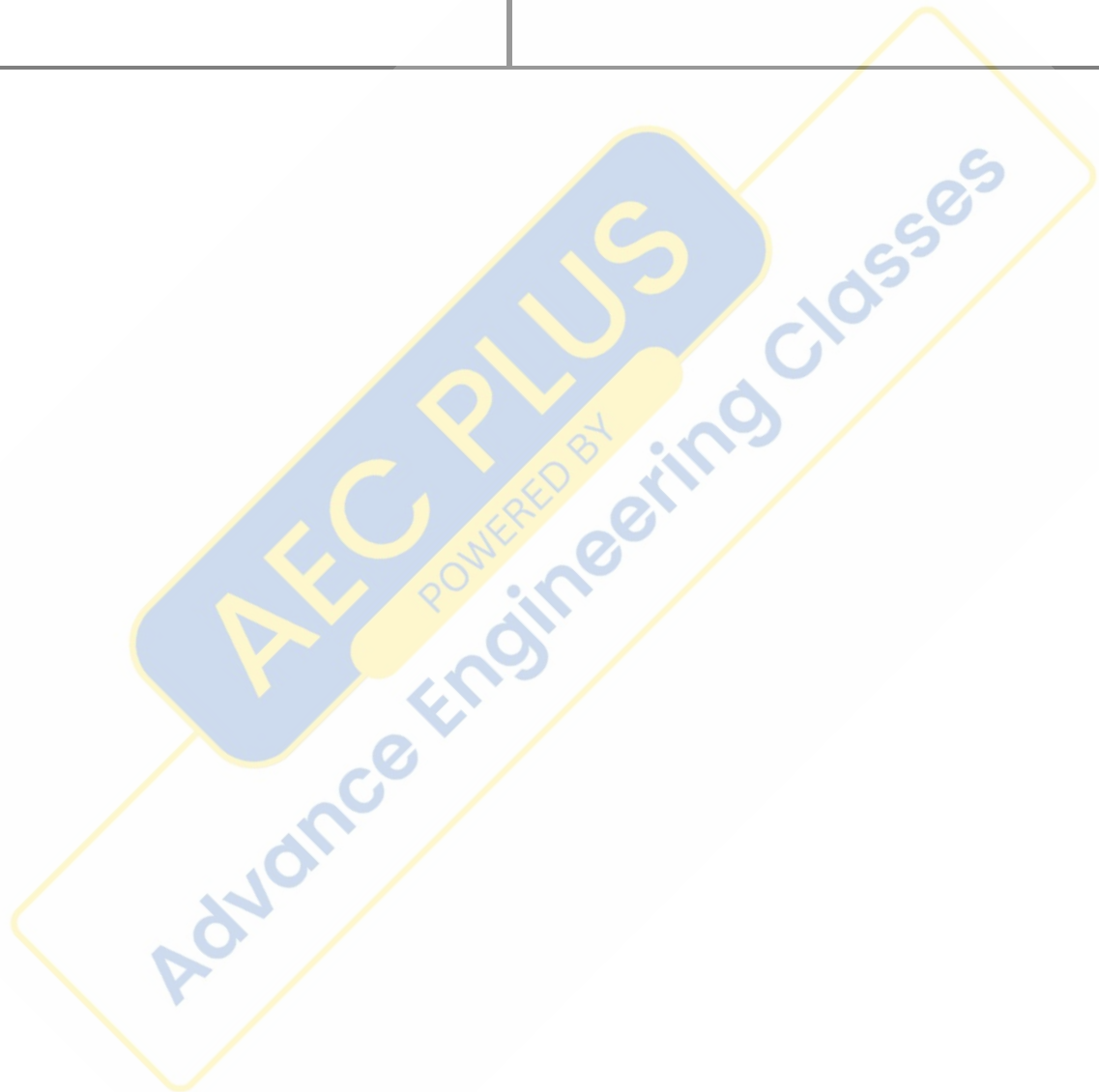


**MPPSC  
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**Previous Year Paper  
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SEE/CE/2020

(Civil Engineering)

प्रश्न-पुस्तिका क्र.  
Question Booklet No.  
20004949

SET

A

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परीक्षार्थी अपना अनुक्रमांक दिए गए खानों में लिखें  
Candidate should write his/her  
Roll No. in the given boxes

मुद्रित पृष्ठों की संख्या/No. of Printed Pages : 32

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### परीक्षार्थियों के लिए निर्देश

1. परीक्षा प्रारंभ होने के तुरन्त बाद, आप इस प्रश्न-पुस्तिका की पड़ताल अवश्य कर ले, कि इसमें कोई बिना छपा, फटा या छुटा हुआ पृष्ठ अथवा प्रश्नांश आदि न हो। यदि ऐसा है, तो वीक्षक से तत्काल संपर्क कर प्रश्न-पुस्तिका बदल लेवें।
2. यह प्रश्न-पुस्तिका सम्मिलित रूप से दो खंडों में विभाजित है। खंड - 'अ' तथा खंड - 'ब'।
3. खंड - 'अ' के प्रश्न सामान्य अध्ययन से संबंधित है, जिसमें कुल 50 प्रश्न है, सभी प्रश्न हिन्दी तथा अंग्रेजी भाषा में है। सभी प्रश्न अनिवार्य हैं।
4. खंड - 'ब' संबंधित इंजीनियरिंग विषय से है। जिसमें कुल 100 प्रश्न है। सभी प्रश्न केवल अंग्रेजी भाषा में है। सभी प्रश्न अनिवार्य हैं। अभ्यर्थी स्वयं यह सुनिश्चित कर लें कि जिस पद हेतु आवेदन किया है वही विषय का प्रश्न-पत्र प्राप्त हुआ है।
5. सभी प्रश्नों के अंक समान हैं। प्रत्येक सही उत्तर के लिए 03 अंक प्रदान किए जायेंगे। ऋणात्मक मूल्यांकन का प्रावधान है। प्रत्येक गलत उत्तर के लिए 01 अंक काटा जायेगा।
6. प्रदत्त उत्तर-पत्र पर दिए गए निर्देशों को ध्यानपूर्वक पढ़ें तथा अपने उत्तर तदनुसार अंकित करें।
7. कृपया उत्तर-पत्र (ओ.एम.आर. शीट) पर निर्धारित स्थानों पर आवश्यक प्रविष्टियाँ करें, अन्यत्र स्थानों पर नहीं।
8. परीक्षार्थी सभी रफ़ कार्य प्रश्न-पुस्तिका के अंतिम पृष्ठ पर निर्धारित स्थान पर ही करें, अन्यत्र कहीं नहीं तथा उत्तर-पत्र (ओ.एम.आर. शीट) पर भी नहीं।
9. प्रश्न-पत्र हल करने हेतु सामान्य केलकूलेटर ही मान्य किया जावेगा। साइंटिफिक/इंजीनियरिंग केलकूलेटर परीक्षा में मान्य नहीं है।
10. यदि खंड-'अ' के किसी प्रश्न में किसी प्रकार की कोई मुद्रण या तथ्यात्मक प्रकार की त्रुटि हो, तो प्रश्न के हिन्दी तथा अंग्रेजी रूपांतरों में से हिन्दी रूपांतर को मानक माना जाएगा।

### INSTRUCTIONS TO THE CANDIDATES

1. Immediately after the commencement of the examination, you should check that this Question Booklet does not have any unprinted or torn or missing pages or items etc. If so, immediately contact the invigilator and get it replaced with Question Booklet.
2. This combined Question Booklet is divided in two Sections. Section - 'A' and Section - 'B'.
3. Section - 'A' contains 50 Questions of General Studies. All Questions are in Hindi and English Language. All questions are compulsory.
4. Section - 'B' contains 100 Questions of Concerned Engineering Subject. Question are only in English Language. All questions are compulsory. Candidates should ensure that he/she got the question paper of the same post for which he/she had applied.
5. All questions carry equal marks. Three marks for each correct answer. There is provision of **Negative Markings**. For each wrong answer, one mark will be deducted.
6. Read carefully the instructions given on the Answer Sheet (OMR) supplied and indicate your answers accordingly.
7. Kindly make necessary entries on the Answer Sheet (OMR) at the places indicated and nowhere else.
8. Examinee should do all rough work on the space meant for rough work on pages given at the end of the Question Booklet and nowhere else, not even on the Answer Sheet (OMR).
9. Only simple calculator is allowed to solve the Question Paper. Scientific/Engineering calculator will not be allowed.
10. If there is any sort of mistake either of printing or of factual nature in any question of Section - A, then out of the Hindi and English versions of the question, the Hindi version will be treated as standard.



