



GATE-2019
Full Length Test
Electrical Engineering

Name:

Test ID: **EE-FLT-2019**

Duration: 3 hours

Maximum marks : 100

Please read the following instructions carefully

General Instructions

1. Total duration of examination is 180 minutes (3 hours).
2. The clock will be set at the server. The countdown timer in the top right corner of screen will display the remaining time available for you to complete the examination. When the timer reaches zero, the examination will end by itself. You will not be required to end or submit your examination.
3. The Question Palette displayed on the right side of screen will show the status of each question using one of the following:
 - a. You have not visited the question yet.
 - b. You have not answered the question.
 - c. You have answered the question.
 - d. You have NOT answered the question, but have marked the question for review.
 - e. You have answered the question, but marked it for review.

The **Marked for Review** status for a question simply indicates that you would like to look at that question again. If a question is answered and **Marked for Review**, your answer for that question will be considered in the evaluation.

Navigating to a Question

4. To answer a question, do the following:
 - a. Click on the question number in the Question Palette to go to that question directly.
 - b. Select an answer for a multiple choice type question by clicking on the bubble placed before the 4 choices namely A, B, C, D. Use the virtual numeric keypad to enter a number as answer for a numerical type question.
 - c. Click on **Save and Next** to save your answer for the current question and then go to the next question.
 - d. Click on **Mark for Review and Next** to save your answer for the current question, and also mark it for review, and then go to the next question.
 - e. **Caution:** Note that your answer for the current question will not be saved, if you navigate to another question directly by clicking on its question number without saving the answer to the previous questions.
 - f. You can view all the questions by clicking on the **Question Paper** button. This feature is provided, so that if you want you can just see the entire question paper at a glance.

Answering a Question

5. Procedure for answering a multiple choice (MCQ) type question:
 - a. To select your answer, click on the bubble button of one of the options
 - b. To deselect your chosen answer, click on the bubble button of the chosen option again or click on the clear response button
 - c. To change your chosen answer, click on the bubble button of another option
 - d. To save your answer, you **MUST** click on the **Save and Next button**.
 - e. To mark the question for review, click on the **Mark for Review and Next** button. If an answer is selected for a question that is Marked for Review, that answer will be considered in the evaluation.

6. Procedure for answering a numerical answer type question:

- a. To enter a number as your answer, use the virtual numerical keypad
 - b. A fraction (eg. -0.3 or $-.3$) can be entered as an answer with or without '0' before the decimal point. As many as four decimal points, e.g. 12.5435 or 0.003 or -932.6711 or 12.82 can be entered.
 - c. To clear your answer, click on the Clear Response button
 - d. To save your answer, you **MUST** click on the **Save and Next** button
 - e. To mark a question for review, click on the **Mark for Review and Next** button. If an answer is selected (for MCQ) or entered (for numerical answer type) for a question that is Marked for Review, that answer will be considered in the evaluation.
7. To change your answer to a question that has already been answered, first select that question for answering and then follow the procedure for answering that type of question.
8. Note that **ONLY** Questions for which answers are saved or marked for review after answering will be considered for evaluation.

Paper Specific Instructions:

9. There are a total of 65 questions carrying 100 marks. Questions are of multiple choice type or numerical answer type. A multiple choice type question will have four choices for the answer with only one correct choice. For numerical answer type questions, the answer is a number and no choices will be given. A number as the answer should be entered using the virtual keyboard on the monitor.
10. Questions Q.1 – Q.25 carry 1mark each. Questions Q.26 – Q.55 carry 2marks each.
11. Questions Q.56 – Q.65 belong to General Aptitude (GA) section and carry a total of 15 marks. Questions Q.56 – Q.60 carry 1mark each, and questions Q.61 – Q.65 carry 2marks each.
12. Questions not attempted will result in zero mark. Wrong answers for multiple choice type questions will result in **NEGATIVE** marks. For all 1 mark questions, $\frac{1}{3}$ mark will be deducted for each wrong answer. For all 2 marks questions, $\frac{2}{3}$ mark will be deducted for each wrong answer. There is no negative marking for questions of numerical answer type.
13. Physical calculator is **NOT** allowed. All candidates will be provided with an online scientific calculator which has to be used to answer the questions.

