## Uttar Pradesh Power Corporation Limited

**Subject** : Electrical Engineering

**Q.1** Which amendment of the Constitution supports the constitutional right to education .
   ✗ 1)  93rd amendment of 2006
   ✗ 2)  17th amendment of 1964
   ✗ 3)  44th amendment of 1979
   ✔ 4)  86th amendment of 2002

**Q.2** Which Sri Lankan town has India has recently opened a consulate in ?
   ✗ 1)  Galle
   ✔ 2)  Jaffna
   ✗ 3)  Negombo
   ✗ 4)  Trincomalee

**Q.3** To which planet, there have been till now about 40 missions and  now,new information will come up from Indian effort  in year 2013, ?
   ✗ 1)  Moon
   ✔ 2)  Mars
   ✗ 3)  Uranus
   ✗ 4)  Venus

**Q.4** How were igneous rocks formed?
   ✗ 1)  Folding of rocks in the Earths' interior.
   ✗ 2)  Cooling of lava from eruptions.
   ✔ 3)  Heating and cooling of magma
   ✗ 4)  Earth movements which led to faulting.

**Q.5** Which President of the United States of America was elected 3 times ?
   ✔ 1)  Franklin D Roosevelt
   ✗ 2)  Thomas Jefferson
   ✗ 3)  Andrew Jackson
   ✗ 4)  Herbert Hoover

**Q.6** Which continental plate is moving apart at the rate of 15 cms a year ?

✗ 1) Indian and Eurasian Plate

✗ 2) Pacific and Australian Plate

✗ 3) Mid Atlantic Ridge.

✔ 4) Nazca and Pacific plates

**Q.7** Which part of the human skeletal system will the femur bone be found in ?

✗ 1) Leg

✔ 2) Thigh

✗ 3) Back

✗ 4) Arm

**Q.8** Which state has been the first to achieve full sanitation coverage and called a Nirmal state?

✗ 1) Maharashtra

✔ 2) Sikkim

✗ 3) Meghalaya

✗ 4) Tamilnadu

**Q.9** Which woman archer who won the gold in the 2010 Common wealth games ?

✔ 1) Deepika Kumari

✗ 2) Kamaam Malleshwari

✗ 3) Bombayla Devi

✗ 4) Arati Saha

**Q.10** Which bird migrates from Africa to Gujarat and Rajasthan

✗ 1) Painted Stork

✔ 2) Flamingo

✗ 3) Cranes.

✗ 4) Ostrich

**Q.11** What is the approximate number of young voters of the age of 18 -21 years who will participate in the National elections 2014

✗ 1) 22 crores

✔ 2) 12 crores

✗ 3) 15 crores

4) 10 crores

**Q.12** Who is the Chief Election Commissioner of India at present?

✗ 1) J.M Lyngdoh

✔ 2) V.S.Sampath

✗ 3) T.N.Seshan

✗ 4) S.Y , Quereshi

**Q.13** Which mineral has been banned for mining and export in Tamilnadu from 2013?

✗ 1) Iron Ore

✔ 2) Ilmenite and garnet

✗ 3) Uranium.

✗ 4) Bauxite

**Q.14** The President of India is elected by the members of an electoral college which doesn't include the elected members of

✗ 1) Lok Sabha

✔ 2) State Legislative Councils

✗ 3) Rajya Sabha

✗ 4) State Assemblies

**Q.15** Which mineral of has been banned for mining and export in Goa from 2013?

✗ 1) Bauxite

✗ 2) Uranium.

✔ 3) Iron Ore

✗ 4) Pyrite

**Q.16** Which Heritage monument was restored and reopened in Sep,2013?

✗ 1) Char Minar

✗ 2) Aurangzeb's Tomb.

✔ 3) Humayun Tomb

✗ 4) Tajmahal

**Q.17**

For which,the first Canadian women won the Noble Prize for Literature?

✗ 1) Biography

✗ 2) Plays

3) Poetry ✗

4) Short Stories ✓

**Q.18** What aspect did the Kothari Commission on Education 1965 place emphasis on?

1) Education for Agriculture and Industry. ✓

2) Girls Education upto Upper Primary Stage ✗

3) Higher education for all . ✗

4) Education only in Mother Tongue ✗

**Q.19** In which two States was the Sarva Shikha Abhiyan first launched?

1) Rajasthan and Uttar Pradesh. ✗

2) Bihar and Rajasthan ✓

3) Uttar Pradesh and Madhya Pradesh ✗

4) Gujarat and Madhya Pradesh ✗

**Q.20** What was common between the early civilisations of India, China , Mesopotamia and Egypt?

1) River Valley based cities and agriculture dependent ✓

2) Many sports and common games were organised. ✗

3) Well developed script and language using pictographs ✗

4) Dependent on trade and inhabited by city dwellers. ✗

**Q.1** The first two letter clusters on the left of the sign '::' are related in a certain way. The same relationship holds for the second pair on the right of the sign '::' of which one is missing. Choose the missing one from among the alternatives.

BDEG : YVTQ :: FIKN : ?

1) URPM ✗

2) UQMI ✗

3) VROK ✗

4) UQNJ ✓

**Q.2** If the position of the first and the third digits are interchanged in each of the following numbers, which of the following will be the difference between the highest and the lowest numbers after rearrangement?

7594, 3985, 6427, 9215, 8537

1) 8197 ✗

2) 8279

3) 6235

4) 7397

**Q.3** If A x B means A is the husband of B; A+B means A is the mother of B an A-B means A is the brother of B, which of the following means 'P is the paternal uncle of T'?

1) P - Q + R x T

2) P- Q x R + T

3) P x Q + R - T

4) P + Q x R + T

**Q.4** Which of the following groups of letters is the odd one out?

1) EVRI

2) GTQJ

3) BYUG

4) CXVE

**Q.5** If 4 persons take 4 days to complete 4 times of a work by working 4 hours a day, how many days, would 2 persons take to complete 2 times of the same work by working 2 hours a day?

1) 2

2) 8

3) 4

4) 16

**Q.6** How many 5s are there in the following number sequence each of which is immediately followed by an odd number, but not immediately preceded by an even number?

4 5 8 2 5 7 5 8 3 5 9 6 5 3 7 5 1 9 5 5 4 7 5 3

1) 3

2) 6

3) 5

4) 4

**Q.7**

A person is standing on a platform facing South. He turned $160^0$ clockwise and then $85^0$ anti-clockwise. Finally, he turned $150^0$ clockwise. Which direction is he facing now?

✗ 1) North

✗ 2) South-East

✗ 3) North-West

✓ 4) North-East

**Q.8** Three statements are followed by two conclusions numbered I and II. Assuming the statements to be true, even if they are at variance with commonly known facts, decide which of the conclusions logically follow?

Statements: (1) All mammals are vertebrates; (2) Some vertebrates are animals; (3) Some animals are human beings.

Conclusions: I. Some vertebrates are human beings
II. Some human beings are animals

✗ 1) Only conclusion I follows

✗ 2) Both conclusions I and II follow

✗ 3) Either conclusion I or II follows

✓ 4) Only conclusion II follows

**Q.9** If every alternate letter in the word 'ORDERLY' starting from the first letter is replaced by the next letter in the English alphabet and each of the remaining letters is replaced by the previous letter and the new letters are arranged alphabetically, which will be the middlemost letter?
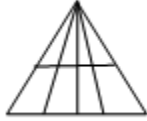
✗ 1) Q

✗ 2) D

✓ 3) P

✗ 4) K

**Q.10** When the students in a class are ranked, Arvind is 7th from the top and Anand is 9th from the bottom. Sunil is exactly in the middle of Arvind and Anand. Praksh and Sunil have 5 boys between them, while Arvind and Praksh have 3. How many students are there in the class?

