Do not open this booklet until you are asked to do so.

इस पुस्तिका को तब तक न खोलें जब तक कहा ना जाए।

QUESTION BOOKLET
प्रश्न पुस्तिका

Subject: Electrical Degree
विषयः– इलेक्ट्रिकल डिग्री

Code: A
कोडः ए

Duration: 2 hours
समय : 2 घण्टे

Max. Marks: 100
अधिकतम अंकः 100

1. Candidate's Roll no. परीक्षार्थी क्रमांक	2. Question booklet Serial number : प्रश्न पुस्तिका क्रमांकः

Important Instructions
महत्वपूर्ण निर्देश

1. Number of pages in the booklet : 16
2. This Booklet is divided into Two Parts namely Part A and Part B. Part A contains 40 questions and Part B contains 60 questions.
3. Questions in Part A are in both English and Hindi language. Questions in part B are in English only.
4. All questions carry equal marks.
5. Please use **Black ink Ball Point Pen** to fill OMR answer sheet.
6. Answer all the questions in OMR sheet.
7. Each question has four alternative responses marked serially as A,B,C, and D. You have to darken only one circle in the supplied OMR sheet for each question.
8. **Negative marking** will be done 1/3 part of the mark(s) of question in case of each wrong/multiple reply.
9. If more than one options for an answer are marked correct then it will be treated as wrong answer.
10. Rough work should be done only in the space provided at the end of the Question Booklet
11. Use of mobile phone or any type of electronic device including calculator is strictly prohibited in the examination hall. Any candidate found with such objectionable material/device will be strictly dealt as per rules.
12. Please hand over both Answer Sheet and the Question Booklet to the Invigilator before leaving the Examination Hall.
13. In case of any variation in English or Hindi version, English version should be treated as correct.

Warning: If a candidate is found copying or if any unauthorized material is found in his/her possession, F.I.R will be lodged against his/her in the police station and he/she will be prosecuted under section 3 of the R.P.F. (Prevention of unfair means) Act, 1992.

1. पुस्तिका में पृष्ठों की संख्याः– 16
2. पुस्तिका में प्रश्नों को दो पार्ट में विभाजित किया गया है, क्रमशः ए एवं बी. पार्ट ए में 40 प्रश्न तथा पार्ट बी में 60 प्रश्न दिये हुए हैं।
3. पार्ट ए में प्रश्न हिन्दी एवं अंग्रेजी (द्विभाषीय) में दिये हुए हैं। पार्ट बी में प्रश्न अंग्रेजी में दिये हुए हैं।
4. सभी प्रश्नों के अंक समान है।
5. ओ एम आर पत्रक (OMR) भरने के लिए केवल **काली स्याही वाले बॉल पोईन्ट पेन** का ही प्रयोग करें।
6. सभी प्रश्नों के उत्तर पत्रक (OMR) पर दें।
7. प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं, जिन्हें क्रमशः A, B, C, D अंकित किया गया है। अभ्यर्थी को सही उत्तर निर्दिष्ट करते हुए उनमें से केवल एक गोले अथवा बबल को उत्तर–पत्रक पर काले बॉल प्वाइंट पेन से गहरा करना है।
8. प्रत्येक गलत उत्तर के लिए प्रश्न अंक का 1/3 भाग काटा जोयगा। गलत उत्तर से तात्पर्य अशुद्ध उत्तर अथवा किसी भी प्रश्न के एक अधिक उत्तर से है।
9. एक से अधिक उत्तर देने की दशा में प्रश्न के उत्तर को गलत माना जाएगा।
10. रफ कार्य केवल परीक्षा पुस्तिका के अंतिम पृष्ठ पर दिये गये खाली जगह पर ही करें।
11. मोबाईल फोन अथवा इलेक्ट्रोनिक यंत्र (केलकूलेटर सहित) का परीक्षा हॉल में प्रयोग पूर्णतया वर्जित है। यदि किसी अभ्यर्थी के पास ऐसी कोई वर्जित सामग्री मिलती है तो उसके विरूद्ध नियमानुसार कार्यवाही की जायेगी।
12. परीक्षा कक्ष छोड़ने से पहले प्रश्न पत्र एवं उत्तर पत्र की पुस्तिका कक्ष निरीक्षक को लौटा दें।
13. अंग्रेजी या हिंदी संस्करणों में किसी भी असमानता के मामले में अंग्रेजी संस्करण को सही माना जायेगा।

चेतावनीः–अगर कोई अभ्यर्थी नकल करते पकड़ा जाता है या उसके पास से कोई अनधिकृत सामग्री पाई जाती है, तो उस अभ्यर्थी के विरूद्ध पुलिस में प्राथमिकी दर्ज कराई जायेगी और आ.पी.ई. (अनुसूचित साधनों की रोकथाम) अधिनियम, 1992 के नियम 3 के तहत कार्यवाही की जायेगी।

Part A (English)

