદ્યાન (Botanical Garden) (D) ઉપરના તમામ
075. પ્રકાશને સૂર્યથી પૃથ્વી સુધીનું અંતર કાપતા લાગતો સમય હોય છે.
- (A) 1 Astronomical Unit (AU) (B) 1 મિનિટ
 (C) 10 મિનિટ (D) 10 AU
076. નીચેના પૈકી કયું વિધાન / કયા વિધાનો સત્ય છે ?
- આમુખ એ પ્રજાના આખરી સત્તાધિકાર ઉપર ભાર મૂકે છે.
 - આમુખ એ જે.એલ. નેહરુ દ્વારા બંધારણ સભામાં 'હેતુલક્ષી ઠરાવ'ની રજૂઆત પર આધારિત છે.
 - 'લોકશાહી' શબ્દ માત્ર રાજકીય જ નહિં પરંતુ સામાજિક અને આર્થિક લોકશાહીને પણ સ્વીકારે છે.
- નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.
- (A) માત્ર 1 અને 2 (B) માત્ર 2
 (C) માત્ર 2 અને 3 (D) 1, 2 અને 3

071. Which of the following statements relating to sound and light is true?
- (A) Light is a form of kinetic energy, whereas sound is a form of potential energy.
☒ (B) Light travels faster in air than sound does.
 (C) Sound travels in waves but light does not.
 (D) Light can be reflected but sound cannot be.
072. In which type of community, the number of species per unit area will be more?
- (A) Temperate forest (B) Deciduous forest
☒ (C) Tropical rain forest (D) Taiga forest
073. What framework was adopted at the third United Nations World Conference on Disaster Risk Reduction, as an improved version of the Hyogo framework?
- ☒ (A) Sendai framework
 (B) Nevada framework
 (C) Khatmandu Framework
 (D) Fukushima Framework
074. The different methods of Ex-Situ Conservation include ____.
- (A) Seed Bank (B) Tissue Culture
 (C) Botanical Garden ☒ (D) All of the above
075. The time taken by light to travel from Sun to Earth is equal to ____.
- ☒ (A) 1 Astronomical Unit (AU) (B) 1 Minute
 (C) 10 Minutes (D) 10 AU
076. Which of the following statements is/are correct?
1. The preamble emphasises the ultimate authority of the people
 2. The Preamble is based on the 'objectives resolution' moved by J.L. Nehru in constituent Assembly
 3. The word 'Democratic' embraces not only political but social and economic democracy as well
- (A) 1 and 2 only (B) 2 only
 (C) 2 and 3 only ☒ (D) 1, 2 and 3

077. રાજ્યમાં જિલ્લા ન્યાયાધીશની નિયુક્તિ (appointment) સ્થળ-નિમણૂક (posting) અને બઢતી (promotion) એ દ્વારા કરવામાં આવે છે.
- (A) વડી અદાલત સાથે વિચાર વિમર્શ કરીને રાજ્યપાલ દ્વારા
 (B) રાજ્યપાલ સાથે વિચાર વિમર્શ કરીને રાજ્યની વડી અદાલતના મુખ્ય ન્યાયાધીશ દ્વારા
 (C) વડી અદાલત સાથે વિચાર-વિમર્શ કરીને રાષ્ટ્રપતિ દ્વારા
 (D) ઉપરોક્ત પૈકી એક પણ નહીં
078. નીચેના પૈકી કયું રાજ્ય એ પહેલા સહયોગી (associate) રાજ્ય હતું અને ત્યારબાદ પૂર્ણ રાજ્ય બન્યું ?
- (A) પુડુચેરી (B) સિક્કીમ
 (C) ઉત્તરાખંડ (D) તેલંગાણા
079. સંસદીય પરિભાષામાં 'Closure' શબ્દનો અર્થ થાય.
- (A) સંસદના સત્રનો અંત (B) દિવસની કાર્યવાહીનો અંત
 (C) કોઈ પ્રસ્તાવ પર ચર્ચાનો અંત (D) ઉપરોક્ત પૈકી એક પણ નહીં
080. જો નીચેની શરતોનું પાલન થતું હોય, તો રાજ્યમાં કટોકટી એક વર્ષથી અધિકના સમયગાળા માટે લંબાવી શકાય છે. આ બાબતમાં નીચેના પૈકી કઈ શરત સાચી છે ?
- (A) 352મી કલમ હેઠળ સમગ્ર ભારતમાં અથવા કોઈ રાજ્યમાં કટોકટી દાખલ કરેલ હોય.
 (B) જો ચૂંટણી પંચ એવું પ્રમાણિત કરે કે તે રાજ્યમાં ચૂંટણી યોજવામાં મુશ્કેલીઓ છે.
 (C) (A) તથા (B) બન્ને
 (D) (A) અથવા (B) એક પણ નહીં
081. ભારતના બંધારણ હેઠળ નીચેના પૈકી કયો અધિકાર એ માનવ અધિકાર તેમજ મૂળભૂત અધિકાર છે ?
- (A) માહિતીનો અધિકાર (Right to Information)
 (B) શિક્ષણનો અધિકાર (Right to Education)
 (C) કામનો અધિકાર (Right to Work)
 (D) રહેઠાણનો અધિકાર (Right to Housing)
082. નીચેના પૈકી કોણ પોતાની સત્તા મહદ અંશે પ્રત્યાયુક્ત વિધિ નિર્માણ (Delegated legislation) વ્યવસ્થા હેઠળ પ્રાપ્ત કરે છે ?
- (A) ધારાકીય સમિતિઓ (The Legislative Committees)
 (B) જાહેર સેવાઓ (The Civil Services)
 (C) ધારાસભા (The Legislature)
 (D) મંત્રીમંડળ (The Council of Ministers)

077. Appointment, posting and promotion of district judge in a state are made by
(A) Governor in consultation with the high court
(B) Chief justice of the high court of the state in consultation with the governor
(C) President in consultation with the High Court
(D) None of the above
078. Which of the following states was earlier an associate state and thereafter became a full state?
(A) Puducherry (B) Sikkim
(C) Uttarakhand (D) Telangana
079. The term 'closure' in Parliamentary terminology implies _____.
(A) The end of session of Parliament
(B) End of the day's proceedings
(C) Stoppage of debate on a motion
(D) None of the above
080. State emergency can be extended beyond one year if following conditions are fulfilled. In this regard which is the correct condition?
(A) Emergency under Article 352 is in force in either whole of India or in the state.
(B) Election Commission certifies that there are difficulties in holding elections in that state
(C) Both (A) and (B)
(D) Neither (A) nor (B)
081. Which one of the following is a Human Right as well as a fundamental right under the Constitution of India?
(A) Right to information (B) Right to education
(C) Right to work (D) Right to Housing
082. Which one of the following derives its power most from the system of delegated legislation?
(A) The Legislative Committees
(B) The Civil Services
(C) The Legislature
(D) The Council of Ministers

083. નીચેના પૈકી કયા ન્યાયિક તંત્રનો બંધારણમાં ઉલ્લેખ કરવામાં આવે છે ?

(A) ગ્રામ ન્યાયાલયો

(B) Fast Track Courts

(C) લોક અદાલતો

(D) જિલ્લા ન્યાયાલયો

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

(A) 26 નવેમ્બર, 1949 ના રોજ બંધારણ અપનાવવા (adopted)માં આવ્યું પરંતુ બંધારણની તમામ જોગવાઈઓ આ તારીખથી અમલમાં આવી નથી.

(B) 26 જાન્યુઆરી, 1950 ને બંધારણના શરૂઆતના (commencement) દિવસ તરીકે ગણવામાં આવે છે.

(C) (A) તથા (B) બન્ને

(D) (A) અથવા (B) એક પણ નહીં

085. કોઈ રાજ્યનું નામ બદલવા માટે સંસદમાં કેટલી બહુમતી હોવી જરૂરી છે ?

(A) હાજર (સભ્યો) અને મતદાનની બહુમતી (Majority of present and voting)

(B) હાજર (સભ્યો) અને મતદાનની 2/3 બહુમતી અને કુલ સંખ્યા બળની અડધી સંખ્યાથી ઓછી નહિં (2/3rd of present and voting and not less than half of total strength)

(C) કુલ સંખ્યાબળની બહુમતી (Majority of total strength)

(D) તે સમયના સભ્યોની બહુમતી (Majority of then members)

086. નીચેના પૈકી કયું એ “કાયદાનું શાસન” (Rule of law) ના મુખ્ય લક્ષણ તરીકે ગણી શકાય ?

1. સત્તાની મર્યાદા (Limitation of powers)

2. કાયદા સમક્ષ સમાનતા (Equality before law)

3. સરકાર પ્રત્યે લોકોની જવાબદારી (People's responsibility to the Government)

4. સ્વતંત્રતા અને નાગરિક અધિકારો (Liberty and civil rights)

નીચેના પૈકી યોગ્ય વિકલ્પ પસંદ કરો.

(A) માત્ર 1 અને 3

(B) માત્ર 2 અને 4

(C) માત્ર 1, 2 અને 3

(D) 1, 2, 3 અને 4

087. નીચેના પૈકી કયો દેશ Bitcoin ને સત્તાવાર ચલણ તરીકે સ્વીકારનાર પ્રથમ દેશ છે ?

(A) Namibia

(B) El Salvador

(C) Papua New Guinea

(D) ઉપરોક્ત પૈકી એક પણ નહીં

083. Which of the following judicial bodies are mentioned in the Constitution?

- (A) Gram Nyayalayas (B) Fast Track Courts
(C) Lok Adalats (D) District Courts

084. Which of the following statements is/are correct?

- (A) The Constitution was adopted by 26th November 1949, but all the provisions of Constitution did not come into force by this date.
(B) 26th January 1950 is regarded as the date of commencement of Constitution.
(C) Both (A) and (B)
(D) Neither (A) nor (B)

085. What is the majority required in Parliament to change the name of a state?

- (A) Majority of present and voting
(B) 2/3rd of present and voting and not less than half of total strength
(C) Majority of total strength
(D) Majority of then members

086. Which of the following are regarded as the main features of the “Rule of Law”?

1. Limitation of powers
2. Equality before law
3. People’s responsibility to the Government
4. Liberty and civil rights

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

087. Which of the following countries is the first country to adopt Bitcoin as official currency?

- (A) Namibia (B) El Salvador
(C) Papua New Guinea (D) None of the above

088. ભારત સરકારના ખાદ્ય પ્રસંસ્કરણ (Processing) ઉદ્યોગ મંત્રાલય દ્વારા ને ખાદ્ય પ્રસંસ્કરણ અઠવાડીયા તરીકે ઘોષિત કરેલ છે.
- (A) 15 થી 21 ઓગષ્ટ, 2021
 (B) 21 થી 27 ઓગષ્ટ, 2021
 (C) 6 થી 12 સપ્ટેમ્બર, 2021
 (D) ઉપરોક્ત પૈકી એક પણ નહીં
089. E-commerce નિકાસમાં વધારો કરવા ગુજરાત સરકારે નીચેના પૈકી કઈ કંપની સાથે કરાર પર હસ્તાક્ષર કર્યા છે ?
- (A) Flipkart
 (B) Amazon
 (C) Indiamart
 (D) ઉપરોક્ત પૈકી એક પણ નહીં
090. શિક્ષક પર્વ (Shikshak Parv) 2021 નો મુખ્ય વિચાર છે.
- (A) Quality and sustainable schools : learning from schools in India
 (B) Schools : sustainability, quality and literacy
 (C) Sustainable schools : quantity, quality and skills
 (D) ઉપરોક્ત પૈકી એક પણ નહીં
091. રાજ્ય પાલ્ક ઉપસાગરમાં દેશના સૌ પ્રથમ Dugong સંરક્ષણ આરક્ષિત ક્ષેત્ર મેળવશે.
- (A) કેરળ
 (B) ગોવા
 (C) આંદામાન નિકોબાર દ્વિપ સમુહો
 (D) તમિલનાડુ
092. ગુજરાત સરકારે ના વિકાસ માટે બિન નિવાસી ગુજરાતીઓ માટે વતન પ્રેમ યોજના દાખલ કરેલ છે.
- (A) માધ્યમિક શાળાઓ
 (B) સાર્વજનિક ભવનો
 (C) ગ્રામીણ રસ્તાઓ
 (D) ગ્રામીણ વિસ્તારો
093. International Army Games 2021 ના યજમાન હતા.
- (A) ભારત
 (B) UAE
 (C) ઈઝરાઈલ
 (D) રશિયા
094. ભારતે પાસેથી 100 કરોડથી વધારે કિંમતના sky striker એક પ્રકારના suicide bomber ખરીદવા માટેના કરાર પર હસ્તાક્ષર કર્યા છે.
- (A) ઈઝરાઈલ
 (B) રશિયા
 (C) ફ્રાન્સ
 (D) જર્મની