✗ 1) 36

✗ 2) 34

✗ 3) 33

✓ 4) 35

**Q.11**

How many triangles are there in the following figure?

✗ 1) 18
✗ 2) 22
✗ 3) 24
✔ 4) 20

## Comprehension:

A cube is painted red on two adjacent faces and on one opposite face; blue on two opposite faces and green on the remaining face. It is then cut into 64 smaller cubes. Answer the following questions.

**Q.12** SubQuestion No. :1

How many smaller cubes will have only one red colored face (the other may or may not be painted)?

✔ 1) 32
✗ 2) 40
✗ 3) 16
✗ 4) 12

**Q.13** SubQuestion No. :2

How many smaller cubes will have only 2 faces painted, one with red and the other with blue?

✗ 1) 16
✗ 2) 8
✗ 3) 24
✔ 4) 12

**Q.14** If A denotes 'x', B denotes '+', C denotes '–', and D denotes '÷', then

15 D (7 C 2) B 5 A (11 C 6) = ?

✗ 1) 40
✗ 2) 29
✔ 3) 28
✗ 4) 38

**Q.15** Which is missing in the following sequence of letter clusters?

bdfh, cfil , eimq , ? , lrxd

1) hmrw ✔

2) hmrv ✘

3) glqv ✘

4) hlpt ✘

**Q.16** Two faces of a cube are given below. Which number will be opposite 5?



1) 6 ✘

2) 2 ✘

3) 1 ✘

4) 3 ✔

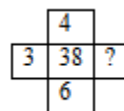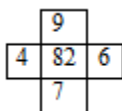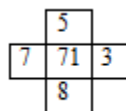**Q.17** Which is the odd number-pair?

1) 85-68 ✘

2) 60-48 ✘

3) 20-15 ✔

4) 65-52 ✘

**Q.18** Among 5 items, B weighs twice as much as A. D weighs half as much as C. A weighs three and half times as much as D. C weighs half as much as E.

Which of the following represents the ascending order of weights of the items?

1) CDAEB ✘

2) DCAEB ✔

3) DCEAB ✘

4) DCABE ✘

**Q.19** Choose the missing number from among the alternatives.



1) 3 ✘

2) 11 ✘

✔ 3) 5
✘ 4) 7

**Q.20** One of the numbers in the following number series is wrong. Which is the wrong number?

5, 11, 23, 49, 95, 191

✘ 1) 95
✘ 2) 191
✘ 3) 23
✔ 4) 49

**Q.1** कोयले की दलाली में हाथ काले लोकोक्ति का सही अर्थ है ?
✘ 1) कहना कुछ और करना कुछ
✔ 2) बुरे काम से बुराई ही पैदा होती है
✘ 3) बुरा आदमी अच्छे आदमी को नही चाहता
✘ 4) कपट और धोखा करना

**Comprehension:**

दुनिया में धन ही सब कुछ नही है । धन की पूजा सदैव नही होती । इतिहास साक्षी है की उन व्यक्तियों की कीर्ति अक्षय है जिन्होंने केवल धनोपार्जन में अपना जीवन नही बिताया, अपितु ऐसे कार्य भी किये जिनसे मानव समाज का कल्याण हो । जिन व्यक्तियों का उद्देश्य केवल धन बटोरना रहा है उनकी प्रतिष्ठा स्थायी नही रही । पूजा उन्ही व्यक्तियों की होती है जिन्होंने मानव समाज की भलाई की और उसके कल्याण के क्षेत्र में योग दिया । जिन्होंने धन को ही सब कुछ समझा, किसी ने जाना तक नही की वे कौन थे और कहाँ गये ?

**Q.2** SubQuestion No. :1
उनकी प्रतिष्ठा स्थायी नहीं रही जिन्होंने -
✔ 1) एकत्रित किया
✘ 2) बड़े - बड़े पद पाए
✘ 3) अनेक युद्ध जीते
✘ 4) बड़े - बड़े मकान खरीदे