Q.1 Relics of ancient civilizations "***GILUND"*** were found near which river and in which district?
A. Ruparel, Bharatpur
B. Banas, Rajsaman
C. Luni, Pali
D. Khari, Bhilwara

Q.2 The language of the book, *'Prithviraj Vijaya'* written by ***Jayanayak Bhatt*** was:
A. Persian
B. Dingal
C. Sanskrit
D. Pingal

Q.3 The copper plant at Khetri and zinc plant in Debari was established in 1960's with support from UK. Today majority holdings in Debari plant has been sold to which industrial group?
A. Vendanta
B. Reliance
C. Tata
D. Birla

Q.4 ***Ira; Chap and Moran*** are tributaries of which river?
A. Banas
B. Chambal
C. Luni
D. Mahi

Q.5 The biggest cannon in the world is in which fort?
A. Chittorgarh Fort
B. Mehrangarh Fort
C. Jaigarh Fort
D. Nahargarh Fort

Q.6 American Cotton (Kapas) is grown in which district of Rajasthan?
A. Ganganagar
B. Sikar
C. Dausa
D. Bharatpur

Q.7 Which Jaipur ruler can be credited for having the buildings of Jaipur painted pink?
A. Sawai Mansingh
B. Kalyan Singh
C. Sawai Ram Singh II
D. Mirza Raja Jaisingh

Q.8 ***Bharateshwar Bahubali Ghor*** (Year 1168) is the oldest Jain litrary work of Rajasthani language. This describes the fierce fight between ***Bharateshwar & Bahubali.*** Who is the writer of this book?
A. Jindutt Suri
B. Brijsen Suri
C. Palhan
D. Vijaysen Suri

Q.9 ***"Saraswati Bhandar"*** a museum famous for paintings is located in?
A. Jodhpur
B. Udaipur
C. Bundi
D. Kota

Q.10 Which bank on 15 November 2014 won Custodian of the Year 2014 award?
A. Standard Chartered Bank
B. Deutsche Bank
C. Industrial & Commercial Bank of China
D. Royal Bank of Canada

Q.11 ***Mangalyaan*** has been named amongst the first best _____ inventions of 2014 in the list published by Time magazine?
A. 100
B. 50
C. 5
D. 25

Q.12 Barack Obama became the _____ President of America to participate in India's Republic Day celebrations during January 26, 2015?

A. Second
B. First
C. Third
D. Fourth

Q.13 Indian Railways has recently flagged off the first CNG (Compressed Natural Gas) based two trains from a station in which state?

A. Bihar
B. Jammu and Kashmir
C. Haryana
D. Gujarat

Q.14 Recently American geologists discovered the most abundant mineral named as _____ on earth's lower mantle.

A. Calcite
B. Aragonite
C. Muscovite
D. Bridgmanite

Q.15 World Health Organization, in November 2014, declared following country as free of the Ebola virus?

A. Democratic Republic of Congo
B. Nigeria
C. Liberia
D. Sudan

Q.16 Who among the following in January 2015 took charge as the first vice-chairman of the newly-created ***NITI Aayog***?

A. V. K. Saraswat
B. Bibek Debroy
C. Sindhushree Khullar
D. Arvind Panagariya

Q.17 Time bound Guarantee for per household per year under MGNREG

A. More than 100 days
B. Up to 100 days
C. 50 days
D. 75 days

Q.18 Wage and Material ratio for permissible works under MGNREGA

A. 50:50
B. 40 :60
C. 60:40
D. 30:70

Q.19 In 2013-14, total persons worked under MGNREGA in Rajasthan are

A. 40-50 Lakh
B. 30-40 Lakh
C. Less than 20 lakh
D. More than 50 Lakh

Q.20 Minimum percentage of Women in total under MGNREGA Work should be:

A. At least half
B. At least one-third
C. One-fourth
D. Two-third

Q.21 Employment is provided under MGNREGA within

A. A week of application
B. 15 days of application
C. A month of application
D. None of these

Q.22 Which statement is valid?

A. 1KB = 1024 bytes
B. 1 MB=2048 bytes
C. 1 MB = 1000 kilobytes
D. 1 KB = 1000 bytes

Q.23 The octal equivalent of 111010 is

A. 81
B. 72
C. 71
D. None of above

Q.24 Antivirus software is an example of:

A. Application software
B. Office software
C. Operating system
D. Utility software

Q.25 A Student wants to create "Digital story Collection" on the famous storyline "Rabbit and the tortoise. He has downloaded some images of tortoise, rabbit and forest. He wants to add watermarks, stylish text and images but is not interested in any animation. Which office tool should he use?

A. Word processing Software
B. Presentation software
C. Spreadsheet software
D. Database management system

Q.26 WAN stands for

A. Wap Area Network
B. Wide Area Network
C. Wide Array Net
D. Wireless Area Network

Q.27 There are eight mango trees in a straight line. The distance between each mango tree with other is 3 metres. What is the distance between first tree and eighth tree?