088. _____ week has announced as Food Processing Week by Ministry of Food Processing Industries of India.
- (A) 15th to 21st August 2021
(B) 21st to 27th August 2021
(C) 6th to 12th September 2021
(D) None of the above
089. With which of the following companies, Gujarat government has signed an agreement to boost the E-commerce exports?
- (A) Flipkart
(B) Amazon
(C) Indiamart
(D) None of the above
090. The Theme of the Shikshak Parv 2021 is _____.
- (A) Quality and Sustainable Schools: Learning from schools in India
(B) Schools: Sustainability, Quality and Literacy
(C) Sustainable Schools: Quantity, Quality and Skills
(D) None of the above
091. _____ state going to get country's first ever Dugong conservation reserve in Palk Bay.
- (A) Kerala
(B) Goa
(C) Andaman Nicobar Islands
(D) Tamil Nadu
092. Gujarat rolls out Vatan Prem Yojana for non-resident Gujarat people to develop _____.
- (A) High Schools
(B) Community Halls
(C) Rural Roads
(D) Rural areas
093. International Army Games 2021 was hosted by _____.
- (A) India
(B) UAE
(C) Israel
(D) Russia
094. India had signed an agreement to procure over 100 crore worth Sky Striker - A type of suicide bombers from _____.
- (A) Israel
(B) Russia
(C) France
(D) Germany

095. International Labour Organization (ILO) ની World Social Protection અહેવાલ 2020-2022 અનુસાર આશરે લોકો સામાજિક સુરક્ષા ધરાવતા નથી.
- (A) 2.1 Billion (B) 3.1 Billion
(C) 4.1 Billion (D) ઉપરોક્ત પૈકી એક પણ નહીં
096. Robobank દ્વારા જાહેર કરવામાં આવેલ Global Dairy Report 2021 માં અમૂલે (Amul) વિશ્વમાં સ્થાન પ્રાપ્ત કર્યું છે.
- (A) 12મું (B) 18મું
(C) 15મું (D) 21મું
097. નીચેના પૈકી કયા દેશો BRICS New Development Bankની નવા સદસ્યોની પ્રથમ બેચમાં જોડાયા છે ?
- (A) UAE, ઉરૂગ્વે અને સિંગાપુર
(B) UAE, બાંગ્લાદેશ અને ઉરૂગ્વે
(C) ઉરૂગ્વે, UAE અને મોરેશિયસ
(D) UAE, બાંગ્લાદેશ અને દક્ષિણ કોરિયા
098. International Monetary Fund એ ઓગષ્ટ 2021માં ભારતને ની રકમના ખાસ ઉપાડ અધિકાર આપ્યા છે.
- (A) \$17.86 Billion (B) \$21 Billion
(C) \$15.46 Billion (D) \$24.53 Billion
099. ભારતમાં સ્વદેશી નિર્મિત Naval Anti Drone System (NADS) વિકસાવવા માટે ભારતીય નૌ સેનાએ સાથે કરાર પર હસ્તાક્ષર કર્યા છે.
- (A) Hindustan Aeronautics Limited
(B) Indian Institute of Technology, Madras
(C) Bharat Electronics Limited
(D) ઉપરોક્ત પૈકી એક પણ નહીં
100. ભારત અને અલ્જીરીયાની નૌ સેનાઓ એ ખાતે સૌ પ્રથમવાર નૌ સેના ક્વાયત કરી હતી ?
- (A) હિંદ મહાસાગર (B) અરબી સમુદ્ર
(C) રાતા સમુદ્ર (D) ભૂમધ્ય સમુદ્ર

095. According to International Labour Organization (ILO)'s World Social Protection report 2020-2022 approximately _____ number of people doesn't have Social Security.
- (A) 2.1 Billion (B) 3.1 Billion
(C) 4.1 Billion (D) None of the above
096. In the Global Dairy Report 2021 by Robobank, Amul has received _____ rank in the world.
- (A) 12th (B) 18th
(C) 15th (D) 21st
097. Which of the following countries has joined as 1st batch new members of BRICS New Development Bank?
- (A) UAE, Uruguay and Singapore
(B) UAE, Bangladesh and Uruguay
(C) Uruguay, UAE and Mauritius
(D) UAE, Bangladesh and South Korea
098. International Monetary Fund has allocated _____ amount of special drawing rights to India in August 2021.
- (A) \$17.86 Billion (B) \$21 Billion
(C) \$15.46 Billion (D) \$24.53 Billion
099. Indian Navy has signed contract with _____ to develop India's first indigenous Naval Anti Drone Systems (NADS).
- (A) Hindustan Aeronautics Limited
(B) Indian Institute of Technology, Madras
(C) Bharat Electronics Limited
(D) None of the above
100. The Navies of India and Algeria have conducted first ever Naval exercise in _____.
- (A) Indian Ocean (B) Arabian Ocean
(C) Red Sea (D) Mediterranean Ocean

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101. What will come in place of the question mark (?) in the following number series?

5 7 ..?.. 25 45 75

- (A) 11 (B) 13
(C) 15 (D) 19

102. If R and S are different integers both divisible by 5, then which of the following is not necessarily true?

- (A) $R - S$ is divisible by 5
(B) $R + S$ is divisible by 10
(C) $R \times S$ is divisible by 25
(D) $R^2 + S^2$ is divisible by 5

103. Father said his son, "I was as old as you are at present at the time of your birth". If the father age is 38 now, the son age 5 years back was:

- (A) 14 (B) 19
(C) 33 (D) 38

104. Consider the following gold articles P, Q, R, S and T with different weights:

- P weighs twice as much as Q
- Q weighs four and a half times as much as R
- R weighs half as much as S
- S weighs half as much as T
- T weighs less than P but more than R

Article T will be lighter in weight than

- (A) P and S (B) P and R
(C) P and Q (D) Q and R

105. Traffic on a highway is moving at a rate of 360 vehicles per hour at a location. If the number of vehicles arriving on this highway follows Poisson distribution, the probability (round off to 2 decimal places) that the headway between successive vehicles lies between 6 and 10 seconds is _____.

- (A) 0.18 (B) 0.37
(C) 0.85 (D) 0.97

106. If each side of a square is increased by 25%, find the percentage change in its area.
 (A) 65.25 (B) 56.25
 (C) 65 (D) 56
107. A man walked 3 km towards East, then 5 km towards North-East, then 8 km towards South and finally 5 km towards North-East direction. The distance of his present location from the starting point will be
 (A) 9 (B) 10
 (C) 15 (D) 21
108. Suresh keeps all his socks in a single drawer. He has 24 pairs of white socks and 18 pairs of grey socks. Suresh picks 3 socks randomly. Find the possibility of Suresh choosing a matching pair.
 (A) $1/36$ (B) $1/108$
 (C) $7/36$ (D) 1
109. If Finger is called Toe, Toe is called Foot, Foot is called Thumb, Thumb is called Ankle, Ankle is called Palm and Palm is called Knee, which one finger has different name?
 (A) Thumb (B) Ankle
 (C) Knee (D) Palm
110. Looking at a picture of a man, Harsh said, "His mother is the wife of my father's son. Brothers and sisters I have none". At whose picture was Harsh looking?
 (A) His son (B) His cousin
 (C) His uncle (D) His nephew
111. Simpson's $3/8$ rule is a special case of Newton-Cotes quadratic formula, when $n =$
 (A) 1 (B) 2
 (C) 3 (D) 6
112. The value of $\Delta^{10} [(1 - ax)(1 - bx^2)(1 - cx^3)(1 - dx^4)]$ is
 (A) $abcd$ (B) $-abcd$
 (C) $10! abcd$ (D) $-10! abcd$

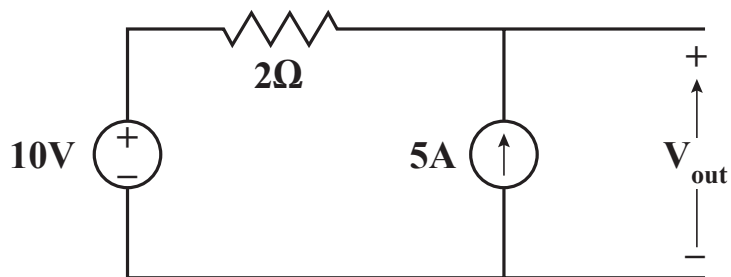
113. The sum and product of the eigen values of the given matrix $\begin{pmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{pmatrix}$ are
 (A) 6, -12 (B) 6, 12
 (C) -6, 12 (D) -6, -12
114. The value of a & b such that the system of equations: $2x-5y+2z=8$, $2x+4y+6z=5$, $x+2y+az=b$ has an infinite number of solutions
 (A) $a = 2$, $b = 3$ (B) $a = 3$, $b = 5/2$
 (C) $a = 2$, $b = 5/2$ (D) $a = 3$, $b \neq 5/2$
115. If $u = \sin \frac{\sqrt{x} - \sqrt{y}}{\sqrt{x} + \sqrt{y}}$ then the value of $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$
 (A) $\frac{1}{2}$ (B) 1
 (C) 0 (D) -1
116. The cam and follower without a spring form a
 (A) lower pair (B) higher pair
 (C) self closed pair (D) force closed pair
117. A kinematic chain is known as a mechanism when
 (A) none of the links is fixed (B) one of the links is fixed
 (C) two of the links is fixed (D) all of the links is fixed
118. The Grubler's criterion for determining the degree of freedom(n) of a mechanism having plane motion is
 (A) $n = (l - 1) - j$ (B) $n = 2(l - 1) - 2j$
 (C) $n = 3(l - 1) - 2j$ (D) $n = 4(l - 1) - 3j$
 Where l = number of links and j = number of binary joints.
119. The total number of instantaneous centre for a mechanism consisting of n links are
 (A) $n / 2$ (B) n
 (C) $(n - 1) / 2$ (D) $n(n - 1) / 2$
120. The coriolis component of acceleration is taken into account for
 (A) slider crank mechanism (B) four bar chain mechanism
 (C) quick return motion mechanism (D) none of the above

121. Body-centered cubic crystal lattice is found in
(A) iron (B) aluminum
(C) gold (D) zinc
122. Which one of the following is no-destructive testing method of engineering materials?
(A) tensile testing (B) impact testing
(C) fatigue testing (D) ultrasonic testing
123. Which material is used for manufacturing of resistance wire for electrical appliances?
(A) nichrome (B) gun metal
(C) babbit metal (D) brass
124. Dislocation in materials is a _____ defect.
(A) Point (B) Line
(C) Plane (D) Casting defect
125. Following stress relieving process is used after cold working of materials
(A) Tempering (B) Cyaniding
(C) Annealing (D) Hardening
126. The design based on human biological science is known as
(A) ergonomics (B) aesthetics
(C) anatomy (D) all of the above
127. Standards specify the
(A) design procedures
(B) testing procedures
(C) both (A) and (B)
(D) none of the above
128. Stress-concentration is caused due to
(A) material discontinuities
(B) load discontinuities
(C) geometric discontinuities
(D) all of the above

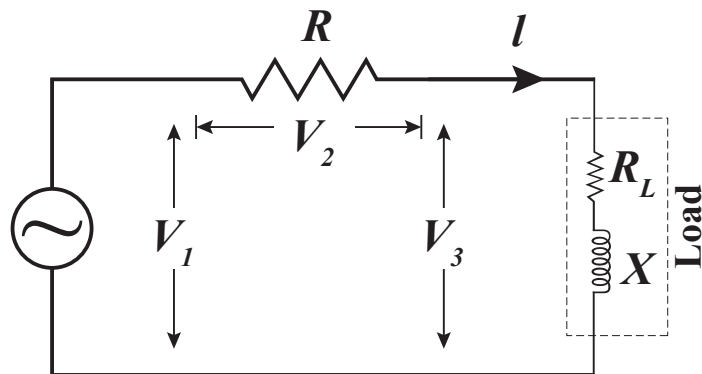
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129. Factor of safety is defined as
- ☒ (A) ratio of ultimate stress to working stress
 - (B) ratio of working stress to ultimate stress
 - (C) product of ultimate stress and working stress
 - (D) addition of ultimate stress and working stress
130. Old designs were based on
- ☒ (A) human needs
 - (B) market survey
 - (C) brain storming
 - (D) all of the above
131. Which of the following motors is used in ceiling fan?
- (A) Universal motor
 - (B) Synchronous motor
 - (C) Series motor
 - ☒ (D) Induction motor
132. Number of parallel path in wave winding is
- ☒ (A) 2
 - (B) 3
 - (C) 4
 - (D) 6
133. The power factor of pure resistive circuit is
- (A) Zero
 - (B) Leading
 - (C) Lagging
 - ☒ (D) Unity
134. Unit of reluctance is
- ☒ (A) Ampere Turns/Weber
 - (B) Weber Turns
 - (C) Henry
 - (D) Weber Turns/Ampere
135. Which among the following is an example of secondary cells?
- (A) Leclanche cell
 - ☒ (B) Lead-storage battery
 - (C) Dry cell
 - (D) Alkaline cell

136. In the circuit shown below, the voltage and current sources are ideal. The voltage (V_{out}) across the current source, in volts, is



- (A) 0 (B) 5
(C) 10 (D) 20
137. The average power delivered to an impedance $(4 - j3) \Omega$ by a current $5\cos(100\pi t + 100)$ A is
- (A) 44.2 W
(B) 50 W
(C) 62.5 W
(D) 125 W
138. In the circuit shown, the three voltmeter readings are $V_1 = 220$ V, $V_2 = 122$ V, $V_3 = 136$ V. If $R_L = 5\Omega$, the approximate power consumption in the load is