### खंड - अ

1. मलांजखंड निम्नलिखित में से किस खनिज के लिए प्रसिद्ध है ?
  - (A) बॉक्साइट
  - (B) ताँबा
  - (C) डोलोमाइट
  - (D) चूना पत्थर
2. बाणसागर परियोजना किस नदी पर स्थित है ?
  - (A) केन
  - (B) बेतवा
  - (C) सोन
  - (D) धसान
3. मध्यप्रदेश में गैर-परम्परागत ऊर्जा स्रोतों के अन्तर्गत सर्वाधिक स्थापित क्षमता निम्न में से किस संसाधन की है ?
  - (A) पवन ऊर्जा
  - (B) सौर ऊर्जा
  - (C) बायोमास ऊर्जा
  - (D) कचरा से ऊर्जा
4. मध्यप्रदेश में निम्नलिखित में से किस साधन द्वारा सर्वाधिक सिंचाई होती है ?
  - (A) नहरें
  - (B) तालाब
  - (C) कुएँ - ट्यूबवेल
  - (D) अन्य साधन
5. विन्ध्याचल सुपर थर्मल पावर स्टेशन निम्नलिखित में से किस जिले में स्थापित है ?
  - (A) शहडोल
  - (B) बैतूल
  - (C) उमरिया
  - (D) सिंगरौली
6. रोबोट के चल जोड़ों की संख्या को कहते हैं
  - (A) डिग्री ऑफ इन्डिपेंडेंस
  - (B) डिग्री ऑफ जाइन्ट्स
  - (C) डिग्री ऑफ फ्रीडम
  - (D) डिग्री ऑफ मूवमेन्ट
7. किसी भी संदेश की अखण्डता को सत्यापित करने की तकनीक को \_\_\_\_\_ कहते हैं ।
  - (A) मेसेज इन्क्रीप्ट
  - (B) मेसेज चेकसम
  - (C) मेसेज डायजेस्ट
  - (D) उपरोक्त में से कोई नहीं
8. \_\_\_\_\_ एक ऐसा साफ्टवेयर प्रोग्राम है जो कि इन्टरनेट से आने वाले डाटा को फिल्टर करता है ।
  - (A) एन्टीवायरस
  - (B) कूकीज
  - (C) मालवेयर
  - (D) फायरवाल



### SECTION – A

1. Malanjkhand is famous for which of the following mineral ?
  - (A) Bauxite
  - (B) Copper
  - (C) Dolomite
  - (D) Limestone
2. Bansagar Project is situated on which of the following river ?
  - (A) Ken
  - (B) Betwa
  - (C) Son
  - (D) Dhasan
3. In Madhya Pradesh, which of the following resources has the highest established capacity among the non-conventional sources of energy ?
  - (A) Wind energy
  - (B) Solar energy
  - (C) Biomass energy
  - (D) Energy from garbage
4. Which of the following sources has highest proportion of irrigation in Madhya Pradesh ?
  - (A) Canals
  - (B) Tanks
  - (C) Wells-tubewells
  - (D) Other sources
5. Vindhya Super Thermal Power Station is established in which of the following district ?
  - (A) Shahdol
  - (B) Betul
  - (C) Umaria
  - (D) Singrauli
6. Number of moveable joints in robot is called
  - (A) Degree of independence
  - (B) Degree of joints
  - (C) Degree of freedom
  - (D) Degree of movement
7. Technique to verify message integrity is known as
  - (A) Message encrypt
  - (B) Message checksum
  - (C) Message digest
  - (D) None of the above
8. \_\_\_\_\_ is a software program that filters all the data coming through the internet.
  - (A) Antivirus
  - (B) Cookies
  - (C) Malware
  - (D) Firewall



9. एप्लीकेशन एवं डाटा होस्टिंग एवं कनेक्टिविटी एवं क्षमता निर्माण हेतु राष्ट्रीय इ-गवर्नेंस योजना के गठन में सरकार द्वारा प्रदान किये गये बुनियादी ढाँचे के पहलू
- (A) एस.डी.सी., एस.डब्ल्यू.ए.एन. एवं ई.एस.डी.जी.  
(B) एस.डब्ल्यू.ए.एन., एस.डी.सी. एवं एन.आई.सी.  
(C) एस.डब्ल्यू.ए.एन., एस.डी.एल.सी. एवं एन.आई.एस.जी.  
(D) इनमें से कोई नहीं
10. सायबर सिक्यूरिटी का दायरा है
- (A) बलनरेबिलिटी रिडक्शन  
(B) इन्सीडेंट रिस्पांस  
(C) रिकवरी पॉलिसी  
(D) उपरोक्त सभी
11. निम्नलिखित में से कौन-सा लोकनृत्य निमाड़ी लोकनृत्य से संबंधित नहीं है ?
- (A) गणगौर  
(B) राई  
(C) काठी  
(D) फेफारिया
12. निम्नलिखित में से कौन-सा मालवा का प्रसिद्ध लोकनाट्य है ?
- (A) हिंगोला  
(B) छाहुर  
(C) मनसुखा  
(D) माच
13. बघेलखण्ड का प्राचीन नाम क्या था ?
- (A) करुष  
(B) माहिषमती  
(C) तीरभुक्ति  
(D) शुक्तिमती
14. प्रसिद्ध चन्देल सेनायक आल्हा एवं उदल ने किस शासक के विरुद्ध लड़ते हुवे अपने प्राणों की आहुति दी थी ?
- (A) अजयराज  
(B) अणोर्राज  
(C) सिन्धुराज  
(D) पृथ्वीराज चौहान
15. निम्नलिखित में से कौन-सी रचना पं. माखनलाल चतुर्वेदी की नहीं है ?
- (A) हिमकिरीटनी  
(B) बिजुरी  
(C) हिमतरंगिनी  
(D) रसिकप्रिया



9. Infrastructure aspects provided by Government in formation of National e-Governance Plan for application and data hosting and connectivity are
- (A) SDC, SWAN and ESDG  
(B) SWAN, SDC and NIC  
(C) SWAN, SDLC and NISG  
(D) None of these
10. The scope of cyber security is
- (A) Vulnerability reduction  
(B) Incident response  
(C) Recovery policy  
(D) All of the above
11. Which of the following folk-dance is **not** associated to Nimari folk-dance ?
- (A) Gangour  
(B) Rai  
(C) Kathi  
(D) Fefariya
12. Which of the following is a famous folk-drama of Malwa ?
- (A) Hingola  
(B) Chhahur  
(C) Mansukha  
(D) Maach
13. What was the ancient name of Baghelkhand ?
- (A) Karush  
(B) Mahishmati  
(C) Teerbhukti  
(D) Shuktimati
14. The famous Chandela Generals Alha and Udal lost their lives while fighting against which ruler ?
- (A) Ajayraj  
(B) Arnoraj  
(C) Sindhuraj  
(D) Prithviraj Chauhan
15. Which of the following is **not** a composition of Pandit Makhanlal Chaturvedi ?
- (A) Himkiritani  
(B) Bijuri  
(C) Himtarangini  
(D) Rasikpriya



16. ओलम्पिक खेलों का आयोजन टोक्यो में किन तिथियों में किया गया ?
- (A) 21 जुलाई से 5 अगस्त 2021  
(B) 22 जुलाई से 10 अगस्त 2021  
(C) 22 जुलाई से 11 अगस्त 2021  
(D) 23 जुलाई से 8 अगस्त 2021
17. 2024 के ओलम्पिक खेल किस स्थान पर आयोजित किया जाना तय किया गया है ?
- (A) पेरिस  
(B) लंदन  
(C) जोहान्सबर्ग  
(D) बुडापेस्ट
18. आरोग्य सेतु एप भारत सरकार द्वारा किस तिथि पर जारी किया गया ?
- (A) 17 जून 2021  
(B) 17 जनवरी 2021  
(C) 2 अप्रैल 2020  
(D) 14 मार्च 2020
19. मध्यप्रदेश सरकार द्वारा राष्ट्रीय शिक्षा नीति 2020 का शुभारम्भ किस तिथि पर किया गया ?
- (A) 16 अगस्त 2021  
(B) 26 अगस्त 2021  
(C) 28 अगस्त 2021  
(D) 30 अगस्त 2021
20. 2021 में आयोजित पैरा-ओलम्पिक में भारतीय दल ने कितने स्वर्ण पदक जीते ?
- (A) 5  
(B) 6  
(C) 7  
(D) 19
21. मध्यप्रदेश में अगस्त माह में होने वाली वर्षा निम्नलिखित में से मुख्यतः किसके द्वारा होती है ?
- (A) उत्तर-पूर्वी मानसून  
(B) दक्षिण-पश्चिमी मानसून  
(C) शीतकालीन मानसून  
(D) चक्रवातीय वर्षा