A. 24 m
B. 27 m
C. 30 m
D. 21 m

Q.28 A father is 30 years older than his son. He will be three times as old as his son after 5 years. What is the father's present age?

A. 35
B. 45
C. 40
D. 30

Q.29 If 34 men completed 2/5th of a work in 8 days, working 9 hours a day. How many more men should be engaged to finish the rest of the work in 6 days, working 9 hours a day?

A. 89
B. 98
C. 102
D. 142

Q.30 A man wants to reach a window which is 40 feet above the ground. The distance from the foot of the ladder to the wall is 9 feet. How long should the ladder be ?

A. 9 feet
B. 81 feet
C. 41 feet
D. 49 feet

Q.31 Choose the correct alternative that will continue the same pattern and fill in the blank spaces.
11, 13, 17, 19, 23, 29, 31, 37, 41, ___

A. 43
B. 47
C. 51
D. 53

Q.32 Choose the correct alternative that will continue the same pattern and fill in the blank spaces.
15, 31, 63, 127, 255, ___

A. 513
B. 511
C. 523
D. 517

Q.33 In a certain code DOWN is written as 5@9# and NAME is written as #6%3. How would MODE be written?

A. %653
B. %@63
C. %5@3
D. %@53

Q.34 At what angle the hands of the clock inclined at 15 minutes past 5 ?

A. $52\frac{1}{2}$ degrees
B. $67\frac{1}{2}$ degrees
C. $88\frac{1}{2}$ degrees
D. 93 degrees

Q.35 Give the correct option in the following sentences:

the/gifts/young/ones/on/give/elders/festivals

A. young ones give gifts on festivals to elders
B. elders give the young ones gifts on festivals
C. ones give gifts the elders, young ones on festivals
D. give gifts to elders and young ones on festivals

Q.36 Make affirmatives of following negative:

I haven't had any tea

A. I have tea
B. I have had some tea
C. I am having tea
D. I has some tea

Q.37 Fill in the blanks with appropriate articles:

_____passengers waited as _____flying mail was _____ hour late.

A. The, a, an
B. An, the, a
C. The, the, an
D. The, an, the

Q.38 'पक्षीवृन्द नभ में विचरते हैं।' रेखांकित शब्द का वचन है–

A. ब्हुवचन
B. एकवचन
C. द्विवचन
D. इनमें से कोई नहीं

Q.39 'संसार के सभी प्राणी केवल अपनी आँखों से ही देख सकते हैं।' वाक्य का रेखांकित अंश कौनसा कारक है

A. कर्ता
B. कर्म
C. करण
D. अधिकरण

Q.40 'पं. जगन्नाथ मिश्र बहुत बड़े पंडित थे।' वाक्य के रेखांकित शब्द से भाववाचक संज्ञा बनाइए

A. पंडिताइन
B. पांडित्व
C. पंडा
D. इनमें से कोई नहीं

Part A (Hindi)

Q.1 प्राचीन सभ्यता 'गिलूण्ड' के अवशेष किसी नदी के किनारे और किस जिले में मिले हैं?

A. रूपारेल, भरतपुर
B. बनास, राजसमन्द
C. लूनी, पाली
D. खारी, भीलवाड़ा

Q.2 जयानक भट्ट रचित 'पृथ्वीराज विजय' की भाषा थी–

A. फारसी
B. डिंगल
C. संस्कृत
D. पिंगल

Q.3 खेतड़ी का तांबा संयंत्र अमेरिकी कंपनी के सहयोग से और देवारी का जस्ता संयंत्र ब्रिटेन के सहयोग से 1960 के दशक में स्थापित किया गया। अब देबारी संयंत्र का अधिकांश हिस्सा इस समूह को बेच दिया गया है।

A. वेदान्ता
B. रिलायन्स
C. टाटा
D. बिड़ला

Q.4 ईरा, चाप और मोरन, किस नदी की सहायक है?

A. बनास
B. चम्बल
C. लूनी
D. माही

Q.5 विश्व की सबसे बड़ी तोप किस किले में स्थित हैं?

A. चित्तौड़गढ़ दुर्ग
B. मेहरानगढ़ दुर्ग
C. जयगढ़ दुर्ग
D. नाहरगढ़ दुर्ग

Q.6 अमेरिकन कपास राजस्थान के किस जिले में होती हैं?

A. श्रीगंगानगर
B. सीकर
C. दौसा
D. भरतपुर

Q.7 जयपुर की इमारतों पर गुलाबी रंग करवाने का श्रेय इन्हें दिया जाता है–

A. सवाई मानसिंह
B. कल्याण सिंह
C. सवाई रामसिंह द्वितीय
D. मिर्जा राजा जयसिंह

Q.8 भरतेश्वर बाहुबलि घोर (1168 ई.) राजस्थानी भाषा का सबसे प्राचीन जैन ग्रन्थ है, जिसमें भरतेश्वर और बाहुबलि के बीच हुए घोर युद्ध का वर्णन है। इसके लेखक कौन थे?