**Q.3** SubQuestion No. :2
उनकी कीर्ति अक्षय है जिन्होंने -
✘ 1) धनोपार्जन किया

✔ 2) मानव समाज का कल्याण किया

✘ 3) अनेक ऊँचे पद पाए

✘ 4) अनेक पुस्तकें लिखी

**Q.4** SubQuestion No. :3

पूजा उन्हीं की की गयी जिन्होनें -

✘ 1) खूब दान किया

✘ 2) श्रेष्ठ साहित्य की रचना की

✘ 3) विद्वानों का सम्मान किया

✔ 4) मानव समाज की भलाई की

**Q.5** बुद्धि भ्रमित करना को व्यक्त करने वाला मुहावरा कौन सा है ?

✘ 1) धोखा खाना

✘ 2) अक्ल पर पत्थर पड़ना

✔ 3) उल्लू बनाना

✘ 4) चक्कर में पड़ना

**Q.6** अमृत का पर्यावाची शब्द क्या ?

✘ 1) मधुर

✘ 2) रस

✔ 3) पीयूष

✘ 4) जीवन

**Q.7** गहरा शब्द का विलोम शब्द कौन सा है ?

✘ 1) गम्भीर

✔ 2) छिछला

✘ 3) हल्का

✘ 4) गंदा

**Q.8** कौन सा शब्द अर्थ की दृष्टि से अन्य शब्दों से भिन्न है ?

✘ 1) सदन

✘ 2) भवन

✔ 3) वन

✘ 4) निकेत

**Q.9** अर्ध सरकारी पत्र कौन-सा है ?

✗ 1) किसी भी व्यक्ति द्वारा किसी अधिकारी को लिखा गया पत्र

✗ 2) राज्य सरकार द्वारा दूसरी सरकार को लिखा गया पत्र

✗ 3) केंद्र सरकार द्वारा राज्य सरकार को लिखा गया पत्र

✔ 4) एक सरकारी अधिकारी द्वारा दूसरे अधिकारी या व्यक्ति को लिखा गया पत्र

**Q.10** शुद्ध वाक्य का चयन कीजिए ?

✗ 1) मैंने घर जाना है

✗ 2) मेरे को घर जाना है

✗ 3) मै घर जाना है

✔ 4) मुझे घर जाना है

**Q.1** A single-phase semi-converter is operating in continuous conduction mode. Average value of the output voltage is

✗ 1) $\dfrac{\sqrt{2}V_s}{\pi}(1+\cos\alpha)$

✗ 2) $\dfrac{\sqrt{2}V_s}{2\pi}(1-\cos\alpha)$

✔ 3) $\dfrac{\sqrt{2}V_s}{\pi}(1-\cos\alpha)$

✗ 4) $\dfrac{\sqrt{2}V_s}{2\pi}(1+\cos\alpha)$

**Q.2** Which instrument is not affected by stray magnetic fields?

✔ 1) Hot wire type

✗ 2) Moving coil type

✗ 3) Moving iron attraction type

✗ 4) Moving iron repulsion type

**Q.3** The deep bar rotor on double cage rotor of an induction motor are used

✗ 1) To increase pull out – torque

✗ 2) To reduce rotor core loss

✗ 3) To improve efficiency

✔ 4) To increase starting torque

**Q.4** Consider the following statements

i. $Dy_1$ and $yd_{11}$ transformer can operate in parallel

ii. $Yd_1$ and $Yd_{11}$ transformer can operate in parallel

iii. $Yd_1$ and $Dy_1$ transformer can operate in parallel

iv. $Yd_1$ and $Yz_1$ transformer can operate in parallel

Use the code below to indicate correct statement

✔ 1) iii and iv only

✘ 2) i and iv only

✘ 3) ii only

✘ 4) ii and iii only

**Q.5** PWM switching schemes used in single-phase inverter

✘ 1) increases the life of the batteries

✘ 2) minimises the load on the dc side

✔ 3) Reduces low order harmonics and increases high order harmonics

✘ 4) reduces the total harmonic distortion with modest filtering

**Q.6** Firing angle of a three-phase semiconverter is 90°. To achieve continuous mode of conduction freewheeling diode should conduct for

✘ 1) 0°

✔ 2) 30°

✘ 3) 90°

✘ 4) 60°

**Q.7** The part of armature electric circuit of a dc motor which take active part in EMF generation are

✘ 1) The overhang part of the coil

✘ 2) the commutator segment

✔ 3) The coil sides inside the slots

✘ 4) BothThe coil sides inside the slots and The overhang part of the coil

**Q.8** From the pole–zero plots if the poles are lying on left side of jω axis then system is

✘ 1) unstable

✘ 2) critically

✘ 3) causal

✔ 4) Stable

**Q.9**  The------------ faults are due to open circuit
  ✗ 1)  Shunt
  ✔ 2)  Series
  ✗ 3)  L-G
  ✗ 4)  Symmetrical

**Q.10**  If Laplace transform of $x_1(t)$ and $x_2(t)$ are $X_1(s)$ and $X_2(s)$ respectively. Then State–time convolution property of Laplace transform, $L[x_1(t)*x_2(t)]$ is ……

  ✗ 1)  $2\,X_1(s)X_2(s)$

  ✗ 2)  $X_1(s)-X_2(s)$

  ✗ 3)  $X_1^2(s)X_2^2(s)$

  ✔ 4)  $X_1(s)X_2(s)$

**Q.11**  Potentiometer sensitivity can be increased by
  ✗ 1)  Decreasing the length of potentiometer wire
  ✗ 2)  Using regulated supply in place of standard cell.
  ✔ 3)  Increasing the length of potentiometer wire
  ✗ 4)  Decreasing the current in potentiometer

**Q.12**  Reactance of a three reactors rated at 7500 kVA, 3300 V, having 7.5% reactance is -----
  ✗ 1)  0 .209 ohm
  ✗ 2)  2 ohm
  ✗ 3)  0.219 ohm
  ✔ 4)  0.109 ohm

**Q.13**  The open loop transfer function of unity feedback control system is given by
$$G(s) = \frac{k}{s(s+1)}.$$
If the gain K is increased to infinity then the damping ratio will tends to become

  ✔ 1)  0
  ✗ 2)  Infinite
  ✗ 3)  1/
  ✗ 4)  1

**Q.14**

Induction relays are used with ………… quantities.

✗ 1) Both ac and d.c.

✓ 2) a.c.

✗ 3) HVDC

✗ 4) d.c.

**Q.15** In any transformer, if $P_i$ be the iron loss and $P_{cu}$ be the copper loss on full load, which of the following condition has to be satisfied to obtain maximum efficiency at ¾ .

✗ 1) $P_{cu} = 9/16\ P_i$

✓ 2) $P_{cu} = 16/9\ P_i$

✗ 3) $Pc_u = ¾\ P_i$

✗ 4) $P_{cu} = 4/3\ P_i$

**Q.16** The unit impulse response of a linear time invariant system is the unit step function u (t). For t > 0, the response of the system to an excitation ,

$e^{-at}u(t)$ a > 0, will be

✗ 1) $ae^{-at}$

✗ 2) $(1-e^{-at})$

✓ 3) $(1-e^{-at})/a$

✗ 4) $a(1-e^{-at})$

**Q.17** The purpose of a parallel circuit resonance is to magnify

✗ 1) power

✗ 2) current

✓ 3) voltage

✗ 4) frequency

**Q.18** A 220 V single phase meter has a constant load current of 5A passing through it for 2Hr, at unity power factor. If the meter disc makes 1056 revolutions during this period, what is the meter constant in revolution / kWh?

✓ 1) 480

✗ 2) 360

✗ 3) 120

✗ 4) 240

**Q.19**

Positive and negative sequence network for transmission line is

✗ 1) Positive and zero sequence networks are same

✔ 2) same

✗ 3) not same

✗ 4) Negative and zero sequence networks are same

**Q.20** Piezometer is used to measure

✔ 1) Very low pressure

✗ 2) Very high pressure

✗ 3) Pressure difference between two points

✗ 4) Pressure in pipes and channel

**Q.21** The p.f. of a transformer having load is poor due to

✗ 1) no load current

✗ 2) Low primary winding resistance

✗ 3) Open circuited secondary

✔ 4) Magnetizing reactance of the transformer

**Q.22** Laplace transform of the function $e^{-t} \sin 5t$ is

✔ 1) $\dfrac{5}{(s+1)^2 + 25}$

✗ 2) $\dfrac{5}{(s+1)^2 + 5}$

✗ 3) $\dfrac{25}{(s+1)^2 + 25}$

✗ 4) $\dfrac{10}{(s+1)^2 + 25}$

**Q.23** The continuous time system described by is

✗ 1) Causal, non-linear and time varying

✔ 2) Non causal, linear and time-invariant

✗ 3) Causal, linear and time varying

✗ 4) non causal, non-linear and time-invariant

**Q.24** The open loop transfer function of unity negative feedback system is given by

$$G(s) = \frac{K(s+2)}{(S+1)(S-7)}$$

for k >6 the stability criteria of the open loop configuration and the close loop configuration of the system are represented by

✗ 1) unstable, stable
✔ 2) Stable, unstable
✗ 3) Stable, stable
✗ 4) unstable, unstable

**Q.25** A 20 bit address bus supports
✗ 1) 20,000 memory addresses
✗ 2) 20,97,152 memory addresses
✔ 3) 10,48,576 memory addresses
✗ 4) 1,00,000 memory addresses

**Q.26** How are the capacitor and resistor arranged within a typical single-pole high-pass circuit?
✗ 1) The capacitor and resistor are both in parallel with the input.
✗ 2) The resistor is in series and the capacitor is in parallel with the input
✗ 3) The capacitor and resistor are both in series with the input.
✔ 4) The capacitor is in series and the resistor is in parallel with the input.