16. On what dates were the Olympic Games held in Tokyo ?
- (A) 21 July to 5 August 2021  
(B) 22 July to 10 August 2021  
(C) 22 July to 11 August 2021  
(D) 23 July to 8 August 2021
17. Where is the 2024 Olympic Games Scheduled to be held ?
- (A) Paris  
(B) London  
(C) Johannesburg  
(D) Budapest
18. On which date the Arogya Setu App was launched by the Government of India ?
- (A) 17 June 2021  
(B) 17 January 2021  
(C) 2 April 2020  
(D) 14 March 2020
19. On which date the National Education Policy 2020 was launched by the Government of Madhya Pradesh ?
- (A) 16 August 2021  
(B) 26 August 2021  
(C) 28 August 2021  
(D) 30 August 2021
20. How many gold medals did the Indian team win in the Paralympics held in 2021 ?
- (A) 5  
(B) 6  
(C) 7  
(D) 19
21. Rain occurs in the month of August in Madhya Pradesh is mainly receives from which of the following ?
- (A) North-Eastern Monsoon  
(B) South-Western Monsoon  
(C) Winter Monsoon  
(D) Cyclonic Rain





22. मध्यप्रदेश शासन के अनुसार, कुल वन क्षेत्रों का निम्नलिखित में से कितना प्रतिशत संरक्षित वन क्षेत्र के अंतर्गत है ?
- (A) 45.6%  
(B) 44.6%  
(C) 32.8%  
(D) 70.2%
23. सोन नदी के दक्षिण तथा नर्मदा-ताप्ती नदी के मध्य निम्नलिखित में से कौन-सी पर्वत श्रेणी है ?
- (A) कैमूर श्रेणी  
(B) भाण्डेर श्रेणी  
(C) विन्ध्याचल श्रेणी  
(D) सतपुड़ा-मैकल श्रेणी
24. पश्चिम दिशा में बहने वाली ताप्ती (तापी) नदी का उद्गम स्थल है
- (A) शाहपुर  
(B) चिचोली  
(C) भैंसदेही  
(D) मुलताई
25. देश के कुल मैंगनीज उत्पादन में मध्यप्रदेश का योगदान कितना है ?
- (A) 18.84%  
(B) 15.02%  
(C) 12.50%  
(D) 4.56%
26. निम्नलिखित में से कौन बुन्देली लेखक नहीं है ?
- (A) जगनिक  
(B) महाराज विश्वनाथ सिंह  
(C) ईसुरी  
(D) गंगाधर व्यास
27. मध्यप्रदेश के किस जिले में जागेश्वरी मेला आयोजित किया जाता है ?
- (A) सतना  
(B) अशोकनगर  
(C) बालाघाट  
(D) बड़वानी
28. बुन्देला विद्रोह के दौरान किस क्रान्तिकारी को ब्रिटिश सरकार द्वारा फाँसी दी गई थी ?
- (A) नरहुत के मधुकरशाह  
(B) भानपुर के बन्देशाह  
(C) हीरापुर के जूझार सिंह  
(D) इनमें से कोई नहीं
29. बैगा परम्परा के अनुसार सृष्टि के निर्माता कौन हैं ?
- (A) ठाकुरदेव  
(B) इन्द्रदेव  
(C) अग्निदेव  
(D) सोमदेव



22. According to the Government of Madhya Pradesh, what percentage of the following area is under protected forests out of the total forest area ?
- (A) 45.6%  
(B) 44.6%  
(C) 32.8%  
(D) 70.2%
23. Which of the following mountain range is situated between Narmada-Tapti rivers and South of the Son river ?
- (A) Kaimur range  
(B) Bhandar range  
(C) Vindhya range  
(D) Satpura-Maikal range
24. Which is the origin of the West direction flowing river Tapti (Tapi) ?
- (A) Shahpur  
(B) Chicholi  
(C) Bhainsdehi  
(D) Multai
25. Which of the following is the share of Madhya Pradesh in the total manganese production of the country ?
- (A) 18.84%  
(B) 15.02%  
(C) 12.50%  
(D) 4.56%
26. Who among the following is **not** a Bundeli writer ?
- (A) Jagnik  
(B) Maharaj Vishwanath Singh  
(C) Isuri  
(D) Gangadhar Vyas
27. In which district of Madhya Pradesh, Jageshwari fair is organized ?
- (A) Satna  
(B) Ashok-nagar  
(C) Balaghat  
(D) Badwani
28. Which revolutionary was hanged by the British Government during the Bundela rebellion ?
- (A) Madhukar Shah of Narhot  
(B) Bandeshah of Bhanpur  
(C) Jujhar Singh of Herapur  
(D) None of these
29. According to the Baiga tradition, who was the creator of the Universe ?
- (A) Thakurdev  
(B) Indradev  
(C) Agnidev  
(D) Somdev



30. प्रसिद्ध कलाकार अन्नासाहब रघुनाथ के. फड़के निम्न में से किस कला से सम्बन्धित है ?
- (A) मूर्तिकला  
(B) नृत्यकला  
(C) संगीतकला  
(D) चित्रकला
31. इनमें से कौन-सा एक ओपन सोर्स आपरेटिंग सिस्टम नहीं है ?
- (A) युनिक्स  
(B) एन्ड्राइड  
(C) विन्डोज  
(D) इनमें से कोई नहीं
32.  $(1101\ 0001)_2$  बायनरी नम्बर  $(\quad)_8$  ऑक्टल नम्बर के बराबर है
- (A)  $(321)_8$   
(B)  $(123)_8$   
(C)  $(641)_8$   
(D)  $(146)_8$
33. इनमें से कौन-सा कम्प्यूटर के सी.पी.यु. के लिये उपयोग आता है ?
- (A) माइक्रोप्रोसेसर  
(B) माइक्रोकंट्रोलर  
(C) माइक्रोकम्प्यूटर  
(D) माइक्रोग्रामर
34. एक गीगाबाइट में कितने मेगाबाइट होते हैं (बायनरी में) ?
- (A) 2048  
(B) 1024  
(C)  $1024 \times 1024$   
(D) 1048
35. रोबोट संचालन के लिये स्थापित क्षेत्र(स्पेस) का नाम
- (A) एन्वायरनमेंट  
(B) स्पेशियल स्पेस  
(C) वर्क स्पेस  
(D) वर्क एन्वेलप
36. संविधान के किस अनुच्छेद में मंत्रिपरिषद का कार्य राज्यपाल को "सहायता और परामर्श" देना कहा गया है ?
- (A) अनुच्छेद - 162  
(B) अनुच्छेद - 163  
(C) अनुच्छेद - 164  
(D) अनुच्छेद - 165



30. The famous artist Annasaheb Raghunath K. Phadke is associated with which of the following art ?
- (A) Sculpture  
(B) Dance  
(C) Music  
(D) Painting
31. Which of these is not an open source Operating System ?
- (A) UNIX  
(B) ANDROID  
(C) WINDOWS  
(D) None of these
32.  $(1101\ 0001)_2$  binary number is same as ( )<sub>8</sub> octal number.
- (A)  $(321)_8$   
(B)  $(123)_8$   
(C)  $(641)_8$   
(D)  $(146)_8$
33. Which of these is used as CPU in computer ?
- (A) Microprocessor  
(B) Microcontroller  
(C) Microcomputer  
(D) Microprogrammer
34. How many megabytes represent one gigabyte (in binary) ?
- (A) 2048  
(B) 1024  
(C)  $1024 \times 1024$   
(D) 1048
35. The space in which a robot operates is called
- (A) Environment  
(B) Spatial space  
(C) Work space  
(D) Work envelope
36. In which Article of the Constitution, the function of the Council of Ministers is said to "Assistance and Advise" the Governor ?
- (A) Article – 162  
(B) Article – 163  
(C) Article – 164  
(D) Article – 165