A. जिनदत्त सूरि
B. ब्रजसेन सूरि
C. पल्हण
D. विजयसेन सूरि

Q.9 चित्र कला के लिए प्रसिद्ध संग्रहालय 'सरस्वती भण्डार' कहां है?

A. जोधपुर
B. उदयपुर
C. बूंदी
D. कोटा

Q.10 किस बैंक ने नवम्बर 2014 मे कस्टडियन ऑफ द ईयर 2014 का खिताब जीता?

A. स्टेंडर्ड चार्टर्ड बैंक
B. ड्यूश बैंक
C. इण्डस्ट्रीयल एण्ड कॉमर्शियल बैंक ऑफ चाइना
D. रॉयल बैंक ऑफ कनाडा

Q.11 टाइम पत्रिका ने मंगलयान को 2014 के पहले सर्वश्रेष्ठ ..... आविष्कारों के बीच में नामित किया है।

A. 100
B. 50
C. 5
D. 25

Q.12 बराक ओबामा 26 जनवरी 2015 के दौरान भारत के गणतंत्र दिवस समारोह में भाग लेने वाले..... अमेरिकन राष्ट्रपति हैं?

A. दूसरे
B. पहले
C. तीसरा
D. चौथा

Q.13 भारतीय रेल ने प्रथम सीएनजी (कंप्रेस्ड नेचुरल गैस) आधारित दो रेलगाड़ी किस राज्य के स्टेशन से रवाना की?

A. बिहार
B. जम्मू एवं कश्मीर
C. हरियाणा
D. गुजरात

Q.14 हाल ही में अमेरिकी भूवैज्ञानिकों को पृथ्वी की निचली सतह पर सबसे प्रचुर मात्रा में ..... खनिज की खोज की।

A. केल्साइट
B. एंरेगोनाइट
C. मास्कोवाइटी
D. ब्रिजमेनाइट

Q.15 विश्व स्वास्थ्य संगठन ने नवंबर 2014 में किस देश को ईबोला वायरस से मुक्त देश घोषित किया है?

A. लोकतांत्रिक गणराज्य कांगो
B. नाइजीरिया
C. लाइबेरिया
D. सूडान

Q.16 निम्नलिखित में से किसने जनवरी 2015 में नवनिर्मित नीति आयोग के उपाध्यक्ष का कार्यभार संभाला?

A. वी.के. सारस्वत
B. बिबेक देबरॉय
C. सिंधूश्री खुल्लर
D. अरविंद पनगडिया

Q.17 मनरेगा के तहत प्रति वर्ष प्रति घर के लिए समय बाध्य गारंटी–

A. 100 दिनों से अधिक
B. 100 दिन तक के लिए
C. 50 दिन
D. 75 दिन

Q.18 मनरेगा के तहत अनुमत कार्यों हेतु वेतन और सामग्री अनुपात–

A. 50:50
B. 40:60
C. 60:40
D. 30:70

Q.19 2013–14 में मनरेगा के तहत राजस्थान में कार्य करने वाले कुल व्यक्ति–

A. 40–50 लाख
B. 30–40 लाख
C. 20 लाख से कम
D. 50 लाख से ज्यादा

Q.20 मनरेगा कार्यों में महिलाओं का न्यूनतम प्रतिशत होना चाहिए–

A. कम से कम ½ महिलाएं
B. कम से कम ⅓ महिलाएं
C. ¼ महिलाएं
D. ⅔ महिलाएं

Q.21 मनरेगा के तहत रोजगार प्रदान किया जायेगा–

A. प्रार्थना पत्र के एक सप्ताह में
B. प्रार्थना पत्र के 15 दिन में
C. प्रार्थना पत्र के एक माह में
D. इनमें से कोई नहीं

Q.22 कौनसा बयान मान्य है–

A. 1केबी = 1024 बाइट्स
B. 1एमबी = 2048 बाइट्स
C. 1एमबी = 1000 किलोबाइट
D. 1केबी = 1000 बाइट्स

Q.23 111010 का अष्टाधारी बराबर (ऑक्टल इक्वीलेंट) है–

A. 81
B. 72
C. 71
D. उपरोक्त में से कोई नहीं

Q.24 एंटीवायरस सॉफ्टवेयर निम्न का एक उदाहरण है–

A. आवेदन सॉफ्टवेयर
B. कार्यालय सॉफ्टवेयर
C. ऑपरेटिंग सिस्टम
D. उपयोगिता सॉफ्टवेयर

Q.25 एक छात्र प्रसिद्ध कहानी ''खरगोश और कछुआ पर'' डिजिटल कहानी संग्रह 'बनाना चाहता है। वह कुछुआ, खरगोश और जंगल के कुछ छवियों को डाउनलोड करता है। वह वाटरमार्क स्आइलिश पाठ और छवियों को जोड़ना चाहता है, लेकिन किसी भी एनीमेशन में कोई दिलचस्पी नहीं है । उसे ....का उपयोग करना चाहिए–

A. वर्ड प्रोसेसिंग सॉफ्टवेयर
B. प्रस्तुति सॉफ्टवेयर
C. स्प्रेडशीट सॉफ्टवेयर
D. डेटाबेस प्रबंधन प्रणाली

Q.26 वैन (WAN) का अभिप्राय है–

A. वैप एरिया नेटवर्क
B. वाइड एरिया नेटवर्क
C. वाइड अरे नेट
D. वायरलेस एरिया नेटवर्क

Q.27 एक सीधी लाइन में आठ आम के पेड हैं। प्रत्येक आम के पेड की दूरी दूसरे से 3 मीटर की है। पहले एवं आठवें पेड के बीच की दूरी क्या है?