**Q.27** A voltage source of 100 volts is connected in series with three resistors; $R_1 = 10\ \Omega$, $R_2 = 10\ \Omega$, $R_3 = 20\ \Omega$. A load is placed in parallel with $R_3$. Determine the Thevenin voltage (VTH) the load would "see."
✗ 1) 100 Volts
✔ 2) 50 Volts
✗ 3) 25 Volts
✗ 4) 10 Volts

**Q.28** An electric car with dc motor drive is running at a speed of 100km/hour. Driver of the car reduces the pressure on the accelerator to reduce the speed of the car to 80km/hour. This is a case of
✗ 1) reverse motoring
✗ 2) counter current braking
✔ 3) regenerative braking
✗ 4) dynamic braking

**Q.29** An amplifier with openloop input resistance of 100 kΩ has -20dB of voltage-series-

feedback. Closed loop input resistance would be

✗ 1) 5 kΩ

✗ 2) 2000 kΩ

✔ 3) 1000 kΩ

✗ 4) 10 kΩ

**Q.30** Variation of supply frequency for speed control of induction motor is generally carried out with

✔ 1) $V_1$/f constant

✗ 2) $V_1$ constant

✗ 3) $V_1$ * f constant

✗ 4) $V_1$+f constant

**Q.31** According to sampling theorem, the sampling frequency should be

✗ 1) Less than half the lowest signal frequency

✗ 2) Greater than the lowest signal frequency

✗ 3) Less than half the highest signal frequency

✔ 4) Greater than twice the highest signal frequency

**Q.32** Which method can be used for absolute measurement of resistance?

✔ 1) Wheatstone bridge method

✗ 2) Releigh method

✗ 3) Ohm's law method

✗ 4) Lortentz method

**Q.33** Time constant of an inductive circuit

✔ 1) increases with increase of inductance and decrease of resistance

✗ 2) increases with decrease of inductance and decrease of resistance

✗ 3) increases with decrease of inductance and increase of resistance

✗ 4) increases with the increase of inductance and the increase of resistance

**Q.34**

Two ammeters having full scale reading of 1mA and 10mA are connected in parallel. If the reading of the two ammeters are 0.5mA and 2.5mA respectively. Ratio of the internal resistance of ammeters is

✗ 1) 10:1

✔ 2) 5:1

✗ 3) 1:10

✗ 4) 1:5

**Q.35** An RC differentiator circuit with a lower 3dB cut-off frequency of 3.5 KHz will respond to a step in put with a rise time of

✗ 1) 100 ms

✗ 2) 100 μs

✗ 3) 10 μs

✔ 4) Practically nil value

**Q.36** The principle of operation of a VMOS device is a similar to that of

✗ 1) Junction FET

✗ 2) Insulated gate bipolar transistor

✔ 3) Enhancement MOSFET

✗ 4) Depletion MOSFET

**Q.37** The region of convergence of the z-transform of the signal $2^n u(n) - 3^n u(-n-1)$

✗ 1) is $z > 1$

✗ 2) Does not exist

✔ 3) is $2 < z < 3$

✗ 4) is $z < 1$

**Q.38** DC motor should be stopped by opening the line switch and not by forcing the starter handle to first stud of starting resistance

✗ 1) Heavy sparking at the middle of resistance

✔ 2) Heavy sparking occurs at the first stud of starting resistance

✗ 3) Heavy sparking occurs at the brushes

✗ 4) Both the Heavy sparking occurs at the first stud of starting resistance Heavy sparking occurs at the brushes

**Q.39** The ac armature winding of an alternator operates at ………. the field winding voltage

✔ 1) Much higher voltage than

✗ 2) Much lesser voltage than

✗ 3) Half the voltage of

✗ 4) The same voltage as

**Q.40** Introduction of hysteresis in a comparator makes it

✗ 1) Pulse generator

✓ 2) Immune to false triggering caused by noisy input signal

✗ 3) A square waveform generator

✗ 4) Prone to false triggering caused by noisy input signal

**Q.41** The voltage gain of an amplifier decreases at 20dB/decade above 100kHz. If the mid-band frequency gain is 80dB, what is the value of voltage gain at 2 MHz?

✗ 1) 54 dB

✗ 2) 52 dB

✓ 3) 64 dB

✗ 4) 60 dB

**Q.42** Line integral of an electric field around a closed path is

✓ 1) Zero

✗ 2) Infinity

✗ 3) Unity

✗ 4) some finite value

**Q.43** The integration of ramp function will be

✗ 1) Step & impulse function

✓ 2) a periodic function

✗ 3) an impulse function

✗ 4) Step function

**Q.44** A line which connects a distributor to the customer's load point is called as

✓ 1) Service main

✗ 2) Distributor

✗ 3) line

✗ 4) Feeder

**Q.45** A stepper motor is ……

✗ 1) a single phase ac motor

✗ 2) dc motor

✓ 3) a multi phase motor

✗ 4) a two phase motor

**Q.46**

Incomparison with power MOSFET, BJTs has

✔ 1) higher switching losses but lower conduction loss

✘ 2) lower switching losses and lower conduction loss

✘ 3) lower switching losses but higher conduction loss

✘ 4) higher switching losses and higher conduction loss

**Q.47** Two sequences $x_1(n)$ and $x_2(n)$ are related by $x_2(n) = x_1(-n)$. In the z- domain, their ROC's are

✘ 1) Complements of each other

✘ 2) Negative of each other

✔ 3) Reciprocal of each other

✘ 4) Same

**Q.48** For sinusoidal pulse width modulation of a switch, sinusoidal reference is modulated with a triangular high-frequency carrier signal. If zero of the reference signal coincides with the zero/peak of the carrier wave, then the number of pulses generated in each half cycle are

✘ 1) m/(m-1)

✔ 2) (m-1)/m

✘ 3) 1

✘ 4) (m-1)/(m-1)

**Q.49** Which of the following amplifier class suffers mainly from the problem of cross over distortion?

✔ 1) Class B

✘ 2) Class A

✘ 3) Class C

✘ 4) Class AB

**Q.50** Ferranti effect is caused for

✘ 1) Line conductance

✔ 2) Line capacitance

✘ 3) Line resistance

✘ 4) Line reactance

**Q.51** Which one of the following statement is correct? A plant is controlled by proporsanal controller. If a time delay element is introduce in loop, it's

✘ 1) Phase margin increases

✔ 2) Phase margin decreases

✘ 3) Gain margin increases

✘ 4) Phase margin remain the same

**Q.52** Skin effect occurs when a conductor carries current at _____ frequencies.

✘ 1) medium

✔ 2) high

✘ 3) low

✘ 4) very low

**Q.53** Electromechanical energy conversion devices are

✘ 1) Incremental devices

✘ 2) Static devices

✘ 3) Gross motion devices

✔ 4) Gross motion and incremental devices

**Q.54** Inner filament reactance is higher than outer filament reactance of a conductor when

✘ 1) true for both AC and DC

✘ 2) HVDC current flows

✔ 3) AC current flows

✘ 4) DC current flows

**Q.55** The open loop DC gain of the unity feedback system with close loop transfer function

$$\frac{s+4}{s^2+7s+13}$$

is

✘ 1) 4/13

✔ 2) 4/9

✘ 3) 13

✘ 4) 4

**Q.56** The accuracy of a 0-100 mV voltmeter is +5%. A full scale reading of 100mV may be due to a voltage of

✘ 1) 100mV

✔ 2) 105mV or 95mV

✘ 3) 90mV

✘ 4) 110mV or 90mV

**Q.57** If Laplace transform of f(t) is F(s) then Laplace transform of tf(t) is

✗ 1) $sF(S) - f(0^+)$

✓ 2) $\dfrac{F(s)}{s}$

✗ 3) $\displaystyle\int_0^\infty F(s)ds$

✗ 4) $-\dfrac{d}{ds}F(S)$

**Q.58** The daily load pattern on a plant is as follows: 50 MW for 20 hours; 100 MW for 4 hours. What is the load factor?