37. मध्यप्रदेश में पंचायती राज व्यवस्था कितने स्तर की है ?  
(A) दो स्तरीय  
(B) त्रिस्तरीय  
(C) चार स्तरीय  
(D) इनमें से कोई नहीं
38. वन स्टॉप सेंटर (सखी) योजना संबंधित है  
(A) हिंसा पीड़ित महिलाओं को सुविधा उपलब्ध कराना  
(B) राशन उपलब्ध कराना  
(C) स्व-रोजगार  
(D) कौशल एवं प्रशिक्षण
39. मध्यप्रदेश का सबसे कम जनसंख्या घनत्व वाला जिला है  
(A) झाबुआ  
(B) मण्डला  
(C) डिंडोरी  
(D) सीधी
40. मध्यप्रदेश के निम्नलिखित जिलों को लिंगानुपात के अनुसार घटते क्रम में व्यवस्थित कीजिए तथा नीचे दिए गए कूट से सही उत्तर चुनिए ।  
1. मण्डला  
2. डिंडोरी  
3. अलिराजपुर  
4. बालाघाट  
कूट :  
(A) 1, 2, 3, 4  
(B) 4, 3, 1, 2  
(C) 2, 1, 4, 3  
(D) 3, 4, 2, 1
41. भारतीय खेल प्राधिकरण की स्थापना किस वर्ष में की गई ?  
(A) 1976  
(B) 1981  
(C) 1984  
(D) 1991
42. मध्यप्रदेश सरकार द्वारा 'लाडली लक्ष्मी योजना' कब प्रारम्भ की गई ?  
(A) 1 अप्रैल 2006  
(B) 1 अप्रैल 2007  
(C) 1 अप्रैल 2008  
(D) 1 जुलाई 2006
43. मध्यप्रदेश में मुख्यमंत्री महिला सशक्तिकरण योजना कब आरम्भ हुई ?  
(A) अप्रैल 2012  
(B) जुलाई 2012  
(C) सितम्बर 2013  
(D) नवम्बर 2013



37. What is the level of Panchayati Raj System in Madhya Pradesh ?
- (A) Two tier  
(B) Three tier  
(C) Four tier  
(D) None of these
38. The scheme One Stop Center (Sakhi) is related with
- (A) Providing facilities to women victims of violence  
(B) Providing ration  
(C) Self employment  
(D) Skill and training
39. The lowest population density district of Madhya Pradesh is
- (A) Jhabua  
(B) Mandla  
(C) Dindori  
(D) Sidhi
40. Arrange the following district of Madhya Pradesh in descending order of sex ratio and select the correct answer from below codes.
1. Mandla  
2. Dindori  
3. Alirajpur  
4. Balaghat
- Codes :**
- (A) 1, 2, 3, 4  
(B) 4, 3, 1, 2  
(C) 2, 1, 4, 3  
(D) 3, 4, 2, 1
41. In which year the Sports Authority of India was established ?
- (A) 1976  
(B) 1981  
(C) 1984  
(D) 1991
42. When was the 'Ladli Lakshmi Yojna' started by the Government of Madhya Pradesh ?
- (A) 1 April 2006  
(B) 1 April 2007  
(C) 1 April 2008  
(D) 1 July 2006
43. When was the Chief Minister's Women Empowerment Scheme started in Madhya Pradesh ?
- (A) April 2012  
(B) July 2012  
(C) September 2013  
(D) November 2013



44. मध्यप्रदेश के वर्तमान राज्यपाल श्री मंगुभाई छ. पटेल ने किस तिथि से पदभार संभाला है ?
- (A) 03 जुलाई 2021  
(B) 13 जुलाई 2021  
(C) 08 जुलाई 2021  
(D) 28 जुलाई 2021
45. ज्योतिर्लिंग ममलेश्वर किस प्रसिद्ध स्थान में स्थित है ?
- (A) मन्दसौर  
(B) ओंकारेश्वर  
(C) कपिल धारा  
(D) उज्जैन
46. मुख्यमंत्री कृषक उद्यमी योजना कब प्रारंभ की गई ?
- (A) वर्ष 2016 – 2017  
(B) वर्ष 2017 – 2018  
(C) वर्ष 2018 – 2019  
(D) वर्ष 2019 – 2020
47. मध्यप्रदेश में वर्ष 2005 – 06 में कृषि जोत को औसत आकार है
- (A) 1.28 हेक्टेयर  
(B) 2.22 हेक्टेयर  
(C) 1.8 हेक्टेयर  
(D) 2.25 हेक्टेयर
48. “बैनगंगा” नहर से मध्यप्रदेश के किस जिले में सिंचाई की जाती है ?
- (A) जबलपुर  
(B) मण्डला  
(C) सीधी  
(D) बालाघाट
49. सॉइल हेल्थकार्ड संबंधित है
- (A) संतुलित उर्वरक के उपयोग  
(B) अधिक पैदावार  
(C) मिट्टी का परीक्षण  
(D) उपरोक्त सभी
50. मध्यप्रदेश का सबसे कम महिला साक्षरता दर वाला जिला है
- (A) झाबुआ  
(B) अलिराजपुर  
(C) श्योपुर  
(D) बड़वानी



44. From which date the present Governor of Madhya Pradesh Shri Mangu Bhai Ch. Patel has taken over ?
- (A) 03 July 2021  
(B) 13 July 2021  
(C) 08 July 2021  
(D) 28 July 2021
45. In which famous place Jyotirling Mamleshvar is situated ?
- (A) Mandsour  
(B) Omkareshvar  
(C) Kapil Dhara  
(D) Ujjain
46. When was Chief Minister Krishak Udhayami Yojana launched ?
- (A) Year 2016 – 2017  
(B) Year 2017 – 2018  
(C) Year 2018 – 2019  
(D) Year 2019 – 2020
47. In a year 2005 – 06, average size of agricultural holding in Madhya Pradesh is
- (A) 1.28 Hectare  
(B) 2.22 Hectare  
(C) 1.8 Hectare  
(D) 2.25 Hectare
48. Which district irrigated by "BenGanga" Canal in Madhya Pradesh ?
- (A) Jabalpur  
(B) Mandla  
(C) Sidhi  
(D) Balaghat
49. Soil Health Card is related with
- (A) Use of balanced fertilizer  
(B) High yields  
(C) Soil test  
(D) All of the above
50. Lowest female literacy rate district in Madhya Pradesh is
- (A) Jhabua  
(B) Alirajpur  
(C) Sheopur  
(D) Barwani





खंड - ब / SECTION - B

51. What is the unit of dynamic viscosity of a fluid termed as 'Poise' equivalent to ?
- (A) dyne/cm<sup>2</sup>  
(B) dyne-sec/cm<sup>2</sup>  
(C) gm-sec/cm<sup>2</sup>  
(D) gm-cm/sec<sup>2</sup>
52. What is the height of the fluid raise (h), when the capillary with the diameter (d) is dipped in the fluid having a density ( $\rho$ ) and surface tension ( $\sigma$ ) ?
- (A)  $h = \frac{4\sigma \cos \theta}{\rho g d}$   
(B)  $h = \frac{4\sigma \cos \theta}{\rho g d^2}$   
(C)  $h = \frac{4\sigma \cos \theta}{2\rho g d}$   
(D)  $h = \frac{4\sigma^2 \cos \theta}{\rho g d}$
53. The pressure intensity at a point in a fluid is given 3.925 N/cm<sup>2</sup>. Find the corresponding height of the fluid when the fluid has specific gravity 1.
- (A) 2 m  
(B) 3 m  
(C) 4 m  
(D) 5 m
54. Velocity potential function exist only when
- (A) flow is laminar  
(B) flow is turbulent  
(C) flow is irrotational  
(D) flow is rotational
55. Three pipes of lengths 800 m, 500 m and 400 m and of diameter 500 mm, 400 mm and 300 mm respectively are connected in series. These pipes are to be replaced by a single pipe of length. Find the diameter of the single pipe.
- (A) 271.8 mm  
(B) 371.8 mm  
(C) 471.8 mm  
(D) 571.8 mm
56. A sample of dry soil weighs 68 grams. Find the volume of voids if the total volume of the sample is 40 mL and the specific gravity of solids is 2.65.
- (A) 14 mL  
(B) 14.34 mL  
(C) 14.74 mL  
(D) 15 mL
57. The capillary rise in one soil sample having  $D_{10} = 0.05$  mm is 52 cm. If another soil having  $D_{10} = 0.10$  and same voids ratio as of first soil then the value of capillary rise in second soil is
- (A) 13 cm  
(B) 26 cm  
(C) 52 cm  
(D) 65 cm