A. 24 मी
B. 27 मी
C. 30 मी
D. 21 मी

Q.28 एक पिता अपने पुत्र से 30 वर्ष बड़ा है। वह पांच वर्ष बाद अपने पुत्र से 3 गुना बड़ा हो जाएगा। पिता की वर्तमान आयु क्या है?

A. 35 B. 45
C. 40 D. 30

Q.29 यदि 34 आदमी 2/5 काम, 8 दिन में प्रतिदिन 9 घंटे करके पूरा करते हैं, तो शेष कार्य को 6 दिन में प्रतिदिन 9 घंटे कार्य करके पूरा करने के लिए कितने अधिक आदमियों की आवश्यकता होगी?

A. 89 B. 98
C. 102 D. 142

Q.30 एक आदमी एक खिड़की तक पहुंचना चाहता है जो जमीन से 40 फीट ऊपर है। सीढ़ी का निचला हिस्सा (पैर) दिवार से 9 फुट की दूरी पर है। सीढ़ी कितनी लम्बी होगी?

A. 9 फीट B. 81 फीट
C. 41 फीट D. 49 फीट

Q.31 सही विकल्प का चयन करें जो नीयत पैटर्न को जारी रखेगा और रिक्त स्थान में भरें–

11, 13, 17, 19, 23, 29, 31, 37, 41,...?....

A. 43 B. 47
C. 51 D. 53

Q.32 सही विकल्प का चयन करें जो नीयत पैटर्न को जारी रखेगा और रिक्त स्थान में भरें–

15, 31, 63, 127, 255,...?....

A. 513 B. 511
C. 523 D. 517

Q.33 एक खास कोड में DOWN को 5@9# के रूप में लिखा जाता है एवं NAME को #6%3 के रूप में लिखा जाता है, तो MODE को कैसे लिखा जाएगा?

A. %653 B. %@63
C. %5@3 D. %@53

Q.34 5 बजकर 15 मिनट पर घडी की सुईयों का कोण क्या होगा?

A. $52\frac{1}{2}$ डिग्री B. $67\frac{1}{2}$ डिग्री
C. $88\frac{1}{2}$ डिग्री D. 93 डिग्री

Q.35 Give the correct option in the following sentences:

the/gifts/young/ones/on/give/elders/festivals

A. young ones give gifts on festivals to elders
B. elders give the young ones gifts on festivals
C. ones give gifts the elders, young ones on festivals
D. give gifts to elders and young ones on festivals

Q.36 Make affirmatives of following negative: I haven't had any tea

A. I have tea
B. I have had some tea
C. I am having tea
D. I has some tea

Q.37 Fill in the blanks with appropriate articles:
_____passengers waited as _____flying mail was _____ hour late.

A. The, a, an
B. An, the, a
C. The, the, an
D. The, an, the

Q.38 'पक्षीवृन्द नभ में विचरते हैं।' रेखांकित शब्द का वचन है–

A. बहुवचन
B. एकवचन
C. द्विवचन
D. इनमें से कोई नहीं

Q.39 'संसार के सभी प्राणी केवल अपनी आँखों से ही देख सकते हैं।' वाक्य का रेखांकित अंश कौनसा कारक है

A. कर्ता
B. कर्म
C. करण
D. अधिकरण

Q.40 'पं. जगन्नाथ मिश्र बहुत बड़े पंडित थे।' वाक्य के रेखांकित शब्द से भाववाचक संज्ञा बनाइए

A. पंडिताइन
B. पांडित्व
C. पंडा
D. इनमें से कोई नहीं

Part-B

Q.41 When transformer is subjected to short circuit, the adjoining turns of the same winding experience

A. An attractive force
B. A repulsive force
C. No force
D. Depends on operating point of the B-H curve

Q.42 The function of oil in a transformer is

A. To provide lubrication
B. To provide protection against lightning
C. To provide protection against short circuit
D. To provide insulation and cooling

Q.43 In an induction motor, if the air-gap is increased

A. Speed will reduce
B. Efficiency will improve
C. Power factor will be lowered
D. Breakdown torque will reduce

Q.44 In a self excited induction generator, to keep the frequency of generated voltage constant with the increase in load, the speed of the induction machine should be

A. Increased
B. Decreased
C. Maintained less than the rated synchronous speed
D. Maintained more than the rated synchronous speed

Q.45 Which type of motor is most suitable for a computer printer drive

A. Reluctance motor
B. Hysteresis motor
C. Shaded pole motor
D. Stepper motor

Q.46 The stator and rotor pole number may be different in a

A. pole changing induction motor
B. reluctance motor
C. repulsion motor
D. synchronous motor

Q.47 In order to have a lower cost of power generation

A. The load factor and diversity factor should be low
B. The load factor and diversity factor should be high.
C. The load factor should be high and diversity factor should be low.
D. The load factor should be low and diversity factor should be high.