- (A) 700 W (B) 750 W
(C) 800 W (D) 850 W

139. The speed of a D.C. shunt motor more than its full-load speed can be obtained by
(A) Decreasing the field current
(B) Increasing the field current
(C) Decreasing the armature current
(D) Increasing the armature current
140. In a constant V/f induction motor drive, the slip at the maximum torque
(A) Is directly proportional to the synchronous speed.
(B) Remains constant with respect to the synchronous speed.
(C) Has an inverse relation with the synchronous speed.
(D) Has no relation with the synchronous speed.
141. Twelve 1Ω resistances are used to form a cube. The resistance between two diagonally opposite corners of the cube is
(A) $5/6\Omega$ (B) $1/6\Omega$
(C) $6/5\Omega$ (D) $3/2\Omega$
142. If the value of C in a series RLC circuit is decreased, the resonant frequency
(A) Is not affected (B) Increases
(C) Is reduced to zero (D) Decreases
143. Power factor of the system is kept high
(A) To reduce line losses
(B) To maximize the utilization of the capacities of generators, lines and transformers
(C) To reduce voltage regulation of the line
(D) Due to all above reasons
144. At very low frequencies a series R-C circuit behaves as almost purely
(A) Resistive (B) Inductive
(C) Capacitive (D) None of the above
145. The apparent power drawn by an A.C. circuit is 10 kVA and active power is 8 kW. The reactive power in the circuit is
(A) 4 kVAR (B) 6 kVAR
(C) 8 kVAR (D) 16 Kvar

146. In an intrinsic semiconductor, the Fermi level
(A) Lies at the center of forbidden energy gap
(B) Is near the conduction band
(C) Is near the valence band
(D) May be anywhere in the forbidden energy gap
147. At room temperature a semiconductor material is
(A) Perfect insulator (B) Conductor
(C) Slightly conducting (D) Any one of the above
148. Assertion (A): A JFET can be used as a current source.
Reason (R): In beyond pinch off region the current in JFET is nearly constant.
(A) Both A and R are true and R is correct explanation of A
(B) Both A and R are true but R is not a correct explanation of A
(C) A is true but R is false
(D) A is false but R is true
149. The energy gap in a semiconductor
(A) Increases with temperature
(B) Does not change with temperature
(C) Decreases with temperature
(D) Is zero
150. The pentavalent impurities like antimony, arsenic, bismuth and phosphorus, added to intrinsic semiconductors are called
(A) Acceptor or P-type impurities
(B) Donor or P-type impurities
(C) Acceptor or N-type impurities
(D) Donor or N-type impurities
151. A hole in a semiconductor is defined as
(A) A free electron
(B) The incomplete part of an electron pair bond
(C) A free proton
(D) A free neutron

152. The output, V-I characteristics of an Enhancement type MOSFET has
- (A) only an ohmic region
 - (B) only a saturation region
 - ☒ (C) an ohmic region at low voltage value followed by a saturation region at higher voltages
 - (D) an ohmic region at large voltage values preceded by a saturation region at lower voltages
153. In the depletion region of a pn junction, there is a shortage of
- (A) Acceptor ions
 - ☒ (B) Holes and electrons
 - (C) Donor ions
 - (D) None of the above
154. The leakage current across a pn junction is due to
- ☒ (A) Minority carriers
 - (B) Majority carriers
 - (C) Junction capacitance
 - (D) None of the above
155. The electron and hole concentrations in an intrinsic semiconductor are n_i and p_i respectively. When doped with a P-type material, these changes to n and p respectively. Then
- (A) $n + p = n_i + p_i$
 - (B) $n + n_i = p + p_i$
 - (C) $np_i = n_i p$
 - ☒ (D) $np = n_i p_i$
156. In a junction diode
- (A) The depletion capacitance increases with increase in the reverse bias
 - ☒ (B) The depletion capacitance decreases with increase in the reverse bias
 - (C) The depletion capacitance increases with increase in the forward bias
 - (D) The depletion capacitance is much higher than the depletion capacitance when it is forward biased.
157. The diffusion potential across a P-N junction
- (A) Decreases with increasing doping concentration
 - (B) Increases with decreasing band gap
 - (C) Does not depend on doping concentration
 - ☒ (D) Increases with increase in doping concentrations

158. The primary reason for the widespread use of silicon in semiconductor device technology is
- ☒ (A) Abundance of silicon on the surface of the earth
 - (B) Large bandgap of silicon compared to germanium
 - (C) Favorable properties of silicon dioxide (SiO_2)
 - (D) Lower Melting point
159. Direct band gap semiconductors
- (A) Exhibit short carrier lifetime and they are used for fabricating BJTs
 - (B) Exhibit long carrier lifetime and they are used for fabricating BJTs
 - ☒ (C) Exhibit short carrier lifetime and they are used for fabricating LASERS
 - (D) Exhibit long carrier lifetime and they are used for fabricating LASERS
160. What technique is used in Miller's Theorem?
- ☒ (A) Two-port network
 - (B) Hybrid parameters
 - (C) Grounding
 - (D) Short circuiting
161. A project is a _____ endeavor undertaken to create _____ product /service /result.
- ☒ (A) Temporary, unique
 - (B) Critical, quality
 - (C) Permanent, useful
 - (D) Great, affordable
162. Which one is the first phase of any project?
- (A) Design the project
 - ☒ (B) Define the project
 - (C) Deliver the project
 - (D) Develop the process
163. Work breakdown structure (WBS) is also known as:
- (A) Chunking
 - (B) Unbundling
 - ☒ (C) Both (A) and (B)
 - (D) None of the above
164. Critical path method (CPM) is an algorithm for planning, managing & analyzing the _____ of a project:
- (A) Quality
 - (B) Risk
 - ☒ (C) Timing
 - (D) All of the above

165. Which one of the following is a systematic and qualitative method of forecasting by collecting opinions from a group of experts?
- (A) Judgmental forecasting method
 - ☒ (B) Delphi method
 - (C) Both (A) and (B)
 - (D) None of the above
166. The cost in which a potential profit is lost when one alternative is selected over another:
- ☒ (A) Opportunity cost
 - (B) Sunk cost
 - (C) Fixed cost
 - (D) Economic cost
167. According to Tuckman's model, which one of the following is a correct sequence of team formation?
- (A) Adjourning, performing, forming, norming, storming
 - (B) Norming, performing, forming, storming, adjourning pressure
 - (C) Norming, storming, performing, forming, adjourning
 - ☒ (D) Forming, storming, norming, performing, adjourning
168. Gantt charts show the relationships between:
- ☒ (A) Activity and time
 - (B) Resource and manpower
 - (C) Process and quality
 - (D) None of the above
169. The costs which are directly related in producing the products in any project are known as:
- ☒ (A) Direct costs
 - (B) Sunk costs
 - (C) Tangible costs
 - (D) None of the above
170. The type of project in which significant changes take place in process through rethinking and redesigning is known as:
- ☒ (A) Reengineering projects
 - (B) Research projects
 - (C) Manufacturing projects
 - (D) Both (A) and (B)

171. Which of the following is not the principle of total quality management strategy?

- (A) Meeting or exceeding the customer's quality expectations.
- (B) Continuous improvement.
- (C) Companywide participation and teamwork.
- ☒ (D) Cost cutting to improve short term profitability.

172. TQM is a part of

- ☒ (A) Strategic management
- (B) ISO 9000 certification
- (C) Inspection
- (D) None of the above

173. TQM and ISO both focus on

- ☒ (A) Customer
- (B) Employee
- (C) Supplier
- (D) All of the above

174. Match the following:

List-I

- a. Dr. Deming believes
- b. Ishikawa Development
- c. Types of the variation due to
- d. Crosby's objective of quality

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

☒ (C) a - 2, b - 3, c - 1, d - 4

List-II

- 1. Common cause
- 2. To prevent defect
- 3. Cause of effect diagram
- 4. Histogram

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

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

175. ISO : 9000 quality system contains

- 1. Legal provision 2. Measurement 3. Document record 4. Standardization

(A) 1, 2 and 3

(B) 1, 2 and 4

(C) 1, 3 and 4

☒ (D) 2, 3 and 4

176. The process that is intended to find potential failures and make changes or repairs is known as

- (A) Troubleshooting.
- ☒ (B) Preventive maintenance.
- (C) Failure maintenance.
- (D) Breakdown maintenance.

177. Infant mortality

- (A) Is a very rare phenomenon in the life of products.
- (B) Is generally found from the MTBF (mean time between failure) rate.
- ☒ (C) Is the failure rate early in the life of a product or process.
- (D) Is seldom due to improper use

178. Increasing the sample size has the following effect upon the sampling error?

- (A) It increases the sampling error
- ☒ (B) It reduces the sampling error
- (C) It has no effect on the sampling error
- (D) All of the above

179. The difference between the expected value of a statistic and the value of the parameter being estimated is called a:

- (A) Standard error
- ☒ (B) Bias
- (C) Sampling error
- (D) Non-sampling error

180. What is the percentage accuracy in the six sigma process?

- (A) 99.8%
- (B) 99.1%
- (C) 99.05%
- ☒ (D) 99.99966%

181. The simplicity to operate and easy to understand a product is concerned with its following aspect

- ☒ (A) Functional aspect
- (B) Aesthetic aspect
- (C) Operational aspect
- (D) Durability aspect

182. One of the disadvantages of standardization is

- (A) Greater customer satisfaction
- (B) Interchangeability
- ☒ (C) Early freezing of product design
- (D) Shorter product life cycle

183. The term “Voice of Customer” is associated with
- (A) Taguchi approach
 - ☒ (B) Quality function deployment
 - (C) Concurrent engineering
 - (D) Service blue printing
184. Production, design and manufacturing personal being brought together early in the design process is called
- (A) Reverse engineering
 - (B) Sequential engineering
 - ☒ (C) Concurrent engineering
 - (D) Forward engineering
185. Product design specification is done at the stage of
- ☒ (A) Problem definition
 - (B) Generating feasible solution
 - (C) Synthesis
 - (D) Product dispatching
186. Type of design in which a known solution is applied to satisfy a different need is called
- (A) Innovative design
 - ☒ (B) Adaptive design
 - (C) Industrial design
 - (D) Conceptual design
187. Environmental Impact Assessment (EIA) for some developmental project is mandatory under which one of the following legislations?
- (A) Indian Forest Act, 1927
 - (B) Air (Prevention and Control of Pollution) Act, 1981
 - (C) Wildlife (Protection) Act, 1972
 - ☒ (D) Environment (Protection) Act, 1986

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188. The project of which of the following are being assessed for environmental impact?
(A) Sugar industry (B) Administration
(C) Public Investment (D) All of the above
189. The validity period of environmental clearance after Environmental Impact Assessment is least for
(A) Mining projects (B) River valley projects
(C) Area development projects (D) Harbour projects
190. Risk Assessment is different from Environmental Impact Assessment in terms of
(A) Hazard identification
(B) Disaster Management
(C) Probability expression
(D) Consideration of human environment
191. Under which one of the following categories, does the programming language 'C' fall into?
(A) Assembly language (B) Machine language
(C) High level language (D) None of the above
192. Which among the following memory has faster access time?
(A) RAM (B) ROM
(C) Cache memory (D) Register
193. Which type of software can be easily modified and distributed by editing the program's source code?
(A) Shareware (B) Freeware
(C) Open source software (D) Utility software
194. Which of the following is not an application software?
(A) Page Maker (B) Windows NT
(C) Winword XP (D) MS Office
195. The port which connects flat panel LCD monitors to the computer's high and videographic card is
(A) Game port (B) Modem port
(C) DVI port (D) PS/2 port

196. Consider the following factors in making ethical judgement:

1. The motive from which the action springs
2. The nature of the act itself, including the means adopted
3. The resulting consequences

Which of the above factors are correct?

- (A) 1 and 2 only (B) 1 and 3 only
(C) 1, 2 and 3 (D) 2 and 3 only

197. Virtue ethics focuses on the obligation of:

- (A) Transcending oneself (B) Transgressing oneself
(C) Treating oneself with respect (D) Surpassing oneself

198. Reckless actions leading to harm are considered:

- (A) Negligent (B) Unintentional
(C) Outside the domain of ethics (D) None of the above

199. Statement (I): What is legal may not always be ethical.

Statement (II): Ethical standards and the law, share the same theme, i.e., what is permissible and impermissible.

- (A) Both Statement (I) and Statement (II) are individually true and Statement (II) is the correct explanation of Statement (I)
(B) Both Statement (I) and Statement (II) are individually true, but Statement (II) is not the correct explanation of Statement (I)
(C) Statement (I) is true, but Statement (II) is false
(D) Statement (I) is false, but Statement (II) is true

200. Environmental Impact Assessment (EIA) is aimed to help

- (A) Estimate future needs of the society
(B) Smooth implementation of a project
(C) Cope with rapid increase in population
(D) Resource conservation

PROVISIONAL ANSWER KEY

Name of The Post	Executive Engineer (Mechanical), Class-1 (GWSSB)
Advertisement No	03/2021-22
Preliminary Test Held On	28-11-2021
Que. No.	001-300
Publish Date	29-11-2021
Last Date to Send Suggestion (S)	06-12 -2021

Instructions / સૂચન (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.