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Full Length Test Electrical Engineering

Q.1 - Q.25 Carry One Mark each.

1. An ac voltmeter with a maximum scale reading of 50 V has an inductance of 0.09 H and a total resistance of 500 Ω . The coil is wound with copper wire having a resistance of 50 Ω and the remainder of the voltmeter consists of non-inductive resistance in series with the coil. The value of capacitance is _____(in μF), that should be placed across the non-inductive resistor to make the instrument read correctly both dc as well as ac.

2. A phasor current of $1\angle 0^\circ$ Amp is flowing through the series combinations of 1 Ω , 1H and 1F. At what frequency is the amplitude of the voltage across the network twice the amplitude of voltage across the resistor
 (A) 2 rad/sec (C) 3.125 rad/sec
 (B) 2.189 rad/sec (D) 1.125 rad/sec

3. A 230V, 50Hz 1 - ϕ induction motor has the following impedances for the main and auxiliary windings
 Main winding, $Z_m = 28\angle 70^\circ\Omega$
 Auxiliary winding, $Z_a = 42\angle 40^\circ\Omega$
 Then find the input current at starting.
 (A) $13.37\angle -60^\circ.04^\circ\text{A}$ (C) $11.37\angle -58^\circ.04^\circ\text{A}$
 (B) $12.37\angle -59^\circ.2^\circ\text{A}$ (D) $8.214\angle -70^\circ\text{A}$

4. The resistance of moving coil voltmeter is 12,000 Ω . The moving coil has 100 turns and is 4 cm long and 3cm wide. The flux density in the air gap is 6×10^{-2} Wb/m². The deflection produced by 300 V if the spring control gives a deflection of one degree for a torque of 25×10^{-7} Nm is _____in degree

5. The neutral point of a three phase 20 MVA, 11 kV alternator is earthed through a resistance of 5 ohms, the relay is set to operate when there is an out of balance current of 1.5A. the CT's have a ratio of 1000/5. Percentage winding protected against an earth fault is _____ %

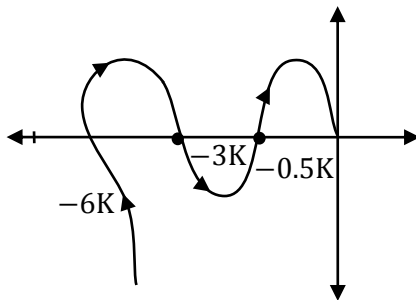
6. The impulse response of a discrete time system is given by $h(n) = \frac{1}{2}[\delta(n) + \delta(n - 2)]$
 Where $z = r e^{j\Omega}$ and $r = 1$. The magnitude of the response $H(z)$ can be expressed as
 (A) $|\cos \Omega|$ (C) $|\sin \Omega|$
 (B) $\cos \Omega$ (D) $\sin \Omega$

7. The minimised expression for the given K-map is (X: don't care)

CD \	00	01	11	10
00		1	1	
01		1	X	
11	1	1	X	X
10	1		X	X

- (A) $\bar{C}B + BD + CD$ (C) $C\bar{B} + AC + B\bar{C}$
 (B) $AB + C\bar{B} + B\bar{C}$ (D) $\bar{C}B + CD + C\bar{B}$

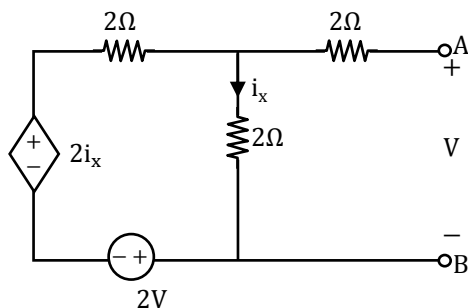
8. Nyquist plot of a system is shown in the below figure



Which of the following shows the above system characteristics?