✗ 1) 0.68

✗ 2) 58.3

✓ 3) 0.583

✗ 4) 68

**Q.59** A useful property of the unit impulse is that

✗ 1) $\delta(at) = a\delta(t)$

✗ 2) $\delta(at) = \delta(t)$

✗ 3) $\delta(at) = [\delta(t)]^a$

✓ 4) $\delta(at) = \dfrac{\delta(t)}{a}$

**Q.60** When the deflection plates of a CRO are kept at the ground potential and a 30 volt dc is applied to the vertical deflecting plates, the bright spot moves 1cm away from the centre. If with the same setting, a 30 volt ac is applied to the vertical deflecting plate, then the picture observed on the screen would be

✗ 1) Two spots 2 cm vertically above each other

✓ 2) A vertical line approximately 3cm long

✗ 3) A spot approximately 3cm away from the centre

✗ 4) A vertical line 2cm long

**Q.61** In a Y-Y source/load configuration, the

✗ 1) phase current and the line current are in phase, and both are 120° out of phase with the load current

✗ 2) phase current, the line current, and the load current are 120° out of phase

✗ 3) line current and the load current are in phase, and both are out of phase with the phase current

✔ 4) phase current, the line current, and the load current are all equal in each phase

**Q.62** A thyristor is connected in series with the series combination of a coil and a capacitor. Resistance and the inductance of the coil are $R = 2.4\Omega$ and $L = 25\mu H$ respectively. To achieve condition of self-commutation value of the capacitor C should be

✗ 1) 20µF

✗ 2) 30µF

✔ 3) 10µF

✗ 4) 50µF

**Q.63** According to Maxwell's equation, which of the following is correct?
(Note: D is a vector quantity.)

✗ 1) $\blacktriangledown \times D = \rho_s$

✔ 2) $\blacktriangledown \cdot D = \rho_v$

✗ 3) $\blacktriangledown \times D = \rho_v$

✗ 4) $\blacktriangledown \cdot D = \rho_s$

**Q.64** 11. A three - phase, 10MVA, 11kV generator has 10% sub-transient reactance. A three phase short occurs at its terminal. The fault current will be.

✗ 1) 5200 A

✔ 2) 5249 A

✗ 3) 6249 kA

✗ 4) 6249 A

**Q.65** A three phase alternator with a rating of 10 MVA, 33 kV has its base resistance of 15 ohm/phase. Determine base impedance. Choose base voltage and base MVA equal to the same given for alternator rating.

✔ 1) 108.9 ohm

✗ 2) 107 ohm

✗ 3) 1633 ohm

✗ 4) 163 ohm

**Q.66** Most devices are interfaced to a bus with

✔ 1) Tristate drivers

✗ 2) Totem-pole outputs

✗ 3) pnp Transistors

✗ 4) Resistors

**Q.67** In an auto transformer the voltage ratio is $V_1/V_2$ where $V_1 > V_2$. the fraction of power transferred inductively is

✔ 1) $(V_1 - V_2)/V_1$

✗ 2) $V_1/(V_1 + V_2)$

✗ 3) $(V_1 - V_2)/(V_1 + V_2)$

✗ 4) $V_2/V_1$

**Q.68** In a single-phase full converter, if α and β are firing and extinction angles respectively then the load current is

✗ 1) discontinuous if $(\beta - \alpha) = \pi$

✗ 2) continuous if $(\beta - \alpha) < \pi$

✔ 3) discontinuous if $(\beta - \alpha) < \pi$

✗ 4) discontinuous if $(\beta - \alpha) > \pi$

**Q.69** Merz price protection scheme is the one from

✗ 1) Over current protection

✗ 2) Earth fault protection

✔ 3) Differential Protection

✗ 4) Distance protection

**Q.70** The inertia constant H for a 50Hz, 100MVA hydroelectric generator is 4.0MJ/MVA. How much kinetic energy is stored in the rotor at synchronous speed?

✔ 1) 400

✗ 2) 2

✗ 3) 25

✗ 4) 8

**Q.71** In an ac bridge three impedances are as follows

$Z_1 = 200$ ohm $< 60^o$

$Z_2 = 400$ ohm $< -90^o$

$Z_3 = 300$ ohm $< 0^o$.

for bridge to be balanced the value of Z4 will

✔ 1) 400 ohm < -90°
✘ 2) 600 ohm < -150°
✘ 3) 150 ohm < 30°
✘ 4) 300 ohm < 90°

**Q.72** In terms of current density, Biot–Savart's Law is expressed as_____
(Note: J and $a_r$ are vector quantities.)

✔ 1) $\int (J \times a_r) . dv/ 4\pi r^2$

✘ 2) $\int (J \times a_r) . dv/ 2\pi r$

✘ 3) $\int (J \times a_r) . dv/ 4\pi r$

✘ 4) $\int (J \times a_r) . dv / 2\pi r^2$

**Q.73** In AC. circuits, laminated iron is invariably used in order to
✘ 1) reduce circuit permeability
✔ 2) reduce eddy current loss
✘ 3) make assembly cheap and easier
✘ 4) increase heat radiation

**Q.74** In half wave SCR, power control circuit, if the firing angle is 300, then for one complete cycle of operation, the load gets power for
✘ 1) $30^0$
✘ 2) $60^0$
✘ 3) $333^0$
✔ 4) $150^0$

**Q.75** The voltage at farthest load point from supply at one end will be the least always for
✘ 1) Ring system
✘ 2) interconnected system
✘ 3) Network system
✔ 4) Radial system

**Q.76** To eliminate third harmonic in a single-pulse modulated PWM inverter, pulse width should be of
✘ 1) 30°
✘ 2) 150°

3) 120° ✓

4) 60° ✗

**Q.77** let

$$[\dot{x}] = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix} x + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u \quad , \quad y = [b \quad 0]x \, ,$$

where b is unknown constant. The system is

✗ 1) Unobservable for all the value of b

✗ 2) Observable for all the value of b

✗ 3) unobservable for all the non zero values of b

✓ 4) Observable for all the non zero values of b

**Q.78** The electrical entity inductance can be compared to the mechanical entity

✗ 1) Impulse

✗ 2) Torque

✗ 3) Energy

✓ 4) inertia

**Q.79** The torque angle and maximum power of a generator are 60 degree and 60 MW. The output power is

✗ 1) 5.19

✗ 2) 51

✗ 3) 53

✓ 4) 51.9

**Q.80** In z-bus building algorithm, a new bus is added to the partial network of 'm' bus and the resultant bus impedance matrix is of dimension

✓ 1) (m+1) × (m+1)

✗ 2) both (m-1) × (m-1) and (m-1) × (m-1)

✗ 3) (m-1) × (m-1)

✗ 4) (m+1) × (m-1)

**Q.81** A utility offers two tariffs for monthly billing

(i) Rs. 2.5/unit
(ii) Rs. 200 +Rs.1.75/unit

At what consumption level is tariff (i) preferable

✗ 1) Above 267 units

✗ 2) At all levels

✔ 3) Below 267 units

✗ 4) Less than 30 units

**Q.82** If a sinusoidal wave has frequency of 50 Hz with 30 A r.m.s. current which of the following equation represents this wave ?