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001. The magnitude of shear stress induced in a solid shaft due to applied torque varies
(A) From maximum at the centre to zero at the circumference.
☒ (B) From zero at the centre to maximum at the circumference.
(C) From maximum at the centre to minimum at the circumference and not zero.
(D) From minimum at the centre and not zero to maximum at the circumference.
002. A hollow shaft of the same cross-sectional area as that of a solid shaft can
(A) resist less torque ☒ (B) resist more torque
(C) resist equal torque (D) none of the above
003. Point of contraflexure is where
☒ (A) bending moment is zero (B) shear force is maximum
(C) shear force is zero (D) bending moment is zero
004. The equivalent length of a column fixed at both the ends is
(A) 0.7 L ☒ (B) 0.5 L
(C) L (D) 2 L
005. Relation amongst Young's modulus (E), Poisson's ratio (μ) and Bulk modulus (K) is given by
☒ (A) $E = 3K(1 - 2\mu)$ (B) $E = 3K / (1 - 2\mu)$
(C) $E = 2K(1 + \mu)$ (D) none of these
006. Maximum deflection for a cantilever beam of span L, loaded at free end by force P is given by
(A) $PL^2/3EI$ (B) $PL^2/6EI$
(C) $PL^3/8EI$ ☒ (D) $PL^3/3EI$
007. Which of the following materials is highly elastic?
(A) Rubber (B) Brass ☒ (C) Steel (D) Glass
008. A metal pipe of 1 m diameter contains a fluid having a pressure of 1 N/mm². If the permissible tensile stress in the metal is 20 N/mm², then the thickness of metal required for making the pipe would be
(A) 5 mm (B) 10 mm
(C) 20 mm ☒ (D) 25 mm

009. Match List-I with List-II and select the answer from the codes given below:

List-I (Property)	List-II (Testing Machine)
(a) Tensile strength	1. Rotating bending machine
(b) Impact strength	2. Three-point loading machine
(c) Bending strength	3. Universal testing machine
(d) Fatigue strength	4. Izod testing machine

Codes:

	(a)	(b)	(c)	(d)
(A)	4	3	2	1
(B)	3	2	1	4
(C)	2	1	4	3
(D)	3	4	2	1

010. Match List-I with List-II and select the answer from the codes given below:

List-I (Condition of beam)	List-II (Bending Moment Diagram)
(a) Subject to bending moment at the end of cantilever	1. Triangle
(b) Cantilever carrying UDL over the whole length	2. Cubic curve
(c) Cantilever carrying UVL over the whole length	3. Parabola
(d) Simply supported beam having load at the centre	4. Rectangle

Codes:

	(a)	(b)	(c)	(d)
(A)	4	1	2	3
(B)	4	3	2	1
(C)	3	4	2	1
(D)	3	4	1	2

011. The diameter of shaft A is twice the diameter of shaft B and both are made of the same material. Assuming both the shafts rotate at the same speed, the maximum power transmitted by shaft B is:

- | | |
|----------------------------------|----------------------------------|
| (A) The same as that of shaft A | (B) Half of shaft A |
| (C) $1/8^{\text{th}}$ of shaft A | (D) $1/4^{\text{th}}$ of shaft A |

012. For a cantilever of length l , flexural rigidity EI and loaded at its free end by a concentrated load W , match List-I with List-II and select the answer from the codes given below:

List-I	List-II
(a) Maximum bending moment	1. Wl
(b) Strain energy	2. $\frac{Wl^2}{2EI}$
(c) Maximum slope	3. $\frac{Wl^3}{3EI}$
(d) Maximum deflection	4. $\frac{W^2 l^3}{6EI}$

Codes:

	(a)	(b)	(c)	(d)
(A)	1	4	3	2
(B)	1	4	2	3
(C)	4	2	1	3
(D)	4	3	1	2

013. Polar moment of inertia of a hollow circular shaft is equal to

- (A) $\pi (D^3 - d^3) / 32$ **(B)** $\pi (D^4 - d^4) / 32$
 (C) $\pi (D^3 - d^3) / 64$ (D) $\pi (D^4 - d^4) / 64$

014. Torsional rigidity of the shaft is equal to

- (A)** product of modulus of rigidity and polar moment of inertia
 (B) sum of modulus of rigidity and polar moment of inertia
 (C) difference of modulus of rigidity and polar moment of inertia
 (D) ratio of modulus of rigidity and polar moment of inertia

015. A steel rod of 1 cm^2 cross-sectional area is 100 cm long and has a Young's modulus of elasticity $20 \times 10^6 \text{ N/cm}^2$. It is subjected to an axial pull of 20 kN . The elongation of the rod will be

- (A) 0.05 cm **(B)** 0.1 cm
 (C) 0.15 cm (D) 0.20 cm

016. The principal stresses σ_1 , σ_2 and σ_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

017. A measure of Rockwell hardness is the
(A) depth of penetration of indenter (B) surface area of indentation
(C) projected area of indentation (D) height of rebound
018. Which one of the following statements is correct?
(A) Euler's formula holds good only for short columns
(B) A short column is one which has the ratio of its length to least radius of gyration greater than 100
(C) A column with both ends fixed has minimum equivalent of effective length
(D) The equivalent length of column with one end fixed and other end hinged is half of its actual length
019. A straight bimetallic strip of copper and steel is heated. It is free at ends. The strip will
(A) expand and remain straight (B) will not expand but will bend
(C) will expand and bend also (D) twist only
020. Which one of the following is preferable cross-section of a beam for bending loads?
(A) Circular (B) Annular
(C) Rectangular (D) I-section
021. According to the principle of transmissibility of forces, the effect of force on a body is
(A) same at every point in its line of action
(B) different at different points in its line of action
(C) minimum when it acts at the centre of gravity of the body
(D) maximum when it acts at the centre of gravity of the body
022. A system of three forces acts on a body and keeps it in equilibrium. The forces need to be
(A) coplanar only (B) concurrent only
(C) coplanar as well as concurrent (D) none of the above
023. The free body diagram of a body shows the body
(A) with its surroundings and external forces acting on it
(B) isolated from all external forces
(C) isolated from all surroundings
(D) isolated from its surroundings and all external effects acting on it

024. Consider the following statements:

The effect of couple in a body remains unchanged if the couple is

1. Rotated through an angle
2. Shifted to any other position in the plane
3. Replaced by another pair of forces whose rotational effect is same

Which of these statements are true?

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

025. A framed structure is said to be perfect if the following correlation exists between the number of joints j and the number of members m

- (A) $m = 2j - 3$ (B) $m = 3j - 3$
(C) $m = 2j - 1$ (D) $m = 5j - 4$

026. The centre of gravity of plane lamina will not be at its geometrical centre if it is a

- (A) circle
(B) square
(C) rectangle
(D) right angled triangle

027. A passenger train takes 2 hours less for a journey of 300 km if its speed is increased by 5 km/hr over its usual speed. What is then the usual speed?

- (A) 15 km/hr (B) 29 km/hr
(C) 25 km/hr (D) 35 km/hr

028. The time variation of the position of a particle in rectilinear motion is given by $x = 2t^3 + t^2 + 2t$ if, v is the velocity and a is the acceleration of particle in consistent units, the motion started with

- (A) $v = 0 ; a = 0$ (B) $v = 0 ; a = 2$
(C) $v = 2 ; a = 0$ (D) $v = 2 ; a = 2$

029. Two stones are projected from the same point with the same speed but at 60° and 30° respectively. If their ranges are R_1 and R_2 , then

- (A) $R_1 = 2 R_2$ (B) $R_1 = R_2$
(C) $R_1 = 0.5 R_2$ (D) $R_1 = 0.25 R_2$

030. Which of the following remains constant during flight of a projectile?
- (A) vertical component of velocity
 - ☒ (B) horizontal component of velocity
 - (C) angle of projection
 - (D) sum of its kinetic and potential energy
031. For perfectly elastic bodies, the coefficient of restitution is
- ☒ (A) 1
 - (B) 0.5 to 1
 - (C) 0 to 0.5
 - (D) Zero
032. A sphere P impinges directly onto another identical sphere Q at rest. If the coefficient of restitution is 0.5, the ratio of velocities V_q / V_p after the impact would be
- (A) 1 : 1
 - (B) 2 : 1
 - ☒ (C) 3 : 1
 - (D) 2 : 3
033. A bullet of mass 0.04 kg moving with a speed of 90 m/s enters a heavy wooden block and is stopped after a distance of 60 cm. The average resistive force exerted by the block on the bullet is
- (A) 180 N
 - (B) 220 N
 - ☒ (C) 270 N
 - (D) 320 N
034. When a bullet is fired from a gun, it is recoiled in the backward direction due to
- (A) impulse
 - (B) inertia
 - ☒ (C) conservation of momentum
 - (D) conservation of energy
035. Which of the following statements is wrong?
- ☒ (A) A stone falling freely is an example of motion under variable acceleration
 - (B) A bus going down the valley may have variable acceleration
 - (C) A lift going down cannot have constant acceleration
 - (D) The ball hit by the bat will not move with constant acceleration
036. A car moves at 30 km/hr for 12 min. then 40 km/hr for 20 min. and finally at 50 km/hr for 8 min. The average speed over this interval is
- (A) 45 km/hr
 - (B) 35 km/hr
 - ☒ (C) 39 km/hr
 - (D) 48 km/hr

037. Strain in a given material is the ratio of
- (A) applied load to the area of cross-section opposing the load
 - ☒ (B) change in dimension to the original dimension
 - (C) applied load to the original dimension
 - (D) change in dimension to the area of cross-section opposing the load
038. Brinell hardness test uses an indenter that is a
- (A) sphero-conical diamond
 - ☒ (B) sphere made of steel or tungsten carbide
 - (C) square-base pyramid diamond
 - (D) rectangular-base pyramid diamond
039. Pig iron is
- (A) pure iron with no carbon
 - (B) iron with 0.40 % carbon
 - ☒ (C) iron with 4 % carbon
 - (D) iron with 2.40 % carbon
040. In a face-centered cubic (FCC) cell, atoms are present
- ☒ (A) at all eight corners of the cube and at the centre of each face
 - (B) at all eight corners of the cube and at the body centre
 - (C) at all eight corners of the cube, at the centre of each face and at the body centre
 - (D) none of the above
041. Fine grain size during the solidification of a metal is achieved by
- (A) lower nucleation rate
 - ☒ (B) higher nucleation rate with lower growth rate
 - (C) higher nucleation rate with higher growth rate
 - (D) lower growth rate
042. Maximum carbon contained in steel is up to
- | | |
|--|------------|
| (A) 0.2 % | (B) 6.67 % |
| <input checked="" type="radio"/> (C) 2 % | (D) 1.2 % |

043. Ferrite is the

- (A) BCC form of iron
- (B) FCC form of iron
- ☒ (C) Pure iron with very low carbon
- (D) Inter metallic compound iron carbide

044. Chromium as an alloying element in alloy steels is used principally to

- (A) improve hardenability
- (B) improve mechanical properties at low or elevated temperatures
- ☒ (C) improve the corrosion and oxidation resistance
- (D) increase the machinability

045. Aluminum alloys are generally used for their

- (A) low thermal conductivity
- (B) low electrical conductivity
- ☒ (C) excellent corrosion resistance
- (D) high mass density

046. Normalising process is used in steels to achieve

- (A) improve ductility by transforming austenite to martensite
- ☒ (B) improve mechanical properties by transforming austenite to fine grain pearlite
- (C) increase hardness by transforming austenite to martensite
- (D) decrease hardness by transforming martensite to pearlite

047. Nitriding process is used to increase surface hardness for

- (A) low-carbon steels
- ☒ (B) alloy steels
- (C) medium-carbon steels
- (D) high-carbon steels

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048. Match list-1 with list-2 and select the correct answer using the codes given below the lists:

List-1	List-2
(Alloys)	(Applications)
(a) Muntz metal	1. Pistons
(b) Duralumin	2. Condenser tubes
(c) Gun metal	3. Aircraft
(d) Y-alloy	4. Bearings

Codes:

	(a)	(b)	(c)	(d)
(A)	2	3	4	1
(B)	1	3	4	2
(C)	1	3	2	4
(D)	2	4	3	1

049. Toughness for mild steel under uniaxial tensile loading is given by the area under the stress-strain curve up to

(A) proportional limit

(B) yield point

(C) ultimate stress

(D) fracture

050. A test specimen is stressed slightly beyond the yield point and then unloaded. Its yield strength will

(A) decrease

(B) increase

(C) remain same

(D) become equal to ultimate tensile strength

051. Select the correct statement.

(A) fatigue crack initiates at the surface

(B) fatigue failure is sudden and total

(C) fatigue failure is characterized by two distinct regions

(D) all of the above

052. Goodman line relates to

(A) endurance strength and yield strength

(B) endurance strength and ultimate strength

(C) endurance strength and failure strength

(D) none of the above

053. The stress intensity factor is a function of
 (A) Geometry
 (B) Geometry, size and shape
☒ (C) Geometry, size, shape of the crack and type of loading
 (D) None of the above
054. According to Griffith criterion, the fracture strength is obtained from
 (A) $\sqrt{\frac{G_c E}{\pi a}}$
 (B) $\frac{G_c E}{\pi a (1 - \nu)}$
☒ (C) Both (A) and (B)
 (D) None of the above
055. The dimension of stress intensity factor is
 (A) MPa
☒ (B) MPa $\sqrt{\text{m}}$
 (C) MPa m
 (D) MPa m^{-1}
056. Pouring basin is used in sand castings to
 (A) reduce the momentum of the molten metal
 (B) remove the slag and dirt present in the molten metal
 (C) reduce the mould erosion
☒ (D) all of the above
057. The following type of gate is used for trapping the slag in a sand mould:
 (A) Bottom gate
☒ (B) Whirl gate
 (C) Parting gate
 (D) Step gate
058. Blowholes in sand casting are caused by
 (A) poor casting design
 (B) lower strength of the solidified metal
☒ (C) higher moisture in the moulding sand
 (D) faulty moulding flask
059. Rat tails and buckles in sand casting are caused by
 (A) lower refractoriness of the moulding sand
 (B) lower strength of the solidified metal
☒ (C) lower strength of the moulding sand
 (D) lower hardness of the moulding sand