- (A) Marginally stable (C) Stable
 (B) Conditionally stable (D) Unstable

9. A circuit shown below



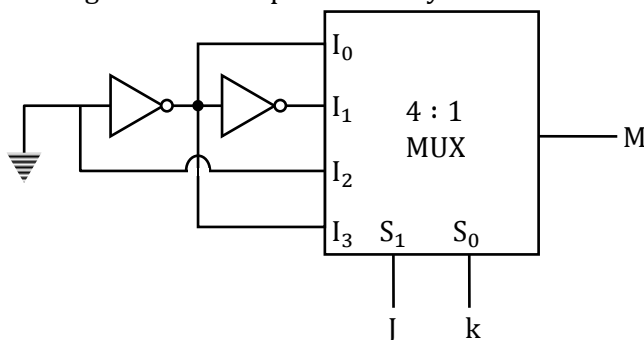
What is the voltage across terminals A And B?

- (A) 0V (C) -2V
 (B) -1V (D) ∞

10. The RMS value of the below function is _____
 $f(t) = 4 \sin 200t + 6 \cos 200t + 2 \cos(200t - 60^\circ)$

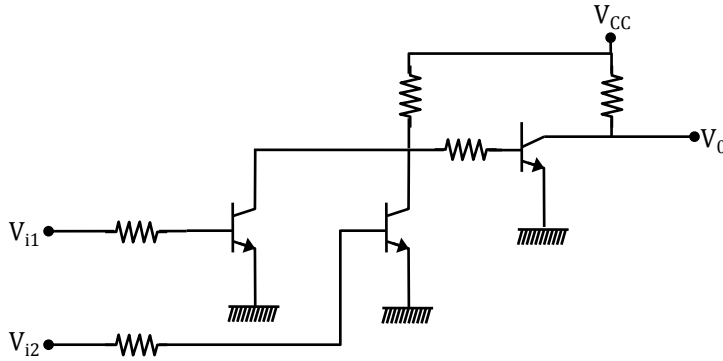
11. Find the 2nd approximation using Newton-Raphson method to the root $\sqrt{18}$ if $x_0 = 4$
 (A) 4.25 (C) 4.23
 (B) 4.243 (D) 4.526

12. Green's theorem is used to convert
 (A) Line integral to surface integral (C) Line integral to volume integral
 (B) Surface integral to volume integral (D) None of these
13. While performing a load test on a 3 phase wound rotor induction motor by 3 wattmeter method the reading obtained on 2 wattmeter were +14.2 kW and -6.1 kW and the line voltage was 440 V. Find the line current
 (A) 46.27 A (C) 45.26 A
 (B) 47.26 A (D) 47.62 A
14. The Eigenvalue of the matrix $\begin{bmatrix} 4 & -2 \\ -2 & 1 \end{bmatrix}$ are
 (A) 1 and 4 (C) 0 and 5
 (B) -1 and 2 (D) Cannot be determined
15. A single phase half-bridge inverter connected to 230V dc source, feeds a resistor = 10Ω. The total output power will be _____ watt.
16. A three-phase half wave controlled converter is fed from a 380V (line), 50 Hz ac supply and is operating at a firing angle of 45°. The thyristor have a forward voltage drop of 1.2V. The average load voltage will be _____V.
17. The inductance of a transmission line is 1.2 mH/ph/km. If the distance between the conductors and radius of the conductor is doubled then the new value of inductance is _____ mH/ph/km
18. The short current through a transmission line is maximum (instantaneous) when $\omega t = ____ \text{ degree}$. (source end voltage is $V_m \sin \omega t$ and the transmission line reactive dominant)
 (A) 2 (C) 0
 (B) 3 (D) 4
19. The logic function implemented by the circuit below is (ground implies a logic '1')



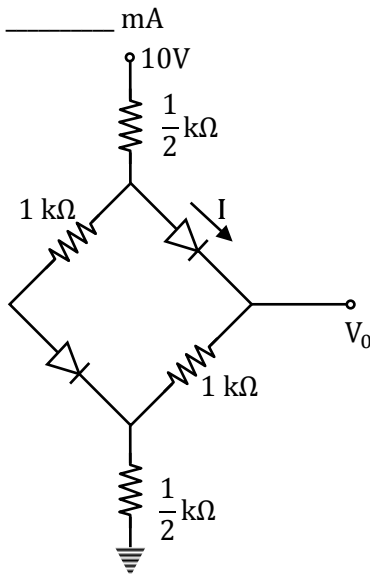
- (A) $M = \text{AND}(J, K)$ (C) $M = \text{X NOR}(J, K)$
 (B) $M = \text{OR}(J, K)$ (D) $M = \text{XOR}(J, K)$