✗ 1) 60 sin 25 t

✗ 2) 84.84 sin 25 t

✗ 3) 30 sin 50 t

✔ 4) 42.42 sin 314 t

**Q.83** A two phase servo motor has ……

✗ 1) Wound rotor

✗ 2) Rotor similar to that in dc motor

✗ 3) Wound and cage rotor

✔ 4) Cage rotor

**Q.84** Suitable bridge for measurement of frequency

✔ 1) Wein's bridge

✗ 2) Anderson's bridge

✗ 3) Campbell bridge

✗ 4) De – Sautty Bridge

**Q.85** Choose the incorrect statement.

✗ 1) A branch formed by the series connection of any resistor R and a short circuit has the characteristic of resistor R.

✗ 2) A branch formed by the series connection of any resistor R and an open circuit has the characteristic of an open circuit.

✗ 3) A branch formed by the parallel connection of any resistor R and a short circuit has the characteristic of a short circuit.

✔ 4) A branch formed by the parallel connection of any resistor R and open circuit has the characteristic of an open circuit.

**Q.86**

The electric stress in the underground cable is

✔ 1) Maximum at the conductor and minimum at the sheath

✗ 2) Zero at the conductor as well as on the sheath

✗ 3) Minimum at the conductor and maximum at the sheath

✗ 4) Same as conductor and sheath

**Q.87** In bode plot of the unity feedback control system the value of phase of $G(j\omega)$ at the gain crossover frequency is $-125^0$, the phase margin of the system is

✗ 1) 125

✗ 2) -55

✗ 3) -125

✔ 4) 55

**Q.88** The capacitance appearing across a reverse-based semiconductor junction

✔ 1) Decreases with increase in bias voltage

✗ 2) Increases with increase in bias voltage

✗ 3) Depends upon breakdown

✗ 4) Is independent of bias voltage

**Q.89** In the signal flow graph given blow the gain C/R will be
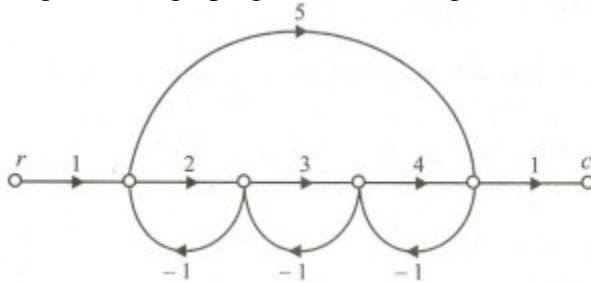


✗ 1) 22/15

✗ 2) 11/9

✗ 3) 24/23

✔ 4) 44/23

**Q.90** The Fourier transform of the exponential signal $e^{jw_0t}$ is

✗ 1) a series of impulses.

✔ 2) an impulse

✗ 3) a rectangular gate

✗ 4) a constant

**Q.91** The purpose of synchronizing control in a CRO is to

✗ 1) Adjust the amplitude of display

✗ 2) Focus the spot on the screen

✓ 3) Lock the display of signal

✗ 4) Control the intensity of the spot

**Q.92** Transfer function of a phase lead compensator is given by

$$\frac{1+aTs}{1+Ts}$$

where a>1 and T>0. The maximum phase shift provided by such compensator is

1) $sin^{-1}\frac{a+1}{a-1}$

2) $tan^{-1}\frac{a-1}{a+1}$

3) $tan^{-1}\frac{a+1}{a-1}$

4) $sin^{-1}\frac{a+1}{a-1}$

Note: This question has been ignored

**Q.93** The trans conductance curve of a JFET is

✗ 1) Linear

✗ 2) Sinusoidal

✗ 3) Hyperbolic

✓ 4) Parabolic

**Q.94** The stage of pipeline operation in which instructions are retrieved from the memory is called

✓ 1) Fetch

✗ 2) Execute

✗ 3) Decode

✗ 4) Accumulate

**Q.95** The unit impulse response of a linear time invariant second order control system
g(t)= 10 e -$^{8t}$ sin 6t (t).
The natural frequency and damping factor of the system are respectively

✗ 1) 6 rad/s and 0.8

✗ 2) 10 rad/s and 0.6

✓ 3) 10 rad/s and 0.8

✗ 4) 6 rad/s and 0.6

**Q.96** an output pulse width of 400μs. If it were fed with 11 trigger pulses with successive trigger pulses separated by 10μs, the output pulse width would be

✗ 1) 200 μs

✓ 2) 500 μs

✗ 3) 100 μs

✗ 4) 400 μs

**Q.97** One kilowatt hour of electrical energy is the same as

✗ 1) $36 \times 10^5$ B.T.U.

✓ 2) $36 \times 10^5$ joules

✗ 3) $36 \times 10^5$ ergs

✗ 4) $36 \times 10^5$ watt

**Q.98** Shunt reactors are needed

✗ 1) to boost receiving end voltage under light load condition

✓ 2) to bring down receiving end voltage at light loads

✗ 3) to boost receiving end voltage under heavy loads

✗ 4) to bring down receiving end voltage under heavy loads

**Q.99** Electromagnetic Waves are used in _____.

✗ 1) Radar

✓ 2) Radar Only

✗ 3) TV

✗ 4) Radio

**Q.100** Transfer function is defined as Laplace transform of the output to the Laplace transform of input with……

✗ 1) Initial condition t=∞

✓ 2) initial condition t=0

✗ 3) initial condition t>0

✗ 4) initial condition t<∞

**Q.101**

Swing bus would generally be a bus in a network which is a

✗ 1) PQ bus

2) PV bus ✓

3) Voltage controlled bus ✗

4) Any bus ✗

**Q.102** For the shifting if x(Z)=Z{x(n)} and initial condition for x(0) are zero the time shifting is

1) $Z\{x(n-m)\}=Z^m X(z)$ ✗

2) $Z\{x(n-m)\}=Z^{-m} X(z)$ ✓

3) $Z\{x(n-m)\}=Z^n X(z)$ ✗

4) $Z\{x(n-m)\}=Z^{-n} X(z)$ ✗

**Q.103** The voltage across a component is measured as 80 V r.m.s. and the current through it is 4 A r.m.s. If the current leads the voltage by $20^0$ what is the apparent power in the component?