060. Drop forging is used to make parts in
- (A) open-impression dies that involves only upsetting operation
 - (B) close-impression dies that involves only upsetting operation
 - ☒ (C) close-impression dies that involves only drawing out operation
 - (D) open-impression dies that involves only drawing out operation
061. Spring back during the sheet metal operation is caused because of the following:
- (A) release of the stored energy during elastic and plastic deformation
 - (B) release of the stored energy during plastic deformation
 - ☒ (C) release of the stored energy during elastic deformation
 - (D) excess energy that was utilized during the forming process
062. Sheet metal drawing operation is used to make
- (A) wire
 - (B) tube
 - ☒ (C) cup shaped parts
 - (D) rods
063. Bending produces the following types of forces in the parts
- (A) tensile
 - (B) compressive
 - ☒ (C) tensile and compressive
 - (D) shear
064. Straight polarity in arc welding is obtained with
- (A) alternating current electrode with electrode being positive
 - (B) direct current electrode with electrode being positive
 - ☒ (C) direct current electrode with electrode being negative
 - (D) alternating current electrode with electrode being negative
065. Advantage of coated electrode for shielded metal arc welding process
- (A) gives off inert gases and protects molten weld pool
 - (B) provides arc stabilizing compounds
 - (C) provides flux to remove oxide from the weld joints
 - ☒ (D) all of the above

066. Powder metallurgy process involves the following operations in sequence:

- (A) powder mixing, sintering, compacting and finishing
- (B) powder mixing, sintering and finishing
- ☒ (C) powder mixing, compacting, sintering and finishing
- (D) powder mixing, compacting and sintering

067. Green density of the powder metallurgy part will be increased by

- (A) increasing the sintering temperature
- (B) decreasing the sintering temperature
- ☒ (C) increasing the compacting pressure
- (D) decreasing the compacting pressure

068. To improve the self-lubricating capacity of a powder metallurgy part, the following finishing operation is used:

- (A) Repressing
- (B) Sizing
- (C) Infiltration
- ☒ (D) Impregnation

069. Match list-1 with list-2 and select the correct answer using the codes given below the lists:

List-1	List-2
(Non-traditional methods)	(Related to)
(a) Chemical machining	1. Dielectric fluid
(b) Electro-discharge machining	2. Faraday's law of electrolysis
(c) Electro-chemical machining	3. Maskant
(d) Electron-beam machining	4. Vacuum chamber

Codes:

	(a)	(b)	(c)	(d)
(A)	1	3	2	4
<input checked="" type="radio"/> (B)	3	1	2	4
(C)	2	4	1	3
(D)	2	3	1	4

070. Match List-1 with List-2 and select the correct answer using the codes given below the lists:

List-1	List-2
(Machining processes)	(Description)
(a) Electro-discharge machining	1. Drilling micro-holes in very hard materials
(b) Electro-chemical machining	2. Drilling holes in glass
(c) Ultrasonic machining	3. Die sinking
(d) Laser-beam machining	4. Machining contours

Codes:

	(a)	(b)	(c)	(d)
(A)	4	2	3	1
(B)	3	4	1	2
(C)	4	3	2	1
(D)	3	4	2	1

071. Which of the following are the requirements of an ideal gating system?

1. The molten metal should enter the mould cavity with as high velocity as possible
2. It should facilitate complete filling of the mould cavity
3. It should be able to prevent the absorption of air or gases from the surroundings of the molten metal while flowing through it

Select the correct answer using the codes given below:

- | | |
|--------------------|-------------|
| (A) 1, 2 and 3 | (B) 1 and 2 |
| (C) 2 and 3 | (D) 1 and 3 |

072. The purpose of preheating low alloy steel pipes, before they are electric arc welded is to:

- | | |
|---------------------------------|----------------------------------|
| (A) Refine grain structure | (B) Relieve internal stresses |
| (C) Retard rapid cooling | (D) Regulate excessive expansion |

073. During heat treatment of steels, the hardness of various structures in the increasing order is

- (A) martensite, fine pearlite, coarse pearlite, spheroidite
- (B) fine pearlite, coarse pearlite, spheroidite, martensite
- (C) martensite, coarse pearlite, fine pearlite, spheroidite
- (D) spheroidite, coarse pearlite, fine pearlite, martensite**

074. The temperature at which the first new grain appears is known as

- (A) Melting temperature
- (B) Critical temperature
- (C) Boiling temperature
- ☒ (D) Recrystallisation temperature

075. Holes in nylon buttons are made by

- (A) Electro-discharge machining
- (B) Chemical machining
- (C) Ultrasonic machining
- ☒ (D) Laser-beam machining

076. Which of the following screw is used for lead screw of lathe machine?

- (A) Square thread
- ☒ (B) Trapezoidal thread
- (C) Buttress thread
- (D) V thread

077. For self-locking screw

Where, α = helix angle, ϕ = friction angle and μ = coefficient of friction

- | | |
|--|---|
| <input checked="" type="radio"/> (A) $\phi > \alpha$ | (B) $\phi < \alpha$ |
| (C) $\mu < \tan \alpha$ | (D) $\mu = \operatorname{cosec} \alpha$ |

078. The transverse fillet welds are designed for

- | | |
|---|--------------------------|
| <input checked="" type="radio"/> (A) Tensile strength | (B) Shear strength |
| (C) Bending strength | (D) Compressive strength |

079. The transmission shaft subjected to bending and torsional moments should be designed on the basis of

- (A) maximum principal stress theory
- ☒ (B) maximum shear stress theory
- (C) permissible bearing pressure
- (D) none of the above

080. While designing a shaft, key and hub care is taken so that
- (A) shaft is the weakest component
 - (B) key is the strongest component
 - ☒ (C) key is the weakest component
 - (D) hub is the weakest component
081. In an application, the bearing is subjected to radial as well as axial loads. Which type of rolling contact bearings you would suggest?
- (A) cylindrical roller bearing
 - (B) needle roller bearing
 - (C) thrust ball bearing
 - ☒ (D) taper roller bearing
082. A satisfactory hydrodynamic film in a journal bearing is formed when
- (A) Journal speed is low, unit pressure on the bearing is high and viscosity of the lubricant used is low.
 - (B) Journal speed is low, unit pressure on the bearing is low and viscosity of the lubricant used is low.
 - ☒ (C) Journal speed is high, unit pressure on the bearing is high and viscosity of the lubricant used is high.
 - (D) Appropriate combination of journal speed, unit pressure on bearing and lubricant viscosity exist resulting in low coefficient of friction.
083. Beam strength of gear tooth is
- ☒ (A) maximum tangential force that the tooth can transmit without bending failure
 - (B) maximum bending stress that the tooth can transmit without failure
 - (C) maximum tangential force that the tooth can transmit without pitting failure
 - (D) maximum contact stress that the tooth can transmit without failure
084. If z is the actual number of teeth on a helical gear and ψ is the helix angle for the teeth, then the formative number of teeth is given by,
- (A) $z \cos^3 \psi$
 - ☒ (B) $z / \cos^3 \psi$
 - (C) $z \cos^2 \psi$
 - (D) $z / \cos^2 \psi$

085. Which of the following statements related to the belt drives is correct?

- (A) The rotational speed of the pulleys is directly proportional to their diameter.
- ☒ (B) The length of the cross belt increases as the sum of the diameters of the pulleys increases.
- (C) The crowning of the pulley is done to make the drive sturdy.
- (D) The slip increases the velocity ratio.

086. The chain drive

- (A) requires initial tension in the chain
- ☒ (B) is unsuitable for precise motion requirement
- (C) is suitable for non-parallel shafts
- (D) has low efficiency

087. Two close coiled helical springs with stiffness 3 and 4 N/mm are joined in series. The stiffness in N/mm of the equivalent spring is

- (A) 3/7 N/mm
- (B) 4/7 N/mm
- (C) 7 N/mm
- ☒ (D) 12/7 N/mm

088. Match List-1 with List-2 and select the correct answer using the codes given below the lists:

List-1

(Clutch)

- (a) Single plate friction clutch
- (b) Multi-plate friction clutch
- (c) Centrifugal clutch
- (d) Jaw clutch

List-2

(Application)

- 1. Scooters
- 2. Rolling mills
- 3. Trucks
- 4. Mopeds

Codes:

	(a)	(b)	(c)	(d)
(A)	1	3	4	2
(B)	1	3	2	4
(C)	3	1	2	4
<input checked="" type="radio"/> (D)	3	1	4	2

089. A positive action clutch is

- ☒ (A) Jaw clutch
- (B) Single disk friction clutch
- (C) Multi-disk friction clutch
- (D) Cone clutch

090. When the coefficient of friction is constant, the rate of heat generation is
 (A) directly proportional to product of pressure and velocity
 (B) inversely proportional to product of pressure and velocity
 (C) directly proportional to ratio of pressure to velocity
 (D) directly proportional to ratio of velocity to pressure
091. $\lim_{n \rightarrow \infty} x^n e^{-x}$ is equal to
 (A) ∞ (B) 1
 (C) $n!$ (D) 0
092. Which of the following is false?
 (A) $f(a)$ is an extreme value of $f(x)$ if $f'(a) = 0$
 (B) If $f(a)$ is an extreme value of $f(x)$, then $f'(a) = 0$
 (C) If $f'(a) = 0$ then $f(a)$ is an extreme value of $f(x)$
 (D) None of these
093. The value of the integral $\int_{-2}^2 \frac{dx}{x^2}$ is
 (A) 0 (B) 0.25
 (C) 1 (D) ∞
094. Limit of the following series as x approaches $\frac{\pi}{2}$ is $f(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$
 (A) $\frac{2\pi}{3}$ (B) $\frac{\pi}{2}$
 (C) $\frac{\pi}{3}$ (D) 1
095. $\int_0^{\frac{\pi}{2}} \int_0^{\frac{\pi}{2}} \sin(x+y) dx dy$ is
 (A) 0 (B) π
 (C) $\frac{\pi}{2}$ (D) 2
096. The value of the integral $\int_C (x^2 + xy) dx + (x^2 + y^2) dy$ by Green theorem, where C is the square formed by the lines $y = 1, y = -1, x = 1, x = -1$ is
 (A) 1 (B) 0
 (C) 2 (D) $5/12$
097. The volume of the solid bounded by the ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$, is
 (A) $\frac{1}{3} \pi abc$ (B) $\frac{1}{6} \pi abc$ (C) $\frac{2}{3} \pi abc$ (D) $\frac{4}{3} \pi abc$

098. For the scalar field $u = \frac{x^2}{2} + \frac{y^2}{3}$, magnitude of the gradient at the point (1, 3) is

(A) $\sqrt{\left(\frac{13}{19}\right)}$

(B) $\sqrt{\left(\frac{9}{2}\right)}$

(C) $\sqrt{5}$

(D) $\frac{9}{2}$

099. Stokes theorem connects:

(A) a line integral and a surface integral

(B) a surface integral and a volume integral

(C) a line integral and a volume integral

(D) gradient of a function and its surface integral

100. The volume of an object expressed in spherical coordinates is given by

$V = \int_0^{2\pi} \int_0^{\pi/3} \int_0^1 r^2 \sin\theta dr d\theta d\phi$. The value of the integral is:

(A) $\frac{\pi}{3}$

(B) $\frac{\pi}{6}$

(C) $\frac{2\pi}{2}$

(D) $\frac{\pi}{4}$

101. By change the order of integration in $\int_0^8 \int_{x/4}^2 f(x, y) dy dx$ changes to $\int_t^s \int_p^q f(x, y) dx dy$; then q equal to

(A) $4y$

(B) $16y^2$

(C) x

(D) 8

102. The area between the parabola $x^2 = 8y$ and the straight line $y = 8$ is

(A) 85.3

(B) 54.7

(C) 216

(D) 226

103. The family $y = Ax + A^3$ of curves is represented by differential equation of degree

(A) 1

(B) 2

(C) 3

(D) 4

104. The curve for which the slope of the tangent at any point is equal to the ratio of the abscissa to the ordinate of the point is