58. The surface of a saturated clay deposit is located permanently below the groundwater table. The clay has natural water content of 43% and specific gravity of 2.70, the vertical intergranular pressure at depth of 11 meter is

- (A) 84.92 kN/m<sup>2</sup>
- (B) 72.62 kN/m<sup>2</sup>
- (C) 43.56 kN/m<sup>2</sup>
- (D) 36.41 kN/m<sup>2</sup>

59. A normally consolidated clay layer settles 2 cm when the effective stress is increased from 80 to 160 kN/m<sup>2</sup>. When the effective stress is further increased to 320 kN/m<sup>2</sup>, the further settlement will be

- (A) 8 cm
- (B) 4 cm
- (C) 6 cm
- (D) 2 cm

60. Which of the following statement is correct ?

- (A) Relative compaction and Relative density are same.
- (B) Vibratory rollers are effective for cohesive soil.
- (C) Zero air void and 100% saturation lines are same.
- (D) For dense sand, maximum and minimum void ratios are identical.

61. The domestic sewage of a town was tested for total solids and following results were obtained :

Weight of sample of sewage = 1000 gm

Weight of solids after evaporation of liquid = 0.952 gm

Weight of dry residue after ignition = 0.516 gm

- (A) 436 ppm
- (B) 952 ppm
- (C) 516 ppm
- (D) 1468 ppm

62. Following is one of the example of secondary air pollutant.

- (A) Organic compounds
- (B) Nitrogen oxides
- (C) Ozone (O<sub>3</sub>)
- (D) Halogen compounds

63. An unit operation in which a solid or solid liquid mixture is intimately mixed with a liquid for the purpose of transferring certain components to the liquid

- (A) Chemical conditioning
- (B) Sludge thickening
- (C) Elutriation
- (D) Dewatering of sludge



64. In case of wastewater disposal in a river, minimum dissolved oxygen level occurs in the zone of

- (A) Zone of clear water
- (B) Zone of active decomposition
- (C) Zone of recovery
- (D) Zone of degradation

65. Sedimentation with coagulation treatment of water is effective when water is

- (A) Slightly acidic
- (B) Slightly alkaline
- (C) Strong acidic
- (D) Strong alkaline

66. A rectangular beam 300 mm deep is simply supported over a span of 4 m and having moment of inertia  $I = 225 \times 10^6 \text{ mm}^4$ . Beam is loaded with 2kN/m uniformly distributed load. The section modulus of beam is

- (A)  $0.87 \times 10^6 \text{ mm}^3$
- (B)  $1.03 \times 10^6 \text{ mm}^3$
- (C)  $1.25 \times 10^6 \text{ mm}^3$
- (D)  $1.50 \times 10^6 \text{ mm}^3$

67. Strain energy stored in a hollow shaft of external diameter (D) and internal diameter (d) when subjected to shear stress ( $\tau$ ) is equal to

(A)  $\frac{\tau^2}{C} \left[ \frac{D^2 + d^2}{D} \right]$

(B)  $\frac{\tau^2}{4C} \left[ \frac{D^2 + d^2}{D} \right]$

(C)  $\frac{\tau^2}{C} \left[ \frac{D^2 - d^2}{D} \right]$

(D)  $\frac{4\tau^2}{C} \left[ \frac{D^2 - d^2}{d} \right]$

68. A cantilever truss is loaded as shown in figure. The force in the member AB is given by

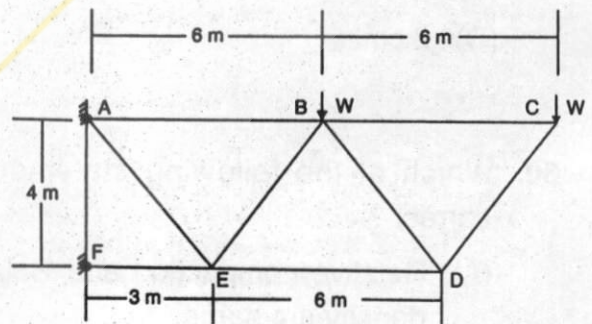


Fig. : Prob

- (A) 3 kN
- (B) 5 kN
- (C) 6 kN
- (D) 8 kN



69. In statically indeterminate frame total pull (T) can be calculated by relation with usual notations

(A)  $\sum \frac{PKL}{AE} / \left( \sum \frac{K^2L}{AE} + \frac{L_0}{AE} \right)$

(B)  $\sum \frac{PKL}{AE} / \left( \sum \frac{K^2L}{AE} - \frac{L_0}{AE} \right)$

(C)  $\sum \frac{PKL}{AE} / \left( \sum \frac{4K^2L}{AE} + \frac{L_0}{AE} \right)$

(D)  $\sum \frac{PKL}{AE} / \left( \sum \frac{4K^2L}{AE} - \frac{L_0}{AE} \right)$

70. A simply supported beam of span 4 m is carrying a uniformly distributed load of 2 kN/m over the entire span. Find the maximum slope and deflection of the beam. Take EI of the beam as  $80 \times 10^9 \text{ N/mm}^2$ .

- (A) Slope 0 deflection 80 mm
- (B) Slope 0.5 radian deflection 83.3 mm
- (C) Slope 0.067 radian deflection 81.3 mm
- (D) Slope 0.67 radian deflection 83.3 mm

71. On Indian railways, the following length of rail is adopted for broad gauge

- (A) 10 m
- (B) 13 m
- (C) 18 m
- (D) 21 m

72. The following method may **not** be useful to correct the creep

- (A) Apply anti creep coating
- (B) Pulling back rails
- (C) Use of creep anchors
- (D) Increase in sleeper density

73. Wherever reverse curves are necessary, a long straight portion between two reverse curves provided should have a minimum length of

- (A) 54 m
- (B) 48 m
- (C) 36 m
- (D) 24 m

74. As per the rule with one locomotive the following gradients are recommended in plains

- (A) 1 in 50 to 1 in 200
- (B) 1 in 50 to 1 in 300
- (C) 1 in 30 to 1 in 200
- (D) 1 in 50 to 1 in 267

75. The reduction in gradients at curve is known as grade compensation. In India, the following value of grade compensation have been allowed for broad gauge track

- (A) 0.04% per degree curve
- (B) 0.06% per degree curve
- (C) 0.067% per degree curve
- (D) 1.23% per degree curve



76. Modulus of rigidity is defined as, within elastic limit shear stress is proportional to
- (A) Torsional strain
  - (B) Shear strain
  - (C) Circumferential strain
  - (D) Longitudinal strain
77. When a body is subjected to direct tensile stress ( $\sigma$ ) in one plane and accompanied by a single shear ( $\tau$ ), the maximum normal stress is
- (A)  $\frac{\sigma}{2} - \frac{1}{2}\sqrt{\sigma^2 + 4\tau^2}$
  - (B)  $\frac{\sigma}{2} + \frac{1}{2}\sqrt{\sigma^2 + 4\tau^2}$
  - (C)  $\frac{\sigma}{2} + \sqrt{\sigma^2 - 4\tau^2}$
  - (D)  $\frac{\sigma}{2} + \frac{1}{2}\sqrt{\sigma^2 - 4\tau^2}$
78. A structure may be redundant both internally as well as externally and the total redundancy (T) is given as
- (A)  $m - (2J - R)$
  - (B)  $m - (J - 2R)$
  - (C)  $m + (2J - R)$
  - (D)  $m - (2J + R)$
79. The vertical deflection of the joint of a perfect frame ( $\delta v$ ) is given as
- (A)  $\sum \frac{pvI}{E}$
  - (B)  $\sum \frac{1.5 pvI}{E}$
  - (C)  $\sum \frac{2 pvI}{E}$
  - (D)  $\sum \frac{\pi pvI}{E}$
80. The term virtual work refers to
- (A) Actual work done by virtual forces
  - (B) Virtual work done by actual forces
  - (C) Virtual work done by virtual forces
  - (D) Virtual work done by uniform forces
81. For which of the following conditions, the hydraulic jump formation will be perfect and it will be formed at the toe of the spillway at all discharges ?
- (where J. H. C. – Jump Height Curve  
T. W. C. – Tail Water Curve)
- (A) J. H. C. and T. W. C. coincides at all discharges
  - (B) J. H. C. lies lower than T. W. C. at all discharges
  - (C) J. H. C. lies above T. W. C. at all discharges
  - (D) None of the above



82. According to Lacey's theory of channel design, what will be the velocity of flow in the channel corresponding to a discharge of 140 cumec and silt factor 1.0 ?