1) 116 VA ✗

2) 109 VA ✗

3) 301 VA ✗

4) 320 VA ✓

**Q.104** An under excited synchronous motor behaves as ……….

1) a and b ✗

2) A capacitor ✗

3) A resister ✗

4) An inductor ✓

**Q.105** Two transistor analogy is used to explain the operation principle of

1) BJT ✗

2) MOSFET ✗

3) IGBT ✗

4) Thyristor ✓

**Q.106** the system represented by transfer function

$$G(s) = \frac{s^2+10\,s+24}{s^4+6s^3-39\,s^2+18s+84}$$

has

1) 3 pole in the left half of the s plane ✗

2) 3 pole in the right half of the s plane ✗

3) 2 pole in the right half of the s plane ✓

✗ 4)  4 pole in the left half of the s plane

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**Q.107**  A two-stage amplifier composed of an active high-pass filter and an active low-pass filter forms:

✗ 1)  a notch filter

✗ 2)  a high-gain amplifier with no net filtration

✓ 3)  an active band-pass filter

✗ 4)  an active band-stop filter

---

**Q.108**  Which of the transistor configuration is capable of providing both voltages and current gains?

✓ 1)  Common emitter

✗ 2)  Common collector

✗ 3)  Both common emitter and common base

✗ 4)  Common base

---

**Q.109**  The most accurate test for frequency response requires:

✗ 1)  a frequency generator

✗ 2)  a multimeter

✓ 3)  a spectrum analyzer

✗ 4)  a filter

---

**Q.110**  Laplace transform of rectangular pulse shown in fig is



✓ 1)  $\frac{1}{s}[1-e^{-sT}]$

✗ 2)  $\frac{1}{s^2}-e^{-sT}[\frac{1}{s}+\frac{1}{s^2}]$
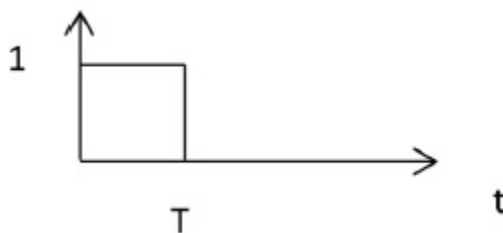
✗ 3)  $\frac{1}{s^2}[1-e^{-sT}]$

✗ 4)  $\frac{1}{s^2}-\frac{e^{-sT}}{s}$

---

**Q.111** For low values of drain-source voltages, the JFET acts as

✗ 1) BJT

✗ 2) Current source

✗ 3) Voltage source

✔ 4) Resistor

**Q.112** There are two semiconductor diodes A and B. Their ratings are 5.6V and 2V, respectively, then

✗ 1) A is avalanche, B is zener

✗ 2) Both of them are zener diodes

✗ 3) Both of them are avalanche diodes

✔ 4) A is zener, B is avalanche

**Q.113** The approximate GM and PM for unit feedback system with loop transmittance $e^{-0.1s}/s$ are respectively

✗ 1) $\propto$

✗ 2) $\propto, 0$

✗ 3) $0, \propto$

✔ 4) 24db, $84^0$

**Q.114** A delta-connected induction motor is to be operated in V/f control is fed by a three-phase voltage source inverter. During the start this induction motor drive requires

✔ 1) DOL starter

✗ 2) star-delta starter

✗ 3) auto-transformer

✗ 4) delta-star starter

**Q.115** There is a zero sequence current if the transformer is connected by

✗ 1) Star-Delta

✗ 2) Delta-Star

✗ 3) Star-Star

✔ 4) Delta-Star, neutral grounded

**Q.116** The impulse response of a system is 5. It's step response is equal to

✔ 1) $0.5(11-e^{-10t})$

✗ 2) $5(1-e^{-10t})$

✗ 3)  0.55 e$^{-10t}$

✗ 4)  10(1-e$^{-10t}$)

**Q.117** In the h-parameter model, the input and the output sections are modeled as

✗ 1)  Voltage sources

✗ 2)  Input section as current source and output section as voltage source

✔ 3)  Input section as voltage source and output section as current source

✗ 4)  Current sources

**Q.118** A step-down chopper is fed by a dc-bus of 100V, to feed a coil of resistance 5Ω and inductance 200mH. A freewheeling diode is used to facilitate ZCS of the power switch. Switch is being operated at 1kHz with a duty ratio of 0.5. Peak to peak current ripple in the coil will be

✗ 1)  10A

✔ 2)  0.125A

✗ 3)  0.25A

✗ 4)  0.5A

**Q.119** One of the reasons of using Bundle conductor is for

✔ 1)  less corona effect

✗ 2)  both more inductance effect and less corona effect

✗ 3)  transposing the lines

✗ 4)  more inductance effect

**Q.120** A diode which is to be used in a chopper has switching specifications as di/dt = 20A/μs and reverse recovery time $t_{rr}$ = 5μs. Expected peak reverse current is

✗ 1)  70.71A

✗ 2)  44.72A

✗ 3)  141.42

✔ 4)  100A

**Q.121** If the impulse response is defined as [h(t)= 1, for 0≤t≤Ts; otherwise it is zero], then it is

✗ 1)  Quantizer

✗ 2)  Second order Hold circuit

✔ 3)  Zero order hold circuit

✗ 4)  Sampler

**Q.122** A circuit has a voltage source of 15 volts and three 15 Ω resistors connected in parallel across the source. What Norton resistance (RN) would a load "see" when connected to this circuit?

✔ 1)  0 Ω

✘ 2)  45 Ω

✘ 3)  15 Ω

✘ 4)  5 Ω

**Q.123** Static system are also called as

✘ 1)  Memory system

✘ 2)  Digital system

✔ 3)  Memory less system

✘ 4)  Analog system

**Q.124** For measurement of high resistance we use

✘ 1)  Potentiometer method

✔ 2)  Loss of charge method

✘ 3)  Kelvin's bridge method

✘ 4)  Wheatstone bridge

**Q.125** A string of series connected thyristors is to be used for an application of 6kV and 1000A with derating factor 0.2. If the available thyristors are of rating 1000V and 200A, then what should be the number of series and parallel connected thyristors

✘ 1)  7, 6

✘ 2)  8, 6

✔ 3)  8, 7

✘ 4)  7, 8

**Q.126** In two wattmeter method if power factor is 0.5, then one of the wattmeter will read

✘ 1)  W/2

✘ 2)  W/√2

✔ 3)  Zero

✘ 4)  W/√3

**Q.127** A single-phase half-wave converter with freewheeling diode is driving a separately excited dc motor at 900rpm and is achieved with 60° firing angle. If the same motor is fed through single-phase semi converter with firing angle 60°, motor will run at a speed

✘ 1)  1500rpm

✗ 2) 1200rpm

✔ 3) 1800rpm

✗ 4) 900rpm

**Q.128** The common-collector bias and emitter bias are example of

✔ 1) Voltage-series feedback and current series feedback respectively

✗ 2) Voltage series feedback

✗ 3) Current-series feedback and current shunt feedback respectively

✗ 4) Voltage-series feedback and voltage-shunt feedback, respectively

**Q.129** Induced Current acts to produce an opposing flux according to which of the following laws:

✗ 1) Biot-Savart's law

✗ 2) Faraday's law

✗ 3) Ampere's law

✔ 4) Lenz's law

**Q.130** Determine the Plug Setting Multiplier(P.S.M) of a 5- ampere over current relay having a current setting of 125% connected to supply circuit through a 400/5 current transformer when the circuit carries a fault current of 4000 amp.