(A) ellipse

(B) parabola

(C) circle

(D) rectangular hyperbola

105. The integrating factor of differential equation $\frac{dy}{dx} + y \tan x - \sec x = 0$ is

(A) $\cos x$

(B) $\sec x$

(C) $e^{\cos x}$

(D) $e^{\sec x}$

106. The solution of differential equation $x dy - y dx = 0$ represents
 (A) a rectangular hyperbola
 (B) parabola whose vertex is at origin
 (C) straight line passing through origin
 (D) a circle whose centre is at origin
107. The general solution of the differential equation $x p^2 - y p + a = 0$ is
 (A) $xc + yc^2 + a = 0$ (B) $xc - yc^2 + a = 0$
 (C) $xc^2 - yc + a = 0$ (D) $xc^2 - yc + a = 0$
108. The general solution of the differential equation $(D + 3)(D - 1)^3 y = e^x$
 (A) $(C_1 + C_2 x + C_3 x^2)e^x + C_4 e^{-3x} + \frac{1}{24} x^3 e^x$
 (B) $(C_1 e^x + C_2 e^{-2x}) + \frac{1}{24} x^3 e^x$
 (C) $(C_1 + C_2 x + C_3 x^2)e^x + C_4 e^{-2x} + \frac{1}{18} x^3 e^x$
 (D) $(C_1 e^x + C_2 e^{-2x}) + \frac{1}{18} x^3 e^x$
109. Solution of differential equation $(y - px)(p - 1) = p$, where $p = \frac{dy}{dx}$ (where c is any arbitrary constant)
 (A) $y = cx + \frac{c}{c-1}$ (B) $y = x^2 + c$
 (C) $y = cx + 2$ (D) $y^2 = cx + 3$
110. Complementary function of the differential equation $(x + a)^2 \frac{d^2 y}{dx^2} - 4(x + a) \frac{dy}{dx} + 6y = x$
 (A) $(C_1 x^2 + C_2 x^3)$ (B) $(C_1(x + a)^2 + C_2(x + a)^2)$
 (C) $(C_1 e^{3x} + C_2 e^{2x})$ (D) None of these
111. The value of $\frac{\partial M}{\partial y}$ and $\frac{\partial N}{\partial x}$ from $(x^2 - 2xy + 3y^2)dx + (4y^3 + 6xy - x^3)dy = 0$ is
 (A) $-2x + 6y$ and $6y - 2x$ (B) $8y + 7$ and $9x + 8$
 (C) $-2x + 7y$ and $9x + 8$ (D) None of these
112. Solution of $y(a - z)dx + x(a - z)dy + xydz = 0$ is
 (A) $xy = c(a - z)$ (B) $xy = ac$
 (C) $x = c(a - z)$ (D) $y = c(z - a)$

113. A function which is analytic everywhere in finite complex plane is known as

- (A) Entire function (B) Holomorphic function
(C) Meromorphic function (D) None of the above

114. If $w = u(x,y) + iv(x,y)$ is an analytic function of $z = x + iy$, then $\frac{dw}{dz}$ equal to

- (A) $\frac{\partial w}{\partial x}$ (B) $-i \frac{\partial w}{\partial x}$
(C) $i \frac{\partial w}{\partial y}$ (D) $i \frac{\partial w}{\partial x}$

115. At $z = 0$, the function $f(z) = z^2 \bar{z}$

- (A) is analytic
(B) differentiable
(C) doesn't satisfy CR equation
(D) satisfy CR equations but not differentiable

116. There exists no analytic functions f such that

- (A) $\operatorname{Re} f(z) = y - 2x$ (B) $\operatorname{Re} f(z) = y^2 - 2x$
(C) $\operatorname{Re} f(z) = y^2 - x^2$ (D) $\operatorname{Re} f(z) = y - x$

117. The mapping $w = z^2 - 2z - 3$ is

- (A) conformal within $|z| = 1$ (B) not conformal at $z = 1$
(C) not conformal at $z = -1$ and $z = 3$ (D) everywhere conformal

118. The residue of $f(z) = \frac{2z + 1}{z^2 - z - 2}$ at $z = -1$ is

- (A) $1/3$ (B) $3/5$
(C) $2/5$ (D) None of the above

119. The value of the integral $\oint_c \frac{\cos z}{(z-\pi)} dz$, where c is $|z - 1| = 3$ is

- (A) $-4\pi i$ (B) $-2\pi i$
(C) -4π (D) πi

120. Expansion of $1/(z^2 - 3z + 2)$ in the region $1 < |z| < 2$ is

- (A) $-\frac{1}{2} \left(1 - \frac{z}{2}\right)^{-1} - \frac{1}{z} \left(1 - \frac{1}{z}\right)^{-1}$ (B) $-\frac{1}{2} \left(1 - \frac{z}{2}\right)^{-1} + (1 - z)^{-1}$
(C) Both (A) and (B) (D) None of the above

M

121. If 5 m^3 of a certain fluid weigh 40 kN , then specific weight and mass density of this fluid are _____ and _____ respectively:
- (A) 8000 N/m^3 , 815.49 kg/m^3 (B) 800 kN/m^3 , 815.49 kg/m^3
(C) 8000 N/m^3 , 715.49 kg/m^3 (D) 7000 N/m^3 , 815.49 kg/m^3
122. The true statement about unit of dynamic viscosity is:
- (A) $1 \text{ N-Second/m}^2 = 1 \text{ poise}$ (B) $1 \text{ N-Second/m}^2 = 10 \text{ poise}$
(C) $1 \text{ kN-Second/m}^2 = 1 \text{ poise}$ (D) $1 \text{ N-Second/m}^2 = 100 \text{ poise}$
123. Gauge pressure is the pressure:
- (A) Measured above and below atmospheric pressure
(B) Measured above absolute zero
(C) Measured above vacuum
(D) Measured below absolute zero
124. Which of the following is a common type of simple manometer?
- (A) Piezometer (B) U-tube manometer
(C) Single column manometer (D) All of the above
125. Piezometer measures:
- (A) Gauge pressure only (B) Absolute pressure
(C) Atmospheric pressure (D) All of the above
126. When a static mass of fluid comes in contact with a surface, the point of application of total pressure on the surface is:
- (A) Centre of pressure (B) Centre of mass
(C) Meta Centre (D) Centre of buoyancy
127. If for a floating body, the meta centre coincides with the centre of gravity of the body, the body will remain in:
- (A) Neutral equilibrium
(B) Stable equilibrium
(C) Unstable equilibrium
(D) Cannot predict anything

128. If the streamlines are straight and parallel to each other then,
(A) There is no acceleration
(B) There is normal convective acceleration
(C) There is tangential convective acceleration
(D) Both (B) and (C)
129. In Euler's equation of motion, only two forces, namely the _____ force and _____ force are assumed to be acting on the mass of fluid in motion:
(A) Pressure and turbulent (B) Pressure and viscous
(C) Pressure and gravity (D) Pressure and compressibility
130. Bernoulli's equation may be derived on the principle of :
(A) Conservation of volume (B) Conservation of mass
(C) Conservation of momentum (D) Conservation of energy
131. The formation of vapour and air pockets in liquid results in phenomenon called:
(A) Erosion (B) Cavitation
(C) Turbulence (D) Whirling
132. Application based on Bernoulli's equation is:
(A) Venturi meter (B) Orifice meter
(C) Nozzle meter (D) All of the above
133. Darcy-Weisbach equation is commonly used for computing:
(A) Total energy in pipes (B) Loss of head due to friction in pipes
(C) Loss of streamline flow in pipes (D) None of the above
134. The velocity distribution in a laminar boundary layer is:
(A) Parabolic (B) Cubic
(C) Linear (D) Random
135. For complete similarity to exist between the model and its prototype, it should have:
(A) Geometric similarity (B) Kinematic similarity
(C) Dynamic similarity (D) All of the above

M

136. Froude number is ratio of:
(A) Inertial to Viscous force
(B) Inertial to Gravity force
(C) Inertial to Pressure force
(D) Inertial to surface tension force
137. The similitude based on _____ finds extensive application in aerodynamic testing:
(A) Froude model law
(B) Euler model law
(C) Weber model law
(D) Mach model law
138. In a turbine, the difference between the head race level and the tail race level when no water is flowing is:
(A) Gross head
(B) Net head
(C) Effective head
(D) None of the above
139. Pelton wheel is a kind of _____ turbine:
(A) Radial flow
(B) Tangential flow
(C) Axial flow
(D) Mixed flow
140. In a turbine, all the available energy of water is converted into kinetic energy is known as:
(A) Impulse turbine
(B) Reaction turbine
(C) Kaplan turbine
(D) Francis turbine
141. In the impeller of a _____ pump, the liquid flows in the outward radial direction:
(A) Propeller
(B) Centrifugal
(C) Mixed flow
(D) None of the above
142. Following is the positive displacement pump:
(A) Reciprocating pump
(B) Centrifugal pump
(C) Dynamic pressure pump
(D) Rotodynamic pumps
143. The _____ is a _____ on p-v diagram where all three phases exist in equilibrium:
(A) Critical state, line
(B) Triple point, line
(C) Triple point, point
(D) Vapor dome, line
144. Following is the intensive property of a thermodynamic system:
(A) Volume
(B) Density
(C) Temperature
(D) Both (B) and (C)

145. There can be no machine which would continuously supply mechanical work without some other form of energy disappearing:
- (A) PMM 1 (B) PMM 2
(C) PMM 3 (D) Law of availability
146. 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) Clausius statement (B) First law of thermodynamics
(C) Kelvin Planck statement (D) Conservation of enthalpy
147. A platinum resistance thermometer has a resistance of 2.8 ohm at 0°C and 3.8 ohm at 100°C . Calculate the temperature when the resistance indicated is 5.8 ohm.
- (A) 100°C (B) 200°C
(C) 300°C (D) 400°C
148. For a reversible cycle, the efficiency will depend solely upon:
- (A) Working temperatures (B) Working pressure
(C) Amount of working fluid (D) Nature of working fluid
149. It is impossible by any procedure, no matter how idealized, to reduce any system to the absolute zero of temperature in a finite number of operations. This is:
- (A) First law of thermodynamics (B) Second law of thermodynamics
(C) Third law of thermodynamics (D) Law of conservation of energy
150. The criterion of reversibility of a cycle is provided by:
- (A) Clausius inequality (B) Heat Engine
(C) Reversible isotherms (D) Reversible adiabatics
151. Any thermodynamic process is accompanied by entropy generation. This is based on:
- (A) First law of thermodynamics (B) Second law of thermodynamics
(C) Third law of thermodynamics (D) Law of irreversibility

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152. The maximum useful work that is obtainable in a process in which the system comes to equilibrium with surrounding is:
(A) Availability of a given system (B) Energy of a given system
(C) Mechanical work of a given system (D) Kinetic energy of a system
153. The general shapes of the vapor dome and of the constant temperature lines on _____ are _____ for all substances:
(A) P-V plane, not same (B) P-V plane, same
(C) T-V plane, not same (D) T-V plane, same
154. In the Rankine cycle, heat is added _____ at a constant _____:
(A) Reversibly, pressure (B) Irreversibly, pressure
(C) Irreversibly, entropy (D) Reversibly, entropy
155. The air standard cycle for the gas turbine power plant is:
(A) Brayton cycle (B) Rankine cycle
(C) Dual cycle (D) Otto cycle
156. For same compression ratio, the Brayton cycle efficiency is equal to:
(A) Diesel cycle efficiency (B) Otto cycle efficiency
(C) Dual cycle efficiency (D) Vapor power cycle efficiency.
157. Bell-Coleman cycle is the base of following refrigeration system:
(A) Air refrigeration system (B) Steam jet refrigeration system
(C) Vapor compression refrigeration system (D) Absorption refrigeration system
158. 1.5 kW per ton of refrigeration is required to maintain the temperature of -40°C in the refrigerator if the refrigeration cycle works on Carnot cycle is:
(A) 1.33 (B) 2.33
(C) 2.59 (D) 1.59
159. The COP of vapor compression refrigeration system is _____ than air refrigeration system:
(A) Greater (B) Lower
(C) Equal (D) Cannot be predicted

160. The net effect of undercooling in vapor compression refrigeration system is:
(A) To decrease COP (B) COP remains unaffected
(C) To increase COP (D) COP may increase or decrease
161. The temperature measured by the thermometer when its bulb is covered with wet cloth and is exposed to a current of moving air:
(A) Dry bulb temperature (B) Wet bulb temperature
(C) Dew bulb temperature (D) Dew point temperature
162. Mass of water vapor present per kg of dry air is known as:
(A) Specific humidity (B) Relative humidity
(C) Absolute humidity (D) Degree of saturation
163. The atmospheric conditions are 25°C DBT and specific humidity of 10gm/kg . Atmospheric pressure is 1 bar. The partial pressure of vapor is:
(A) 0.1120 (B) 0.0112
(C) 0.0158 (D) 0.1580
164. The enthalpy of moist air is given as:
(A) Enthalpy of dry air only (B) Enthalpy of water vapor only
(C) Sum of A and B (D) Cannot be obtained by summation
165. In psychometric chart, the following is taken along abscissa:
(A) Dry bulb temperature (B) Wet bulb temperature
(C) Specific humidity (D) Dew point temperature
166. During sensible heating:
(A) Moisture is removed
(B) Moisture is added
(C) Heating without addition or subtraction of moisture
(D) Heating with addition of moisture
167. Dead Centre when the piston is nearest to the crankshaft is known as:
(A) Bottom dead centre (B) Outer dead centre
(C) Both (A) and (B) (D) Top dead centre