20. Given figure depicts the circuit of a gate in RTL family. The circuit represents a _____ gate

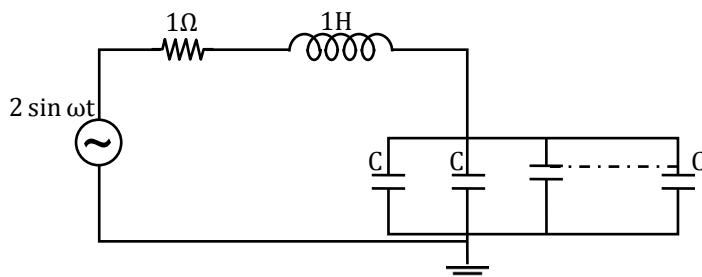


- (A) OR Gate
(B) NOR Gate
(C) XOR Gate
(D) None of these

21. For the circuit shown in figure the cut-in voltage of diode, $V_f = 0.7V$ then the value of I is _____ mA



22. A circuit as shown below, where $C = 1F$



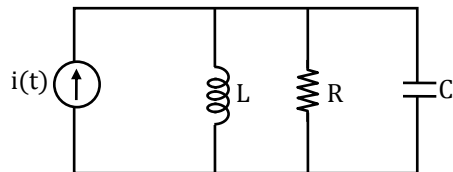
Determine the Bandwidth of the above circuit _____ [Hz]

23. The circuit shown for $i(t) = 10 \sin 120\pi t$ A. The power (time average power) dissipated in R is _____ watts

$$C = \frac{1}{60\pi} \text{ F}$$

$$L = \frac{1}{120\pi} \text{ H}$$

$$R = 1\Omega$$



24. If $L[f(t)] = \frac{1}{s(s-3)}$, then its final value is

(A) -3

(C) 0

(B) Unbounded

(D) 3

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

(A) $\sqrt{\frac{13}{9}}$

(C) $\sqrt{5}$

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

(B) $\sqrt{\frac{9}{3}}$

Q.26 - Q.55 Carry Two Mark each.

26. To provide reliable protection for a distribution transformer against over voltage using lightning arrestor, it is essential that the

1. Load resistance is high

2. Distance between the transformer and the arrestor is small

3. Transformer and the arrestor have a common interconnecting ground

4. Spark over voltage of the arrestor is greater than the residual voltage.

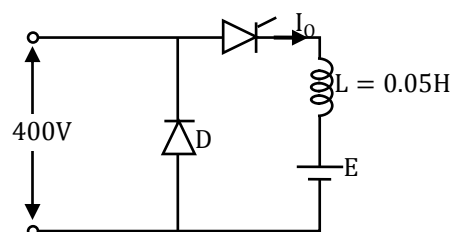
(A) 1, 3 and 4 are correct

(C) 2, 3 and 4 are correct

(B) 2 and 3 are correct

(D) 1 and 4 are correct

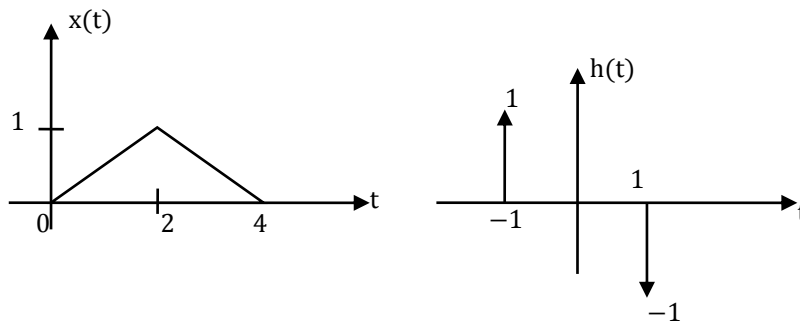
27. The following diagram shows a chopper with an active load. The duty cycle of the chopper is 0.25.