✗ 1) 7

✗ 2) 10

✔ 3) 8

✗ 4) 6

**Q.131**

The transfer function of the system given below is
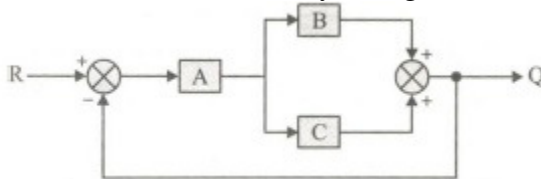


✗ 1) $\dfrac{Q}{R} = \dfrac{A+B+C}{1+AB+AC}$

✗ 2) $\dfrac{Q}{R} = \dfrac{ABC}{1+ABC}$

✔ 3) $\dfrac{Q}{R} = \dfrac{AB+AC}{1+AB+AC}$

$$\frac{Q}{R} = \frac{AB+AC}{ABC}$$

✗ 4)

**Q.132** The following type of dc generator is most suitable as booster

✔ 1) Series generator

✗ 2) Shunt generator

✗ 3) Separately excited generator

✗ 4) Compound generator

**Q.133** The time constant of the capacitive circuit is defined as the time during which voltage

✗ 1) falls to 36.8% of its final steady value

✗ 2) rises to its final steady value

✗ 3) rises to 38.6% of its final steady value

✔ 4) rises to 63.2% of its final steady value

**Q.134** A 10km lossless line has a reactance of 0.3 ohm/km. The ABCD constants are

✔ 1) A=1, B=j3, C=0, and D=1

✗ 2) A=1, B=0.3, C=0, and D=1

✗ 3) A=1, B=j0.3, C=0, and D=1

✗ 4) A=1, B=0.3, C = 0.3 and D=1

**Q.135** Which of the following signal is causal

✗ 1) $(1/2)^n u(n+3)$

✗ 2) sin t u(t)

✔ 3) $e^{-2t}u(t-2)$

✗ 4) u(n+2)-u(n-2)

**Q.136** The operator a rotates the vector in the anticlockwise direction by

✗ 1) 180 degree

✔ 2) 120 degree

✗ 3) 90 degree

✗ 4) 120 degree but clockwise

**Q.137** At surge impedance loading, magnitude of Sending and receiving end voltage are

✗ 1) sending end voltage is greater than receiving end

✗ 2) receiving end voltage is greater than sending end

✗ 3) not equal at the middle of the line

✓ 4) Same throughout the length

**Q.138** The energy signal is obtained by

✗ 1) $\int\limits_{-\infty}^{\infty}|x(t)|\,dt$

✗ 2) $\lim\limits_{T\to\infty}\dfrac{1}{T}\int\limits_{-T/2}^{T/2}|x(t)|\,dt$

✓ 3) $\int\limits_{-\infty}^{\infty}|x(t)|^2\,dt$

✗ 4) $\lim\limits_{T\to\infty}\dfrac{1}{T}\int\limits_{-T/2}^{T/2}|x(t)|^2\,dt$

**Q.139** Nyquist plot of the loop transfer function $G(j\omega)\,H(j\omega)$ of a system encloses the $(-1, j0)$ point. The gain margin of the system is

✗ 1) Infinity

✗ 2) Grater then zero

✗ 3) Zero

✓ 4) Less then zero

**Q.140** In an inverting summer circuit using opamp, DC voltages of +1V, -2V and +2V are, respectively applied to the input through 10kΩ, 20 kΩ and 50 kΩ resistors. It the feedback resistance were 50 kΩ, the output voltage would then be
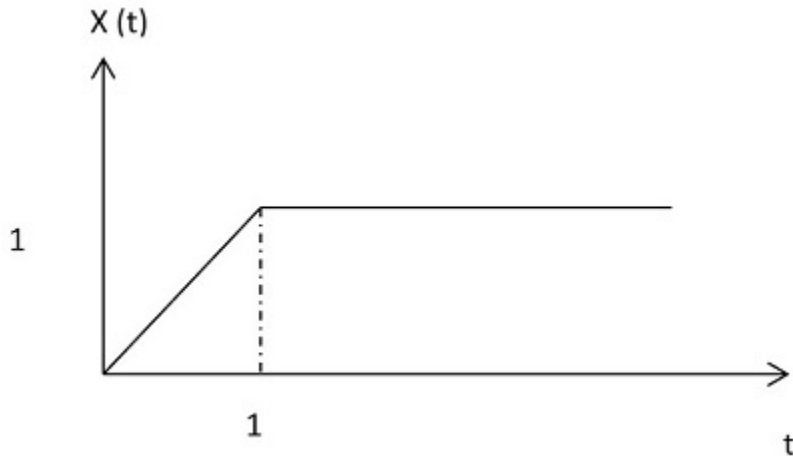
✓ 1) -2V

✗ 2) +2V

✗ 3) +3V

✗ 4) -3V

**Q.141** The Fourier transform of an unit step function is given as

✗ 1) $\dfrac{2}{jw}$

✗ 2) Ramp function

✗ 3) $2\pi\delta(w)$

✓ 4) $\pi\delta(w)+\dfrac{1}{jw}$

**Q.142** Current through a capacitor is expressed as _____.

✗ 1) $(Ad/\varepsilon)$ dv/dt

✗ 2) $(\varepsilon/Ad)$ dv/dt

✗ 3) $(d/\varepsilon A)$ dv/dt

✔ 4) $(\varepsilon A/d)$ dv/dt

**Q.143** The following signal is expressed as



✔ 1) t u(t)-(t-1) u(t-1)

✗ 2) t- u(t)-u(t-1)

✗ 3) tu(t)+(t)-1

✗ 4) -t u(t)+u(t-1)

**Q.144** Kirchhoff s voltage law applies to circuits with

✗ 1) linear elements only

✗ 2) linear, non-linear, active and passive elements

✗ 3) nonlinear elements only

✔ 4) linear, non-linear, active, passive, time varying as wells as time-in-variant elements

**Q.145** In a capacitor start motor if $C_1$ is the capacitance required for best starting torque and $C_2$ is the capacitance required for best running characteristic then

✗ 1) $C_1$ approximately equal to $C_2$

✗ 2) $C_1$ is much smaller than $C_2$

✔ 3) $C_1$ is much larger than $C_2$

✗ 4) $C_1$ is equal to $C_2$

**Q.146** Piezo electric transducers are

✗ 1) Primary transducer

✔ 2) Active transducers

✗ 3) Secondary transducers

✗ 4) Passive transducers

**Q.147** An ideal voltage source has

✗ 1) terminal voltage in proportion to current

✗ 2) open circuit voltage equal to the voltage on full load

✔ 3) zero internal resistance

✗ 4) terminal voltage in proportion to load

**Q.148** A varying magnetic flux linking a coil is given by $\Phi = Xt^2$. If at time t=3s, the emf induced is 9V, then the value of X is

✗ 1) -0.66 Wb.s$^{-2}$

✗ 2) 1.5 Wb.s$^{-2}$

✗ 3) 0.66 Wb.s$^{-2}$

✔ 4) -1.5 Wb.s$^{-2}$

**Q.149** The state variable description is

$$[\dot{x}] = \begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix} x + \begin{bmatrix} 1 \\ 1 \end{bmatrix} u$$

The state transition matrix of the system will be

✗ 1) $\begin{bmatrix} e^{-2t} & 0 \\ 0 & e^{-2t} \end{bmatrix}$

✗ 2) $\begin{bmatrix} e^{-2t} & 1 \\ 1 & e^{-2t} \end{bmatrix}$

✗ 3) $\begin{bmatrix} e^{2t} & 1 \\ 1 & e^{2t} \end{bmatrix}$

✔ 4) $\begin{bmatrix} e^{2t} & 0 \\ 0 & e^{2t} \end{bmatrix}$

**Q.150** The power is measured in terms of decibles in case of

✗ 1) current transformers

✗ 2) transformers

✗ 3) auto transformers

✔ 4) electronic equipment