168. The fuel having high self-ignition temperature is desirable in the following:
☒ (A) SI engine (B) CI engine
(C) Diesel cycle (D) Both (B) and (C)
169. The energy released per unit quantity of the fuel when the combustible is burned and the products of combustion are cooled back to the initial temperature of the combustible mixture:
☒ (A) Heating value of fuel (B) Higher heating value of fuel
(C) Indicated power (D) Specific energy of fuel
170. An air standard cycle which consists of two isothermal and two constant volume processes:
(A) Lenoir cycle ☒ (B) Stirling cycle
(C) Diesel cycle (D) Otto cycle
171. The _____ cycle always has a lower efficiency than the _____ of same compression ratio:
☒ (A) Diesel, Otto (B) Otto, Diesel
(C) Otto, Dual (D) Dual, Diesel
172. The theoretical cycle for gas turbine is:
(A) Atkinson cycle ☒ (B) Brayton cycle
(C) Ericsson cycle (D) Stirling cycle
173. Air standard efficiency of Otto cycle, having bore and stroke of an engine as 17 cm and 30 cm respectively is (take the clearance volume as 0.001025 m^3):
(A) 50.70 (B) 58.98
☒ (C) 55.70 (D) 59.92
174. In the abnormal combustion in SI engine, known as detonation:
☒ (A) The end charge auto-ignites before the flame front reaches it.
(B) The end charge auto-ignites after the flame front reaches it.
(C) The end charge does not ignite before the flame front reaches it.
(D) The end charge does not ignite after the flame front reaches it.
175. Which of the following is effect of detonation?
(A) Carbon deposits (B) Noise and roughness
(C) Increase in heat transfer ☒ (D) All of the above

176. In diesel engine, for smooth running and to maintain the control over the pressure changes:
- ☒ (A) The delay period should be as short as possible
 - (B) The delay period should be as long as possible
 - (C) The delay period has no effect
 - (D) None of the above
177. Which method is used to determine the engine friction?
- (A) Deceleration method
 - (B) Motoring method
 - (C) Morse test
 - ☒ (D) All of the above
178. The point at which a lubricating oil will start solidifying is known as:
- ☒ (A) Cloud point
 - (B) Pour point
 - (C) Flash point
 - (D) Viscosity index
179. The difference between the indicated power and break power is known as:
- ☒ (A) Friction power
 - (B) Mechanical power
 - (C) Combustion efficiency
 - (D) Mechanical efficiency
180. Willan's line method is applicable to the following engine to measure friction power:
- ☒ (A) CI engine
 - (B) SI engine
 - (C) Both SI and CI engines
 - (D) Multi cylinder engines
181. The unit of thermal conductivity is:
- ☒ (A) W/m-K
 - (B) W-K/m
 - (C) W-K/m-S
 - (D) W/m²-K
182. Newton's law of cooling is applicable to:
- ☒ (A) Convection
 - (B) Conduction
 - (C) Radiation
 - (D) None of the above
183. In radiation heat transfer, relation among absorptivity, reflectivity and transmissivity is:
- ☒ (A) Absorptivity + reflectivity + transmissivity = 1
 - (B) Absorptivity + reflectivity + transmissivity = 0
 - (C) Absorptivity + transmissivity = 1
 - (D) Absorptivity + reflectivity = 1

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184. A brightly polished surface will have a _____ absorptivity and _____ emissivity:
(A) Low, low (B) Low, high
(C) High, low (D) Cannot be generalized
185. The rate at which energy is radiated by a black body at temperature T is given by:
(A) Kirchhoff's law (B) Stefan-Boltzmann law
(C) Fourier's law (D) Joule's law
186. An evaporator and a condenser are used in the _____ and _____ pressure side respectively of a refrigeration system:
(A) Low, high (B) High, low
(C) High, high (D) Low, low
187. An evaporator in which liquid covers the entire heat transfer surface is known as:
(A) Flooded evaporator (B) Dry evaporator
(C) Frost evaporator (D) Natural convection evaporator
188. Automobile radiators prefer to use the following type of heat exchanger:
(A) Parallel flow heat exchanger (B) Cross flow heat exchanger
(C) Counter flow heat exchanger (D) Evaporative heat exchanger
189. In a parallel flow heat exchanger, hot fluid enters at temperature of 110°C . Cold fluid enters at 40°C and leaves at 60°C . LMTD for the same is:
(A) 53.60°C (B) 58.45°C
(C) 50.11°C (D) 59.09°C
190. Prandtl number is defined as:
(A) Ratio of kinematic viscosity to thermal diffusivity
(B) Ratio of dynamic viscosity to thermal diffusivity
(C) Ratio of kinematic viscosity to thermal conductivity
(D) Ratio of thermal diffusivity to kinematic viscosity
191. In power plant economics, the Use factor is the ratio of:
(A) Average load and peak load (B) Peak load and plant capacity
(C) Average load and plant capacity (D) Base load and peaking load

192. The load below which the demand never falls and is supplied 100% of the time is called:
(A) Constant load (B) Minimal load
(C) Intermediate load (D) Base load
193. The science that deals with the processes governing depletion and replenishment of water resources over and within the earth's surface is known as:
(A) Hydrology (B) Aceology
(C) Anemology (D) Bathymetry
194. _____ shows the variation of river flow (discharge) with time.
(A) Hyetographs (B) Hydrographs
(C) Mass curves (D) Power duration curves
195. Which of the following is a mixed flow turbine?
(A) Pelton (B) Propeller
(C) Kaplan (D) Francis
196. The range of specific speed of Kaplan turbine is:
(A) 50-100 (B) 100-300
(C) 300-1100 (D) 50-200
197. _____ is example of an indirect method of utilization of solar energy.
(A) Water power (B) Thermal
(C) Photovoltaic (D) None of the above
198. Solar thermal power generation is based on
(A) Sterling cycle (B) Rankine cycle
(C) Brayton cycle (D) Vapour power cycle
199. The efficiency of ocean thermal energy conversion (OTEC) plant is around:
(A) ~15% (B) ~10%
(C) ~2.5% (D) ~20%
200. At times during full or new moon, when the sun, moon, and earth are approximately in one line, the type of tides that occur are:
(A) Spring tides (B) Neap tides
(C) Single basin tide (D) Double basin tide

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201. In CANDU type of nuclear reactors, which is true?
(A) Natural uranium is used as fuel and water as moderator
☒ (B) Natural uranium is used as fuel and heavy water as moderator
(C) Enriched uranium is used as fuel and water as moderator
(D) Enriched uranium is used as fuel and heavy water as moderator
202. In a hole and shaft assembly designated by $50H_7d_8$, what is represented by 7 and 8?
☒ (A) Width of tolerance zone (B) Dimensions of shaft and hole
(C) Unilateral tolerances (D) None of the above
203. What type of fit appears when there is overlap of tolerance zone?
(A) Clearance fit (B) Interference fit
☒ (C) Transition fit (D) Zero Clearance
204. Which of the materials is not used in the manufacturing of gauge materials?
(A) High carbon steel (B) Mild steel
(C) Invar ☒ (D) Titanium
205. Which of the following materials are used for fabricating the sine bar?
(A) Invar steel (B) HSS
(C) Mild steel ☒ (D) Chromium steel
206. Which of the following is used for indirect measurement of an angle of a machined surface?
(A) Slip gauge (B) Angle blocks
☒ (C) Sine bar (D) Both (B) and (C)
207. Of the following, which is not a way for measuring straightness?
(A) Straight edge (B) Spirit level
(C) Autocollimator ☒ (D) Mikrokator
208. Waviness in machined surface is not produced by which of the following?
☒ (A) Improper selection of cutting fluid (B) Machine vibrations
(C) Chatter (D) Error in guide ways
209. Predominant surface pattern produced by feed marks is called
(A) Flaw (B) Primary texture
(C) Secondary texture ☒ (D) Lay

210. When data is collected randomly from an infinite universe, it follows,
(A) Bernoulli's distribution (B) Binomial distribution
(C) Normal distribution (D) Poisson distribution
211. _____ is an example of incompletely constrained motion.
(A) Motion of piston inside the cylinder
(B) Motion of square bar in a square hole
(C) Motion of circular bar in a circular hole
(D) None of the above
212. Pantograph is an inversion of which of the following chains?
(A) Slider crank chain (B) Four bar chain
(C) Double slider crank chain (D) Kinematic chain
213. This mechanism is used in shaping machines.
(A) Whitworth quick return motion mechanism
(B) Oldham's coupling
(C) Scotch Yoke
(D) Crank and slotted lever quick return mechanism
214. The number of possible inversions of double slider crank chain is
(A) Four (B) Three
(C) Two (D) None of the above
215. If degree of freedom is zero, the structure is known as
(A) Indeterminate structure (B) Unconstrained structure
(C) Structure (D) Gruebler's structure
216. When three links are connected at the same point, it is called:
(A) Quaternary joint (B) Ternary joint
(C) Tertiary joint (D) Unconstrained pair
217. The study of relative motion between the parts of a machine is called
(A) Kinetics (B) Kinematics
(C) Dynamics (D) Relativity

218. What does Aronhold-Kennedy theorem of three centres state?
- (A) If three bodies have relative motions their instantaneous centres lie on a straight line
 - (B) If three bodies have multidimensional motions their instantaneous centres lie on a straight line
 - (C) If three bodies have relative motions their instantaneous centres lie on a same plane
 - ☒ (D) If three bodies have plane motions their instantaneous centres lie on a straight line
219. In toothed gearing, the unit of module is
- (A) Inch
 - ☒ (B) mm
 - (C) Inch²
 - (D) Unitless
220. The gyroscopic effects due to rotating parts of a turbo jet engine of an aircraft on a curved course depend on
- (A) Flight velocity
 - (B) Flight altitude
 - (C) Radius of the curve
 - ☒ (D) Flight velocity and radius of the curve
221. In a p-n junction diode at equilibrium, which one of the following statements is NOT TRUE?
- (A) The hole and electron diffusion current components are in the same direction.
 - (B) The hole and electron drift current components are in the same direction.
 - (C) On an average, holes and electrons drift in opposite direction.
 - ☒ (D) On an average, electrons drift and diffuse in the same direction
222. The drift velocity of electrons in silicon
- (A) Is proportional to the electric field for all values of electric field
 - (B) Is independent of the electric field
 - (C) Increases at low values of electric field and decreases at high values of electric field exhibiting negative differential resistance
 - ☒ (D) Increases linearly with electric field and gradually saturates at higher values of electric field
223. In a P-type Si sample the hole concentration is $2.25 \times 10^{15}/\text{cm}^3$. The intrinsic carrier concentration is $1.5 \times 10^{10}/\text{cm}^3$ the electron concentration is
- (A) Zero
 - (B) $10^{10}/\text{cm}^3$
 - ☒ (C) $10^5/\text{cm}^3$
 - (D) $1.5 \times 10^{25}/\text{cm}^3$

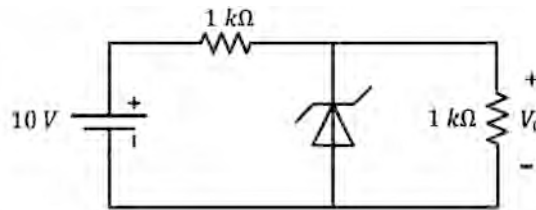
224. Silicon PN junction at a temperature of 200°C has a reverse saturation current of 10 pA . The reverse saturation current at 400°C for the same bias is approximately

- (A) 20 pA (B) 30 pA
 (C) 40 pA (D) 80 pA

225. A Zener diode, when used in voltage stabilization circuits, is biased in

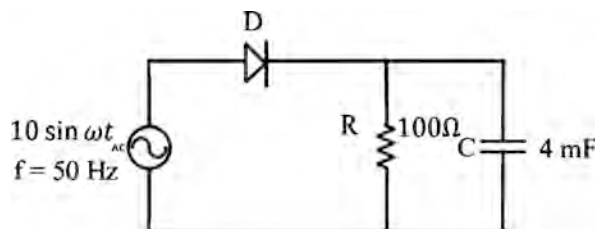
- (A) reverse bias region below the breakdown voltage
 (B) reverse breakdown region
 (C) forward bias region
 (D) forward bias constant current mode

226. In the circuit shown below, the Zener diode is ideal and Zener voltage is 6 V . The output voltage V_0 (in volts) is



- (A) 6 V (B) 5 V
 (C) 10 V (D) 4 V

227. The figure shows a half-wave rectifier. The diode D is ideal. The average steady-state current (in Amperes) through the diode is approximately ____



- (A) 2 A (B) 1 A
 (C) 0.1 A (D) A

228. In a rectifier, larger the value of shunt capacitor filter

- (A) Larger the peak-to-peak value of ripple voltage
 (B) Larger the peak current in the rectifying diode
 (C) Longer the time that current pulse flows through the diode
 (D) Smaller the dc voltage across the load