Q.48 The surge impedance loading of a 220 kV, over head line is approximately

A. 121MW
B. 121 kW
C. 12.1 kW
D. 121,000MW

Q.49 Hollow conductors are used in transmission lines to

A. Reduce weight of conductor
B. Improve power transfer capability
C. Reduce corona
D. Increase stability

Q.50 Shunt reactors are needed

A. To boost receiving end voltage under light loads
B. To boost receiving end voltage under heavy loads
C. To bring down receiving end voltage at light loads
D. To bring down receiving end voltage under heavy loads

Q.51 In a load flow solution $V_i=1.083\angle 15^0$ pu and $V_k=0.986\angle -2^0$pu. What is the direction of P and Q flow in line *i-k*

A. P and Q flow from i to k
B. P flows from i to k and Q flows from k to i
C. Both flow from k to i
D. Data is insufficient to determine direction

Q.52 The incremental fuel costs of two plants is given by

$$\frac{dF_1}{dP_1} = 0.01\ P_1 + 2.0 \qquad \$/MWhr$$

$$\frac{dF_2}{dP_2} = 0.01\ P_2 + 1.6 \qquad \$/MWhr$$

For economic schedule of a load of 180 MW

A. P_1 = 100 MW; P_2 = 80 MW
B. P_1 = 90 MW ; P_2 = 90 MW
C. P_1 = 80 MW; P_2 = 100 MW
D. P_1 =120 MW ;P_2 = 60 MW

Q.53 A turbine generator set has a regulation constant 5% on the generator rating of100MVA, 50Hz.The generator frequency decreases by 0.02 Hz. The increase in turbine output power for steady state operation is

A. 0.8 MW
B. 8MW
C. 3.6 MW
D. 0.2 MW

Q.54 For an arcing fault where the arc resistance is significant an impedance or admittance relay will

A. Over reach
B. Under reach
C. The reach of relay is unaffected
D. The reach will depend on the arcing resistance and may under reach or over reach.

Q.55 A list of relays and power system components protected by them are given in group I and group II. Match them

Group I	**Group II**
I. Buchloz relay	1. Transformers
II. Under frequency relay	2.Turbines
III. Distance relay	3.Bus bars
IV. Differential relay	4.Shunt capacitors
	5.Alternators
	6.Transmission lines.

A. I-6, II-5, III-1, IV-4
B. I-1, II-2, III-4, IV-6
C. I-1, II-5, III-6, IV-3
D. I-2, II-5, III-6, IV-1

Q.56 In HVDC transmission system, rectifier firing angle alpha is kept near

A. 0 degree
B. 15 degree
C. 30 degree
D. 90 degree

Q.57 The function of the starter in DC machines is:

A. To avoid the excessive currents at the starting
B. To control the speed
C. To avoid armature reaction
D. To avoid excessive heating

Q.58 Which of the following motors is used for rolling mills?

A. DC shunt motor
B. DC cumulative compound motor
C. DC series motor
D. DC differential compound motor

Q.59 Armature reaction is attributed to:

A. The effect of magnetic field set up by armature current
B. The effect of magnetic field set up by field current
C. Copper losses in the armature
D. The effect of magnetic field set up by back emf

Q.60 The brushes of a DC machine are physically

A. Placed in the interpolar axis and electrically connected to the coils in the polar axis
B. Placed in the interpolar axis and electrically connected to the coils in the interpolar axis
C. Placed in the polar axis and electrically connected to the coils in the interpolar axis
D. Placed in the polar axis and electrically connected to the coils in the polar axis

Q.61 The brake test for the determination of the efficiency of a dc machine is:

A. An indirect method
B. A regenerative method
C. A direct method
D. None of these

Q.62 The most economic method of electrical braking is

A. Regenerative braking
B. Dynamic braking with self excitation
C. Dynamic braking with separate excitation
D. Plugging

Q.63 The no load voltage of a generator is 230V and the rated load voltage is 200V, then the voltage regulation is

A. 5%
B. 10%
C. 15%
D. 20%

Q.64 The full load copper loss and iron loss of a transformer are 6400 W and 5000 W respectively. The above copper loss and iron loss at half load will be

A. 3200 W and 2500 W respectively
B. 3200 W and 5000 W respectively
C. 1600 W and 1250 W respectively
D. 1600 W and 5000 W respectively