The value of chopping frequency in order to limit the load current excursions to 15 A is _____

28. A transmission line conductor across a hill is supported by two towers at a height 60 m and 90 m above ground level. The horizontal distance between them is 400 m. The tension in the conductor is 3000 kg. Find the clearance between the ground and conductor at a point midway between the towers, if weight of conductor is 0.8 kg/meter will be
 (A) 70.54 m (C) 48.58 m
 (B) 71.42 m (D) 69.66 m
29. A star connected 3- ϕ 11 kV, 25 MVA alternator with its neutral grounded through a 0.033 pu reactance [based on alternator rating] has positive, negative and zero sequence reactance of 0.2 pu, 0.1 pu and 0.1 pu respectively. A SLG fault on one of its terminals would result in a fault current of
 (A) 3.6 kA (C) 7.9 kA
 (B) 5.1 kA (D) 6 kA
30. A CS amplifier is driven by a voltage source with internal resistance $R_S = 300\Omega$. The load is $R_D = 20k\Omega$. FET parameters are $g_m = 2m\text{ U}$, $r_d = 20k\Omega$, $C_{gs} = 8pF$, $C_{gd} = 4pF$. The upper cut off frequency is
 (A) 5.7 MHz (C) 6.5 MHz
 (B) 4.1 MHz (D) 3.7 MHz

31. The signals $x(t)$ and $h(t)$ shown in the figures are convolved to yield $y(t)$



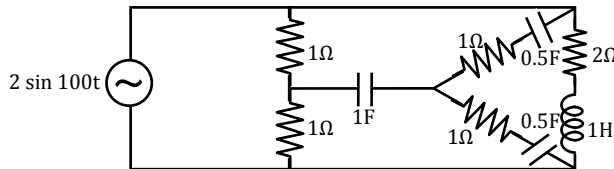
Then $\int_{-\infty}^{\infty} y(t)dt = \underline{\hspace{2cm}}$

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

32. Determine the contents of HL and DE pairs after the execution of DAD D instruction
 LXI B, 2100 H
 LXI D, 0200 H
 LXI SP, 2700 H
 PUSH B
 PUSH D
 LXI H, 0100 H
 XTHL
 DAD D
 HLT
 (A) 0400 H and 0400 H (C) 0200 H and 0400 H
 (B) 0400 H and 0200 H (D) 0200 H and 0200 H

33. An emitter follower using a pnp transistor with $\beta_0 = 150$ is biased at $I_C = 0.25$ mA. The voltage signal source has $R_s = 3k\Omega$. In order to make the overall $R_0 = 110\Omega$, $R_E = \underline{\hspace{2cm}}$ k Ω
 [given, $g_m = \frac{I_C}{V_T} = \frac{I_C(\text{mA})}{25}$ at 290k]

34. The rms value of current through 1F capacitor of fig is _____ Amp.



- (A) 1 (C) 3
 (B) 0 (D) 4
35. The analytic solution corresponding to the real part is given by
 $u = e^{-x}\{(x^2 - y^2) \cos y + 2xy \sin y\}$
 (A) $z^2 e^{-z}$ (C) $(z^2 + 2)e^{-z}$
 (B) $(z^2 - 2)e^{-z}$ (D) $z^2 e^z$

36. 'x' is the matrix $x = \begin{bmatrix} b^2 & 1 \\ (b^2 + b - 1) & (1 - b) \end{bmatrix}$ and $x^2 - x + I = 0$

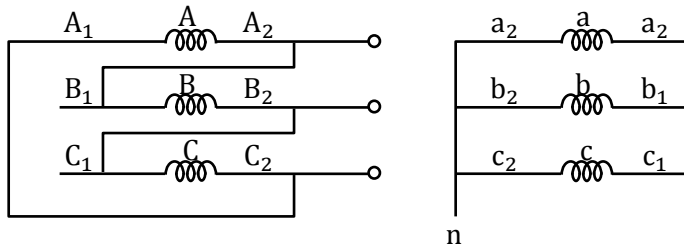
I: Identity matrix

0: Zero matrix

Then, which of the following denotes the inverse of x?