229. The basic reason why a full wave rectifier has a twice the efficiency of a half wave rectifier is that
- (A) it makes use of transformer
 - (B) its ripple factor is much less
 - ☒ (C) it utilizes both half-cycle of the input
 - (D) its output frequency is double the line frequency
230. A 10-V dc regulator power supply has a regulation of 0.005 per cent. Its output voltage will vary within an envelope of
- (A) ± 5 mV
 - (B) ± 0.05 mV
 - (C) ± 0.5 mV
 - ☒ (D) ± 2.5 mV
231. The power dissipated by a transistor approximately equals the collector current times
- (A) Base emitter voltage
 - ☒ (B) Collector emitter voltage
 - (C) Base supply voltage
 - (D) 0.7V
232. Early effect in BJT refers to
- (A) Avalanche breakdown
 - (B) Thermal breakdown
 - ☒ (C) Base narrowing
 - (D) Zener breakdown
233. A bipolar junction transistor is used as power control switch by biasing it in the cut-off region (OFF state) or in the saturation region (ON state). In the ON state, for the BJT
- (A) Both the base-emitter junction and base-collector junctions are reverse biased
 - (B) The base-emitter is reverse biased, and the base-collector junction is forward biased
 - (C) The base-emitter junction is forward biased, and the base-collector junction is reverse biased
 - ☒ (D) Both the base-emitter and base-collector junctions are forward biased
234. Which of the following transistor configuration circuits is much less temperature dependent?
- (A) Common base
 - (B) Common emitter
 - ☒ (C) Common collector
 - (D) None of the above
235. The CE amplifier circuit are preferred over CB amplifier circuit because they have
- (A) Lower amplification factor
 - ☒ (B) Larger amplification factor
 - (C) High input resistance and low output resistance
 - (D) None of these

236. In CB configuration, the output V-I characteristics of the transistor are drawn by taking
 (A) V_{CB} vs. I_C for constant I_E (B) V_{CB} vs. I_E for constant I_C
 (C) V_{CB} vs. I_E for constant I_B (D) V_{CB} vs. I_B for constant I_E
237. A thin P-type silicon sample is uniformly illuminated with light which generates excess carriers. The recombination rate is directly proportional to
 (A) The minority carrier mobility
 (B) The minority carrier recombination lifetime
 (C) The majority carrier concentration
 (D) The excess minority carrier concentration
238. In a multi-stage RC-coupled Amplifier the coupling capacitor
 (A) Limits the low frequency response
 (B) Limits the high frequency response
 (C) Does not affect the frequency response
 (D) Blocks the dc components without effecting the frequency response
239. Reverse saturation current in a Silicon PN junction diode nearly doubles for every
 (A) 2° rise in temperature (B) 5° rise in temperature
 (C) 6° rise in temperature (D) 10° rise in temperature
240. 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
241. The impurity commonly used for realizing the base region of a silicon n-p-n transistor is
 (A) Gallium (B) Indium
 (C) Boron (D) Phosphorus
242. In a uniformly doped abrupt PN junction, the doping level of the N-side is four times the doping level of the P-side. Then the ratio of the depletion layer width is
 (A) $W_n/W_p = 1/8$ (B) $W_n/W_p = 1/6$
 (C) $W_n/W_p = 1/4$ (D) $W_n/W_p = 1/2$

243. A PN junction with a $100\ \Omega$ resistor is forward biased so that a current of 100 mA flows. If the voltage across this combination is instantaneously reversed to 10 volts at $t = 0$, the reverse current that flows through the diode at $t = 0$ is approximately given by
- (A) 0 mA (B) 100 mA
(C) 200 mA (D) 50 mA
244. In a Zener diode,
- (A) Only P-region is heavily doped
(B) Only N-region is heavily doped
(C) Both P and N-regions are heavily doped
(D) Both P and N-regions are lightly doped
245. A DC power supply has a no-load voltage of 30 volts, and a full load voltage of 25 volts at a full load current of one amp. Its output resistance and load regulation, respectively are
- (A) $5\ \Omega$ and 20 % (B) $25\ \Omega$ and 20 %
(C) $5\ \Omega$ and 16.7 % (D) $25\ \Omega$ and 16.7 %
246. The breakdown voltage of a transistor with its base open is BV_{CEO} that with emitter open is BV_{CBO} then
- (A) $BV_{CEO} = BV_{CBO}$ (B) $BV_{CEO} > BV_{CBO}$
(C) $BV_{CEO} < BV_{CBO}$ (D) BV_{CEO} not related to BV_{CBO}
247. The Ebers-Moll model is applicable to
- (A) Bipolar junction transistors (B) MOS transistors
(C) Unipolar Junction transistors (D) Junction field effect transistors
248. A BJT is said to be operating in the cutoff region, if
- (A) Both the junctions are reverse biased
(B) Base emitter junction is in reverse biased, and base collector junction is forward biased
(C) Base emitter junction is in forward biased, and base collector junction is reverse biased
(D) Both the junctions are forward biased
249. Drift current in semiconductors depends upon
- (A) Only the electric field
(B) Only the carrier concentration gradient
(C) Both the electric field and the carrier concentration
(D) Both the electric field and the carrier concentration gradient

250. If the base width in a bipolar junction transistor is doubled, which one of the following statements will be TRUE?
- (A) Current gain will increase
 (B) Unity gain frequency will increase
 (C) Emitter base junction capacitance will increase
 (D) Early voltage will increase
251. Operations research is the application of methods to arrive at the optimal solutions to which problem?
- (A) Economical (B) Scientific
 (C) Statistical (D) Artistic
252. In Degenerate solution value of objective function
- (A) Increases infinitely (B) Basic variables are nonzero
 (C) Decreases infinitely (D) One or more basic variables are zero
253. _____ or _____ are used to “balance” an assignment or transportation problem.
- (A) Destinations; sources (B) Units supplied; units demanded
 (C) Dummy rows; dummy columns (D) Artificial cells; degenerate cells
254. Which of the following is a method for improving an initial solution in a transportation problem?
- (A) Northwest-corner (B) Vogel’s approximation method
 (C) Southeast-corner rule (D) Stepping-stone method
255. The solution to a transportation problem with ‘m’ rows (supplies) & ‘n’ columns (destination) is feasible if number of positive allocations are
- (A) $m - n + 1$ (B) $m * n * 1$
 (C) $m + n - 1$ (D) $m + n + 1$
256. The Operations research technique which helps in minimizing total waiting and service costs is
- (A) Queuing Theory (B) Decision Theory
 (C) Game Theory (D) Network Theory

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257. Activities A, B, and C are the immediate predecessors for Y activity. If the earliest finishing time for the three activities are 12, 15, and 10, then what will be the earliest starting time for Y?
- (A) 10 (B) 15
(C) 12 (D) 18.5
258. Pessimistic time and optimistic time of completion of an activity are given as 10 days and 4 days respectively, the variance of the activity will be
- (A) 1 (B) 6
(C) 12 (D) 18
259. In PERT the activity distribution is
- (A) Binomial (B) Normal
(C) Poisson (D) Beta
260. A minimal spanning tree in network flow models involves
- (A) All the nodes with cycles/loop allowed
(B) All the nodes with cycle/loop not allowed
(C) Shortest path between start and end nodes
(D) All the nodes with directed areas
261. Customers arrive at a reception counter at an average interval rate of 10 minutes and the receptionist takes an average of 6 minutes for one customer. Determine the average queue length.
- (A) 9/10 (B) 7/10
(C) 11/10 (D) 3/10
262. The method used for solving an assignment problem is called
- (A) Reduced matrix method (B) MODI method
(C) Hungarian method (D) Graphical method
263. If an opportunity cost value is used for an unused cell to test optimality, it should be
- (A) Equal to zero (B) Most negative number
(C) Most positive number (D) Any value

264. 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 $x'' \geq 0$
265. For a salesman who has to visit n cities which of the following are the ways of his tour plan?
- (A) $n!$ (B) $(n + 1)!$
 (C) $(n - 1)!$ (D) n
266. Interpolator in a CNC machine
- (A) Controls spindle speed (B) Coordinates axes movements
 (C) Operates tool changer (D) Commands canned cycle
267. Which one of the following is not Extrusion-based Rapid Prototyping Systems?
- (A) Fused Deposition Modelling (B) 3D Printing
 (C) Laminated Object Manufacturing (D) Electron Beam melting
268. What is the format for the prototyping machine file?
- (A) .prt (B) .slt (C) .stl (D) .iges
269. The slope of constant pressure curve on enthalpy-entropy diagram gives:
- (A) Entropy (B) Specific volume
 (C) Absolute temperature (D) Density
270. Feed is measured in units of
- (A) Length/revolution (B) Degree/revolution
 (C) Length (D) Velocity
271. NC contouring is an example of
- (A) Continuous path positioning (B) Point-to-point positioning
 (C) Absolute positioning (D) Incremental positioning
272. The two-dimensional translation equation in the matrix form is
- (A) $P' = P + T$ (B) $P' = P - T$
 (C) $P' = P * T$ (D) $P' = P$

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273. What key hardware item ties a CAD/ CAM system together?
(A) Mouse (B) Graphics workstation
(C) Digitizer (D) Plotter
274. SCADA stands for _____.
(A) Supervisory control and data acquisition system
(B) Superior control and data acquisition system
(C) Supervisory control and data appear system
(D) None of the above
275. Which of the following may be classified as an automation system?
(A) Automated warehouses
(B) Numerically controlled machine tools
(C) Robotics
(D) All of the above
276. XY Plane Selection in CNC machining is done by _____.
(A) G16 (B) G17
(C) G18 (D) G19
277. In which system we get feedback?
(A) Open-loop system (B) Machine control system
(C) Closed-loop system (D) None of the above
278. The lost motion in CNC machine tool is on account of:
(A) Backlash in gearing (B) Wind-up of drive shafts
(C) Deflection of machine tool members (D) All of the mentioned
279. Up and down motion along an axis is known as _____ in robotics
(A) Pitch (B) Roll
(C) Yaw (D) None of the above
280. Following is the high energy rate forming process:
(A) Low explosive forming (B) High explosive forming
(C) Electrohydraulic forming (D) All of the above

281. A robot can do the following:

- (A) Spot welding (B) Palletizing
(C) Machine loading/unloading (D) All of the above

282. Electron beam machining is a process which can be categorised as:

- (A) Thermal energy based process (B) Mechanical energy based process
(C) Chemical energy based process (D) Electro-chemical process

283. Automated assembly lines are an example of:

- (A) Fixed automation (B) Programmable automation
(C) Flexible automation (D) All of the above

284. The alternative name for Rapid prototyping is:

- (A) Additive Manufacturing (B) Layered Manufacturing
(C) Both (A) and (B) (D) None of the above

285. Usually stronger constituent of a composite is

- (A) Matrix (B) Reinforcement
(C) Both are of equal strength (D) Fillers

286. In polymer composites, polymer acts as a

- (A) Matrix (B) Reinforcement
(C) Interphase (D) Interface

287. Rayon is made from

- (A) wood pulp (B) bark of the tree
(C) dry leaves (D) petroleum products

288. The synthetic fibre is

- (A) carbon (B) nylon
(C) glass (D) all of the above

289. Which of the following types of polymers is a copolymer?

- (A) Graft (B) Network
(C) Linear (D) Branched

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290. Which is a thermoset polymer?
- (A) Polyethylene (B) Polypropylene
(C) Polylactic acid (D) Epoxy
291. Hybrid vehicles convert energy that is normally lost through braking into electrical energy. What is the term that is used for this recycling of energy?
- (A) Perpetual motion (B) Regenerative braking
(C) Kinetic conversation (D) Hybrid archamy
292. What does PHEV stands 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
293. Advantages of lithium batteries
- (A) Light weight (B) Compact
(C) Low maintenance (D) All of the above
294. Which of the following is not an example of a fuel cell?
- (A) Hydrogen-oxygen cell (B) Methyl-oxygen-alcohol cell
(C) Propane-oxygen cell (D) Hexanone-oxygen cell
295. The algebraic sum of moments of a system of coplanar forces about a moment centre is equal to the moment of their resultant force about the same moment centre. This is known as:
- (A) Lami's theorem (B) Varignon's theorem
(C) Transmissibility law (D) Parallelogram law of forces
296. 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) Clausius statement (B) Kelvin statement
(C) Planck statement (D) Conservation of energy
297. Which of the following is not a thermodynamic property?
- (A) Pressure (B) Temperature
(C) Heat (D) Specific volume

298. A fluid is confined in a cylinder by a spring loaded, frictionless piston so that the pressure in the fluid is a linear function of the volume ($p = a + bV$). The internal energy of the fluid is given by the following equation: $U = 34 + 3.15 pV$, where U is in kJ, p in kPa and V in m^3 . If the fluid changes from an initial state of 170 kPa, $0.03 m^3$ to a final state of 400 kPa, $0.06 m^3$, with no work other than that done on the piston, find the magnitude of the work and heat transfer.
- (A) 8.55 kJ, 68.05 kJ (B) 8.55 kJ, 59.50 kJ
(C) 68.05 kJ, 8.55 kJ (D) 59.50 kJ, 8.55 kJ
299. The general law of expansion or compression is $pv^n = C$. This is said to be hyperbolic, if n is equal to
- (A) 0 (B) 1
(C) Γ (D) ∞
300. Which of the following is the characteristic feature of a quasi-static process?
- (A) Infinite slowness (B) Rapidity
(C) Stability (D) Stationary existence
-