Q.65 A transformer has a core loss of 64 W and copper loss of 144 W, when it is carrying 20% overload current. The load at which this transformer will operate at the maximum efficiency is

A. 80%
B. 66%
C. 120%
D. 44%

Q.66 The function of damper winding in synchronous motor is to provide starting torque and

A. To reduce speed
B. To prevent hunting
C. To increase speed
D. None of these

Q.67 A 3-phase 400V, 50 Hz synchronous motor is working at 50% load. In case an increase in the field current of motor cause a reduction in the armature current, it can be concluded that

A. The motor is delivering reactive power to the mains
B. The motor is absorbing reactive power form the mains
C. The motor is neither absorbing nor delivering reactive power
D. None of these

Q.68 If the excitation and terminal voltage of a synchronous motor are kept constant and the load is increased then

A. Armature current decreases and power factor becomes more leading
B. Armature current increases and power factor becomes more leading
C. Armature current increases and power factor becomes more lagging
D. None of these

Q.69 A 500V, 50 Hz motor takes a full load current of 40A at 0.85 p.f lagging. If a capacitor of 80μF is connected cross the motor terminals, the p.f becomes

A. 0.72
B. 0.85
C. 0.97
D. 1.00

Q.70 The purpose of skewing of rotor slots in induction motor is

A. To reduce magnetic hum of motor
B. To increase the distribution factor
C. To reduce the locking tendency of motor
D. To increase the breadth factor

Q.71 An induction motor has a slip of 2% at normal voltage. The slip when developing the same torque at 10% below normal voltage is

A. 1.65%
B. 2.47%
C. 2.22%
D. 1.82%

Q.72 A feedback system has its characteristic equation as $1+\frac{k}{s(s+1)(s+2)}=0$

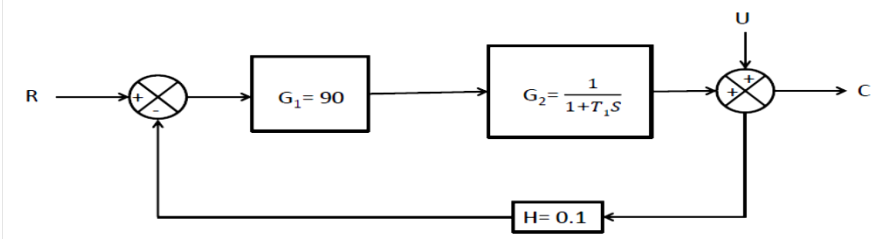
The centroid of the asymptotes will be equal to

A. -1
B. -2
C. -3
D. -4

Q.73 If the system specifications are given in time domain, best approach for designing is

A. Nyquist plot
B. Bode's plot
C. Root locus
D. None of these

Q.74 The transfer function $\frac{C(s)}{R(s)}$ of a closed loop system shown in the figure below will be



A. $\frac{G_1G_2}{1+G_1G_2H}$
B. $(G_1G_2)/(1+G_1H)$
C. $\frac{1}{1+G_1G_2H}$
D. $\frac{G_1}{1+G_2H}$

Q.75 The value of K for which the system $S^3 + 3S^2 + 3S + 1 + K = 0$ becomes stable is

A. K>8
B. K=8
C. K=7
D. None of these

Q.76 Phase margin of a system is used to specify

A. Relative stability
B. Absolute stability
C. Time response
D. Frequency response

Q.77 Which input yields natural response

A. Step input
B. Sinusoidal input
C. Impulse input
D. Ramp input

Q.78 If the gain of an open-loop system is doubled, the gain margin

A. Is not affected
B. Gets doubled
C. Becomes half
D. Becomes one-fourth

Q.79 If the stability error for step input and speed of response be the criteria for design, what type of controller would you recommend?

A. P controller
B. PD controller
C. PI controller
D. PID controller

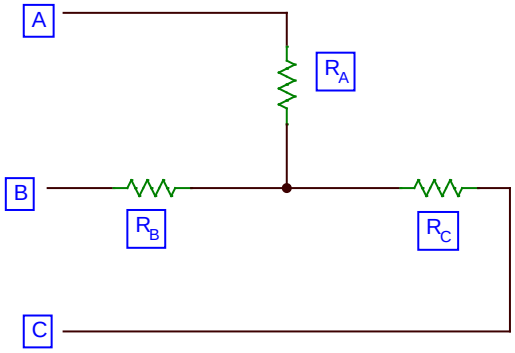
Q.80 Which of the following terms is not a specification of a control system

A. Band-width
B. Time response
C. Phase margin
D. Nyquist plot

Q.81 damped natural frequency of an under-damped second-order system is given by

A. ω_n
B. $\xi\omega_n$
C. $\omega_n \sqrt{1-\xi^2}$
D. None of these

Q.82 Consider the star network shown in the given figure. The resistance between terminals A and B with C open is 6Ω, between terminals B and C with A open is 11 Ω, and between terminals C and A with B open is 9 Ω. Then