- (A) $\begin{bmatrix} -b & (b^2 - 1) \\ (b - 1) & 1 \end{bmatrix}$ (C) $\begin{bmatrix} (b - 1) & b^2 \\ b^2 & (-b^2 + b - 1) \end{bmatrix}$
 (B) $\begin{bmatrix} (1 - b) & (b^2 - 1) \\ b^2 & b \end{bmatrix}$ (D) $\begin{bmatrix} (1 - b^2) & -1 \\ (1 - b - b^2) & b \end{bmatrix}$

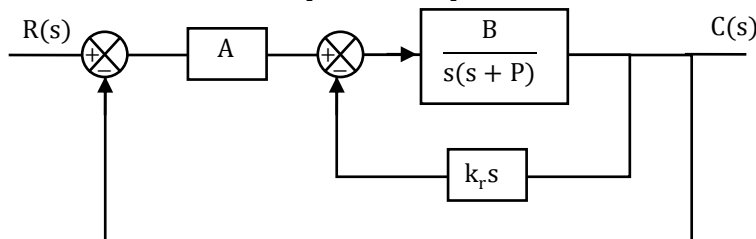
37. In the following fig.



The phase displacement between primary and secondary windings is

- (A) D_{y7} (C) D_{y11}
 (B) D_{y5} (D) D_{y12}
38. A 7.5 kW, 400 V, 3-phase, 50 Hz, 6-pole squirrel cage induction motor operates at 4% slip at full-load when rated voltage and frequency is applied. The torque-slip characteristic is assumed to be linear in the operating region. The no-load torque is 6 Nm. The no-load speed of the motor when the supply voltage is reduced to half its rated value will be
 (A) 874 rpm (C) 756 rpm
 (B) 987 rpm (D) 699 rpm
39. A length of cable is tested for insulation resistance by the loss of charge method. A voltmeter of infinite resistance is connected between the cable conductor and earth, forming there with a joint capacitance of 600pF. It is observed that the voltage falls from 250 V to 92 V in 60 sec. The insulation resistance of the cable is _____ $M\Omega$
40. A continuous time system $y(t) = e^{-5|x(t)|}$ is
 (A) $Y(t) = \infty$ if $x(t)$ is ∞ (C) Unbounded
 (B) Strictly bounded (D) Can't say

41. The relation between input and output shown below



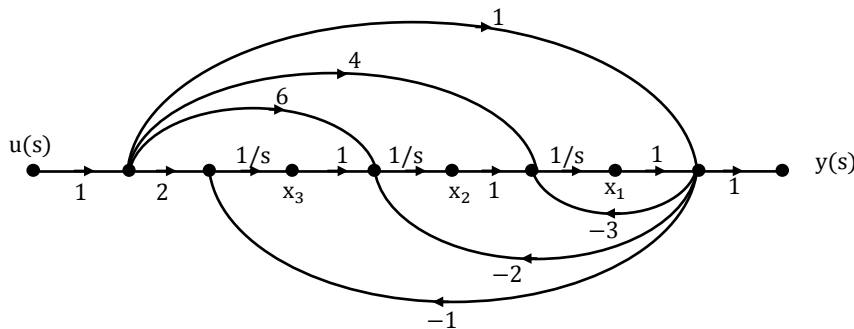
Given conditions are $\sqrt{B \cdot k_r} = 16$, $\sqrt{A \cdot B} = 64$

The system is limitedly stable, then the value of $\frac{\omega_0}{P}$ _____ (rad/s)
 [Where ω_0 frequency of self sustained oscillations]

42. A 5 - point sequence is given by $x[-2] = x[2] = -2$, $x[-1] = x[1] = 1$, $x[0] = 4$.
 Let $X(\omega)$ denote the discrete time fourier transform of $x[n]$.