- (A) 1.0 m/s
- (B) 1.2 m/s
- (C) 2.0 m/s
- (D) 2.2 m/s

83. As per Kennedy's theory of design of canal, if the depth of water in the canal is 1.0 m, which of the following will be value of critical velocity, if the critical velocity ratio is 1.0 ?

- (A) 1 m/sec
- (B) 0.55 m/sec
- (C) 0.64 m/sec
- (D) 2.0 m/sec

84. The percentage quantity of water required for maintaining equilibrium in the salt content of the soil is known as

- (A) Drainage coefficient
- (B) Leaching requirement
- (C) Saturation soil extract
- (D) Salt content of irrigation water

85. The ultimate width to which an alluvial river can be constructed may be computed from which of the following relations ?

(where  $L$  = Width of river in m

$Q$  = Estimated Max-discharge in cumecs)

(A)  $L = 4.75\sqrt{Q}$

(B)  $L = 4.75Q^{1/3}$

(C)  $L = 3.75\sqrt{Q}$

(D)  $L = 4.8Q^{1/3}$

86. For 22 mm diameter rivet, the diameter of the rivet hole is

- (A) 22 mm
- (B) 23.5 mm
- (C) 24 mm
- (D) 25.5 mm

87. In case when plates are connected by zigzag or staggered riveting the net sectional area  $A_n$  is given by

(A)  $A_n = \left[ b - nd_n + n' \frac{P^2}{4g} \right] t$

(B)  $A_n = \left[ b + nd_n - n' \frac{P^2}{4g} \right] t$

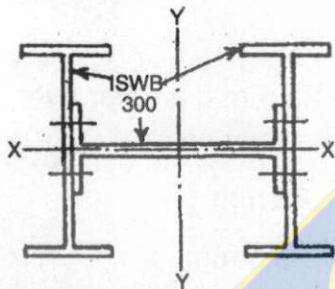
(C)  $A_n = \left[ b + nd_n + n' \frac{P^2}{4g} \right] t$

(D)  $A_n = \left[ b - nd_n + n' \frac{4P^2}{g} \right] t$



88. A strut used in a roof truss having a length of 4.0 m between the c/c intersection. The effective length of strut is
- (A) 4.0 m
  - (B) 3.0 m
  - (C) 3.4 m
  - (D) 3.1 m

89. Three rolled steel beam ISWB 300 as shown in figure are used as built up section for column having  $I_{xx} = 9021.6 \times 10^4 \text{ mm}^4$  and  $I_{yy} = 990 \times 10^4 \text{ mm}^4$ . The moment of inertia of the combined section  $I_{xx}$  is given as



- (A)  $407.78 \times 10^6 \text{ mm}^4$
  - (B)  $308.63 \times 10^6 \text{ mm}^4$
  - (C)  $284.53 \times 10^6 \text{ mm}^4$
  - (D)  $20.63 \times 10^6 \text{ mm}^4$
90. As per IS800 : 1984 for battened struts the effective length shall be increased by
- (A) 5%
  - (B) 8%
  - (C) 10%
  - (D) 12%
91. The result of ring and ball test on bitumen is given in terms of
- (A) Viscosity
  - (B) Time
  - (C) Flow
  - (D) Temperature

92. Radius of relative stiffness of cement concrete pavement is **not** dependent upon
- (A) Modulus of subgrade reaction
  - (B) Poisson's ratio of concrete
  - (C) Wheel load
  - (D) Modulus of elasticity of cement concrete

93. Benkelmann Beam deflection method is used for the design of
- (A) Flexible overlay on flexible pavement
  - (B) Rigid overlay on rigid pavement
  - (C) Flexible overlay on rigid pavement
  - (D) Rigid overlay over flexible pavement

94. According to FAA guidelines the runway length is to be increased at a rate of 20% for
- (A) One percent of effective gradient
  - (B) Two percent of effective gradient
  - (C) Three percent of effective gradient
  - (D) Five percent of effective gradient

95. The best direction of runway is
- (A) Along the direction of the longest line on the windrose diagram
  - (B) Along the direction perpendicular to the longest line on the windrose diagram
  - (C) Along  $30^\circ$  to the direction of the longest line on the windrose diagram
  - (D) None of the above



96. Safe Speed ( $V$ ) on the BG, MG or transition curve can be calculated by empirical formulae suggested by Martin
- (A)  $2\pi\sqrt{(R - 70)}$   
(B)  $\pi\sqrt{(R - 70)}$   
(C)  $4.4\sqrt{(R - 70)}$   
(D)  $4.4\sqrt{(70 - R)}$
97. Cant deficiency is
- (A) Deficiency in super elevation to maintain average speed  
(B) Sudden jump of rail due to joint deficiency  
(C) Deficiency in maintaining speed in straight run  
(D) Deficiency in rail due to wear
98. If the track is laid on the place in a curve of 5 degree, the allowable ruling gradient on the curve is
- (A) 1 in 334  
(B) 1 in 318  
(C) 1 in 297  
(D) 1 in 253
99. The following switches are used in Indian Railways
- (A) Wharton's switch  
(B) John Richard switch  
(C) Clark switch  
(D) Stub switch
100. The maximum permissible speed for broad gauge have been recommended by the Indian railways for crossing
- (A) 1 in  $8\frac{1}{2}$  - 16 kmph  
(B) 1 in  $8\frac{1}{2}$  - 12 kmph  
(C) 1 in 12 - 12 kmph  
(D) 1 in 12 - 16 kmph
101. The shear strength of plastic undrained clay depends upon
- (A) Internal friction  
(B) Cohesion  
(C) Internal friction and cohesion  
(D) Unit weight of clay
102. A vertical wall 6.0 m high with a smooth back pure and dry sand behind it. The level of sand is horizontal and has  $C = 0.0 \text{ kN/m}^2$ ,  $\phi = 30^\circ$  and  $\gamma = 18 \text{ kN/m}^3$ . The active pressure at the base of the wall using Rankine's theory is
- (A)  $24 \text{ kN/m}^2$   
(B)  $36 \text{ kN/m}^2$   
(C)  $72 \text{ kN/m}^2$   
(D)  $108 \text{ kN/m}^2$
103. If the gross bearing capacity of a strip footing 1.5 m wide located at depth of 1 m clay is  $400 \text{ kN/m}^2$ , its net bearing capacity for  $\gamma = 20 \text{ kN/m}^3$  is
- (A)  $370 \text{ kN/m}^2$   
(B)  $380 \text{ kN/m}^2$   
(C)  $390 \text{ kN/m}^2$   
(D)  $360 \text{ kN/m}^2$





104. The method of slices for the stability of slope
- (A) Can be used for stratified soil
  - (B) Can be used when seepage occurs and the pore pressure exists within the soil
  - (C) Gives the factor of safety based on moments and not the forces
  - (D) All the above
105. A pile group consists of 9 friction piles of 300 mm diameter and 10 m length driven in clay ( $C_u = 100 \text{ kN/m}^2$ ,  $\gamma = 20 \text{ kN/m}^3$ ). The centre to centre distance of piles is 0.75 m in both direction. Factor of safety = 3, adhesion factor  $\alpha = 0.60$ , then the safe load for pile group is
- (A) 628.8 kN
  - (B) 5659.2 kN
  - (C) 1886.4 kN
  - (D) 2243.4 kN
106. Original cost of property is Rs. 18,00,000 and its expected life is 60 years. Salvage value of the property is Rs. 75,000. Depreciation per year using straight line method would be
- (A) Rs. 25,150
  - (B) Rs. 29,450
  - (C) Rs. 29,770
  - (D) Rs. 28,750
107. Turnover ratio is the ratio between
- (A) Annual sales and investment
  - (B) Capital and investment
  - (C) Purchase and investment
  - (D) Annual sales and purchase
108. Due to change in price level, a revised estimate is prepared if the sanctioned estimate exceeds
- (A) 2.0%
  - (B) 2.5%
  - (C) 4.0%
  - (D) 5.0%
109. A supplier sends steel plates in a huge quantity to a contractor. The first batch was exhaustively examined for thickness and gave a standard deviation of 1.8. The contractor feels that the knowledge of mean within a range of 0.5 to its true value for a probability of 95% would be satisfactory. At 95% probability  $z = 1.96$  the size of the sample would be
- (A) 30
  - (B) 40
  - (C) 50
  - (D) 60
110. Which one of the following is **not** separated contract ?
- (A) Lumpsum
  - (B) Item rate
  - (C) Joint venture
  - (D) Cost plus percentage