A. $R_A = 4\ \Omega$, $R_B = 2\ \Omega$, $R_C = 5\ \Omega$
B. $R_A = 2\ \Omega$, $R_B = 4\ \Omega$, $R_C = 7\Omega$
C. $R_A = 3\ \Omega$, $R_B = 3\ \Omega$, $R_C = 4\Omega$
D. $R_A = 5\ \Omega$, $R_B = 1\ \Omega$, $R_C = 10\ \Omega$

Q.83 If each branch of a Delta circuit has impedance √3 Z, then each branch of the Wye circuit has impedance

A. $Z/\sqrt{3}$
B. 3Z
C. $3\sqrt{3}$ Z
D. Z/3

Q.84 About the Fourier series expansion of periodic function it can be said that
A. Even functions have only a constant term and cosine terms in their expansion
B. Odd functions have only sine terms in their expansion
C. Functions with half-wave symmetry contain only odd harmonics
D. All of these

Q.85 A circuit with a resistor, inductor and capacitor in series is resonant at f_o Hz. If all the component values are now doubled, the new resonant frequency is
A. 2 f_o B. still f_o
C. $f_o/2$ D. $f_o/4$

Q.86 Maxwell's divergence equation for the magnetic field is given by
A. ∇ X B = 0 B. ∇ . B = 0
C. ∇ X B = ρ D. ∇. B = ρ

Q.87 Double integration of unit step function would lead to
A. An impulse B. A parabola
C. A ramp D. A doublet

Q.88 In a Kelvin's double bridge, two sets of readings are taken when measuring a low resistance, one with the current in one direction and other with the direction of current reversed. This is done to eliminate the effect of
A. Contact resistance B. Resistance of leads
C. Changes in battery voltage D. Thermo-electric emf's

Q.89 In an LVDT the two secondary windings are connected in differential to obtain
A. Higher output
B. An output voltage which is phase sensitive i.e. the output voltage has a phase which can lead us to a conclusion whether the displacement of core took place from right to left or from left to right.
C. In order to establish the null or the reference point for the displacement of the core.
D. Both B and C

Q.90 Ratio of the readings of two watt meters connected to measure power in a balanced 3- phase load is 5:3 and the total load is inductive. The power factor of load is
A. 0.917 lead B. 0.917 lag
C. 0.6 lead D. 0.6 lag

Q.91 An inverted V-curve of a synchronous motor shows the variation of
A. Power actor and dc excitation at constant load
B. Supply voltage and field current at constant excitation
C. Power factor and supply voltage during hunting
D. Supply voltage and excitation current at constant load

Q.92 A PMMC type ammeter and a MI type ammeter are connected in series in a resistive circuit fed from output of a half wave rectifier voltage source. If the moving iron type instrument read 5A, the PMMC type instrument is likely to read
A. 0 B. 2.5A
C. 3.18A D. 5A

Q.93 A 10 bit A/D converter is used to digitize an analog signal in the 0 to 5 V range. The maximum peak to ripple voltage that can allowed in the D.C. supply voltage is

A. Nearly 100 mV
B. Nearly 50 mV
C. Nearly 25 mV
D. Nearly 5.0 mV

Q.94 A 8085 microprocessor based system uses a 4K × 8 bit RAM whose starting address is AA00 H. The address of the last byte in this RAM is

A. 0FFF H
B. 1000 H
C. B9FF H
D. BA00 H

Q.95 The digital multiplexer is basically a combinational logic circuit to perform the operation

A. AND-AND
B. OR-OR
C. AND-OR
D. OR-AND

Q.96 In a 8085 microprocessor, the following sequence of instructions is executed:

```
STC
CMC
MOVE A, B
RAL
MOVE B,A
```

After the last instruction, the output will

A. Rotate the contents of the accumulator and store it in B
B. Get the contents of B register into the accumulator and rotate it to left by one bit
C. Double contents of B register
D. Manipulate carry in A and B

Q.97 A memory system has a total of 8 memory chips, each with 12 address lines and 8 data lines. Total size of the memory system is

A. 6 kbytes
B. 32 kbytes
C. 48 kbytes
D. 64 kbytes

Q.98 A single-phase half wave controlled rectifier has 400 sin314 *t* as the input voltage and R as the load. For the firing angle of 60^0 for the SCR, the average output voltage is

A. $\frac{400}{\pi}$
B. $\frac{300}{\pi}$
C. $\frac{240}{\pi}$
D. $\frac{200}{\pi}$

Q.99 When a line commutated converter operates in the inverter mode

A. It draws both real and reactive power of the A.C. supply
B. It delivers both real and reactive power to the A.C. supply
C. It delivers real power to the A.C. supply
D. It draws reactive power from the A.C. supply

Q.100 The characteristic polynomial of a system is

$$q(s) = 2s^5 + s^4 + 4s^3 + 2s^2 + 2s + 1$$

The system is….

A. Stable
B. Marginally stable
C. Unstable
D. Oscillatory

---END----