111. The slenderness ratio of the lacing bars for compression member shall **not** exceed
- (A) 200  
(B) 175  
(C) 165  
(D) 145
112. For plate girder, where load bearing stiffeners at supports are the role means of providing restraint against torsion, the moment of inertia of the stiffeners about the centre of web plate  $I$  shall **not** be less than
- (A)  $\frac{DT^3}{25} \times R/W$   
(B)  $\frac{D^3R}{250} \times T/W$   
(C)  $\frac{WT^3}{250} \times R/W$   
(D)  $\frac{D^3T}{250} \times R/W$
113. Where the horizontal stiffeners are provided 'd' in mm shall be taken as clear distance between the horizontal stiffeners and tension flange. These vertical stiffeners shall be designed so that  $I$  is **not** less than
- (A)  $1.3 \frac{d^3t^3}{C^2}$   
(B)  $1.5 \frac{d^3t^3}{C^2}$   
(C)  $0.87 \frac{d^3t^3}{C^2}$   
(D)  $0.85 \frac{d^3t^3}{C^2}$
114. The live load for sloping roof with slope  $15^\circ$  where access is **not** provided to roof is taken as
- (A)  $0.55 \text{ kN/m}^2$   
(B)  $0.65 \text{ kN/m}^2$   
(C)  $0.75 \text{ kN/m}^2$   
(D)  $1.10 \text{ kN/m}^2$
115. In the analysis of structures by plastic theory, the following conditions must be satisfied
- (A) Equilibrium condition  
(B) Mechanism condition  
(C) Yield condition  
(D) All the above
116. The carbonate and non-carbonate hardness of a water having a total alkalinity of  $200 \text{ mg/L}$  as  $\text{CaCO}_3$  and  $120 \text{ mg/L}$  of  $\text{Ca}^{++}$  and  $60 \text{ mg/L}$  of  $\text{Mg}^{++}$  as ions. Calculate total hardness of the water in  $\text{mg/L}$  as  $\text{CaCO}_3$ .
- (A) 450  
(B) 550  
(C) 650  
(D) 750



117. In a continuous flow settling tank 3 m deep and 60 m long, what flow velocity of water would recommend for effective removal of 0.025 mm particles. The specific gravity of particles is 2.65 and kinematic viscosity  $\nu$  for water may be taken as  $0.01 \text{ cm}^2/\text{sec}$
- (A) 0.0462 cm/sec  
(B) 0.0562 cm/sec  
(C) 0.0662 cm/sec  
(D) 0.0762 cm/sec
118. A water supply scheme has to be designed for a city having a population of 100000. Estimate the maximum daily draft in million litres/day (Mld) for an average water consumption of 250 lpcd
- (A) 25 Mld  
(B) 50 Mld  
(C) 45 Mld  
(D) 90 Mld
119. Sewage is flowing with a velocity of 0.90 m/sec. in a 300 mm diameter sewer. Find the hydraulic gradient. Assume Manning's rugosity coefficient " $\eta$ " as 0.013.
- (A) 0.0043  
(B) 0.0053  
(C) 0.0063  
(D) 0.0073
120. Calculate the 'fire demand' for a city having population using "Freeman formula".
- (A) 0.829 cumecs  
(B) 0.719 cumecs  
(C) 0.789 cumecs  
(D) 0.879 cumecs
121. If the free haul distance is 200 m, the cost of borrow (including excavation and hauling) is Rs. 4/m<sup>3</sup> at station, cost of haulage beyond free haul is Rs. 0.75/m<sup>3</sup> – station meter, what is the limit of economical haul distance ?
- (A) 340 m  
(B) 360 m  
(C) 380 m  
(D) 400 m
122. Critical path is defined as one that gives
- (A) The longest time of completion of the project  
(B) The smallest time of completion of the project  
(C) The average time of the completion of the project  
(D) None of the above



123. A preliminary survey indicates that 20% of the time of a gang of workers is spent idly. Estimate the total number of observations required to determine the proportion of idle time within  $\pm 5\%$  with 95% confidence limit. (z value for 95% confidence limit = 1.96)
- (A) 246  
(B) 256  
(C) 266  
(D) 276
124. BOT contract means
- (A) Building Of Transfer  
(B) Built Own Transfer  
(C) Build Operate Transfer  
(D) Building Operate Trade
125. A four wheel tractor whose operating weight is 13,000 kg is pulled along a level haul road at a uniform speed by another tractor. The average tension in the toe cable is 585 kg. The rolling resistance of the haul road is
- (A) 25 Kg/t  
(B) 35 Kg/t  
(C) 45 Kg/t  
(D) 60 Kg/t
126. Water is flowing with velocity 0.15 m/sec over a plate 1 m long and 0.8 m wide. Calculate the Reynold's number. [Take viscosity of water  $\mu = 0.001 \text{ Ns/m}^2$ ]
- (A) 100000  
(B) 150000  
(C) 200000  
(D) 250000
127. Condition for the most economical rectangular channel in open channel flow when width and depth of the channel are 'b' and 'd' respectively and 'm' is the hydraulic mean depth.
- (A)  $b = 2d$   
(B)  $m = b/3$   
(C)  $d = 2b$   
(D)  $m = d/4$
128. A stationary hydraulic jump occurs in a rectangular channel with the initial and sequent depth being equal to 0.20 m and 1.20 m respectively. Estimate the energy loss.
- (A) 0.5 m  
(B) 1.04 m  
(C) 2.50 m  
(D) 3.52 m
129. If the boundary layer over a flat plate, kept parallel to the flow, is laminar. Determine the ratio of the skin – skin friction drags on the front half of the plate to the rear half.
- (A) 3.52  
(B) 1.51  
(C) 2.41  
(D) 4.21



130. Froude's number is defined as the ratio of
- (A) Inertia force to viscous force
  - (B) Square root of inertia force to pressure force
  - (C) Square root of inertia force to gravity force
  - (D) Square root of inertia force to elastic force
131. The value of strength of concrete below which not more than 5% of results are expected to fall is called
- (A) Ultimate strength
  - (B) Permissible strength
  - (C) Characteristic strength
  - (D) Design strength
132. A simply supported beam has an effective span of 12 m. What shall be the limiting ratio of span to effective depth as per IS : 456 – 2000 ?
- (A) 20
  - (B) 26
  - (C) 7
  - (D) 16.67
133. **Assertion (A)** : The behaviour of an over-reinforced beam is more ductile than that of under-reinforced beam.
- Reason (R)** : Over reinforced beam contains more steel and steel is more ductile than concrete.
- (A) Both (A) and (R) are individually true and (R) is correct explanation of (A)
  - (B) Both (A) and (R) are individually true and (R) is not correct explanation of (A)
  - (C) (A) is true but (R) is false
  - (D) (A) is false but (R) is true
134. The side face reinforcement is provided in a beam along the two faces, when depth of the web in a beam exceeds
- (A) 300 mm
  - (B) 750 mm
  - (C) 500 mm
  - (D) 450 mm
135. In case of continuous slab, the torsion reinforcement provided in an inner corner with all the face side continuous an amount equal to
- (A) 0.75 A
  - (B) 0.75 A/2
  - (C) 0.50 A
  - (D) No torsion reinforcement is required



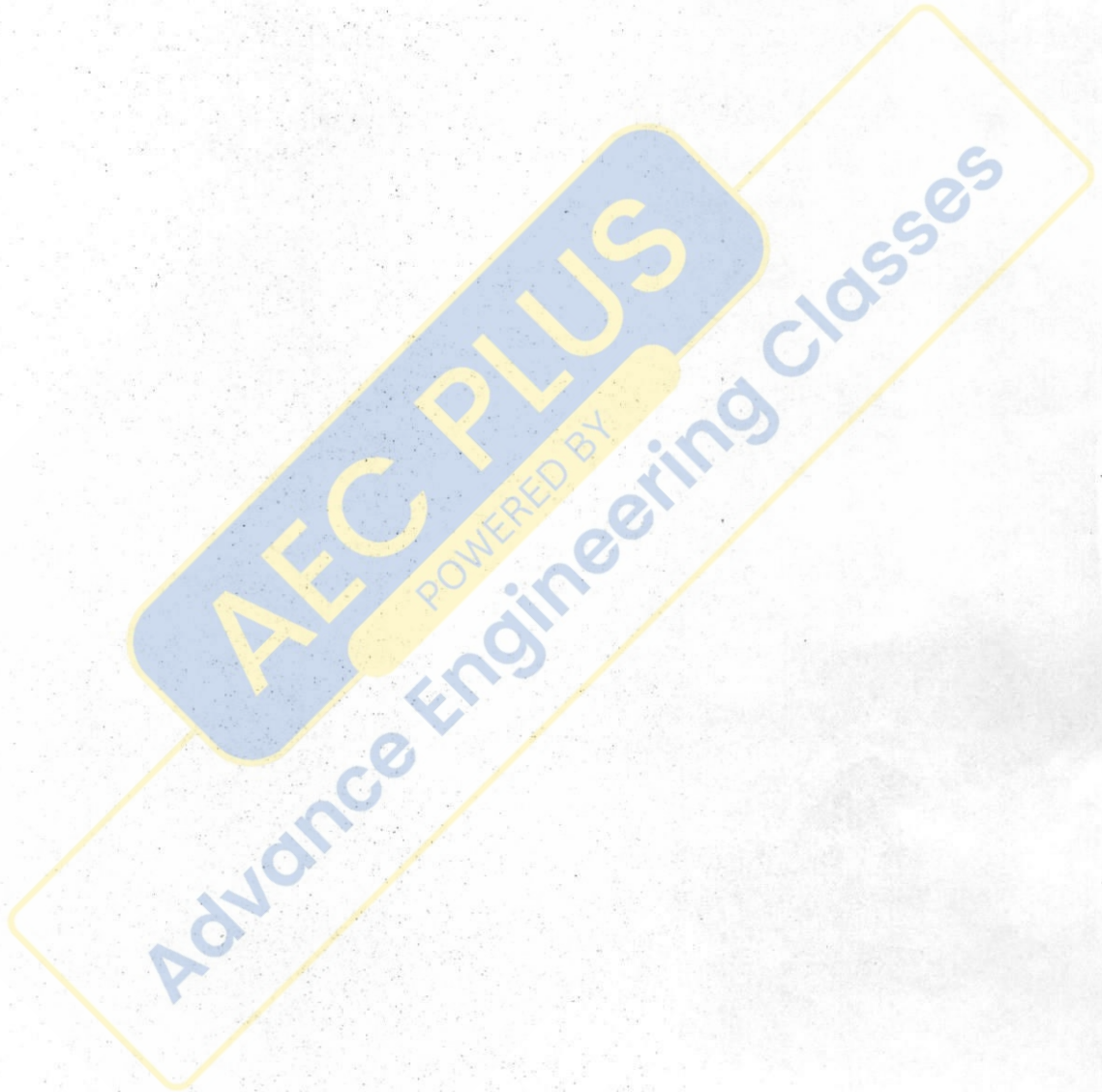
136. The "Pradhana Mantri Gram Sadak Yojana" (PMGSY) Scheme was launched in the year
- (A) 1998  
(B) 1999  
(C) 2000  
(D) 2001
137. As per IRC : 73 – 1980, the width of the carriageway for double lanes (with raised curbs) is
- (A) 7.5 m  
(B) 7.6 m  
(C) 7.7 m  
(D) 8.0 m
138. According to the IRC : 73 guidelines, extra widening of curves is not required on single lane carriageways if the radius of the curve is longer than
- (A) 60 m  
(B) 80 m  
(C) 100 m  
(D) 120 m
139. Which one of the following is **not** a desirable property of the subgrade soil as a highway material ?
- (A) Bitumen adhesion  
(B) Strength  
(C) Stability  
(D) Good drainage
140. A road sign indicates "No Parking" in
- (A) Warning sign  
(B) Prohibitory sign  
(C) Regulatory sign  
(D) Informatory sign
141. Which of the following is the world's largest river ?
- (A) Brahmaputra  
(B) Ganga  
(C) Amazon  
(D) Yamuna
142. A crop requires twelve waterings at an interval of 10 days and water depth of 10 cm is applied in every watering. What will be the total water depth required by the crop during entire period ?
- (A) 1.10 m  
(B) 1200 cm  
(C) 1.20 m  
(D) 100 cm
143. In case of synthetic unit hydrograph, which of the following relation was suggested by Synder relating standard duration (D) with the basin lag in hours ( $t_p$ ) ?
- (A)  $D = \frac{2}{11} t_p$   
(B)  $D = \frac{1}{11} t_p$   
(C)  $D = \frac{1}{12} t_p$   
(D)  $D = \frac{t_p}{5}$



144. The equilibrium equation for steady flow in a confined aquifer is popularly known as  
(A) Lacey's equation  
(B) Thiem's equation  
(C) Dupuit's equation  
(D) Bligh's theory
145. In case of gravity dam, the water pressure acts at a distance of  
(where  $h_w$  – height of water in metre)  
(A)  $\frac{1}{8} h_w$  from still water surface  
(B)  $\frac{3}{8} h_w$  from still water surface  
(C)  $\frac{1}{4} h_w$  from still water surface  
(D)  $\frac{1}{3} h_w$  from still water surface
146. In case of helically reinforced column, the ratio of volume of helical reinforcement to the volume of the core shall be  
(A)  $\leq 0.36 \left( \frac{A_g}{A_c} - 1 \right) \cdot f_{ck} / f_y$   
(B)  $\geq 0.36 (A_g / A_c - 1) f_{ck} / f_y$   
(C)  $\geq 0.36 (A_g / A_c + 1) f_{ck} / f_y$   
(D)  $\geq 0.36 (1 - A_g / A_c) \cdot f_{ck} / f_y$
147. The critical section for one way shear action in the design of isolated column footing shall be taken as  
(A) column face  
(B) a distance 'd' from column face  
(C) a distance ' $d/2$ ' from column face  
(D) a distance ' $d/4$ ' from column face
148. A pre-stressed concrete simply supported rectangular beam is having 'A' cross-sectional area has a span 'S' and is subjected to a bending moment 'M' at mid span sections. The pre-stressing tendons are located at an eccentricity 'e' from the centroidal axis provide an effective pre-stress of 'P'. The extreme bottom fibre stress at mid-span section is given as  
(A)  $\frac{P}{A} - \frac{Pe}{Z_b} + \frac{M}{Z_b}$   
(B)  $\frac{P}{A} + \frac{Pe}{Z_b} - \frac{M}{Z_b}$   
(C)  $\frac{P}{A} + \frac{Pe}{Z_b} + \frac{M}{2Z_b}$   
(D)  $\frac{P}{A} - \frac{Pe}{Z_b} - \frac{M}{Z_b}$
149. A simply supported concrete beam pre-stressed with a force of 2500 kN is designed by load balancing concept for an effective span of 10 m and to carry a total load of 40 kN/m, the central dip of the cable profile should be  
(A) 100 mm  
(B) 200 mm  
(C) 300 mm  
(D) 400 mm
150. As per IS : 1893 (Part I) 2016, the design horizontal seismic co-efficient  $A_h$  for a structure is determined by  
(A)  $A_h = \frac{Z}{2} \times \frac{I}{R} \times \frac{S_a}{g}$   
(B)  $A_h = \frac{Z}{2} \times \frac{R}{I} \times \frac{S_a}{g}$   
(C)  $A_h = Z \cdot \frac{I}{R} \cdot \frac{S_a}{g}$   
(D)  $A_h = \frac{Z}{2} \cdot \frac{R}{I} \cdot \frac{S_a}{2g}$



रफ़ कार्य / ROUGH WORK







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