The value of $\frac{1}{\pi} \int_{-\pi}^{\pi} X(\omega) d\omega =$ _____

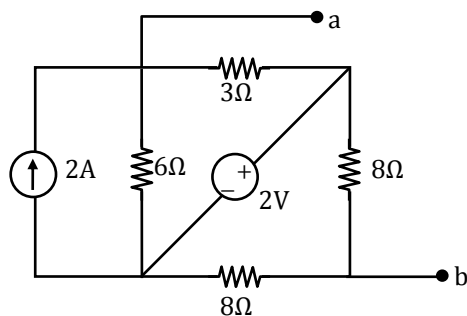
43. The signal flow graph shown below,



Which of the following is correct state model for above diagram

- (A) $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 3 & 1 & 0 \\ 2 & 0 & 1 \\ 1 & 0 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 1 \\ 4 \\ 1 \end{bmatrix} [u], y = x_1$
- (B) $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 3 & 1 & 0 \\ 2 & 0 & 1 \\ 1 & 0 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} -1 \\ -4 \\ -1 \end{bmatrix} [u], y = x_1$
- (C) $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & -2 & -3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 1 \\ 4 \\ 1 \end{bmatrix} [u], y = x_1$
- (D) $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} -3 & 1 & 0 \\ -2 & 0 & 1 \\ -1 & 0 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 1 \\ 4 \\ 1 \end{bmatrix} [u], y = x_1$

44. The Thevenin's impedance across the terminals ab of the following network is



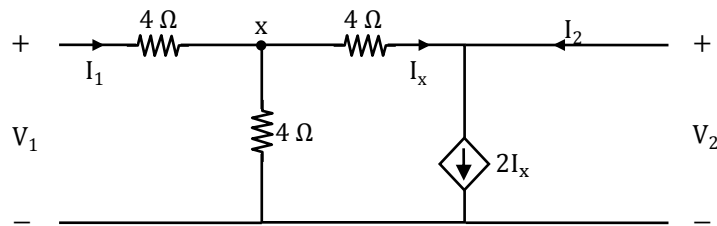
- (A) 2Ω (B) 6Ω (C) 6.16Ω (D) 4/3Ω
45. For Fourier transform to exist, location of poles on s-plane is
 (A) All poles on left half of s-plane (B) All poles on right half of s-plane
 (C) All poles on imaginary axis (D) All poles on real axis

46. The potential field between the capacitor plates varies as $V = 10^5 x$ Volts, the distance between the capacitor plates is 0.2 cm and the area of the capacitor plates is 100m², then what is the energy stored in the capacitor _____ mJ

The medium between the plates is air, $\epsilon_0 = \frac{1}{36\pi} \times 10^{-9}$ F/m

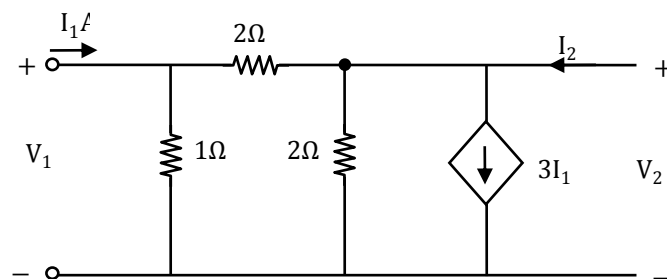
47. In a class 60% are boys and rest is girls. 50% of boys and 25% of girls knows cricket. If a student is selected at random and given that the selected student is a cricketer. The probability that the selected student is a girl is _____

48. A circuit shown below

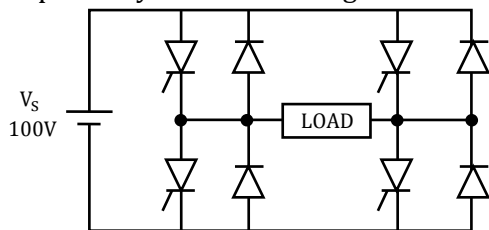


One of the equation of above network is $V_1 = SV_2 + MI_2$, what is the value of $M \times S$

49. It is y parameter y_{11} is _____ Ω .



50. An inverter shown in the following diagram supplies an RLC load at 50Hz fundamental frequency. The load resistance, inductance and capacitance are 4Ω , 35mH and $155\mu\text{F}$ respectively. The conducting time of each thyristor in ms is



- (A) 6.26 (C) 10
(B) 3.73 (D) 3.33

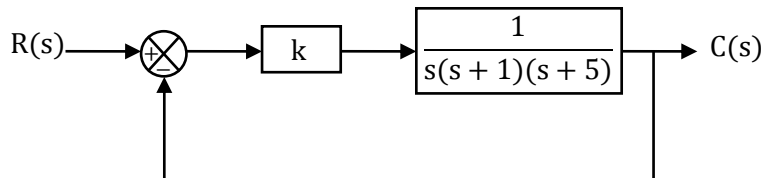
51. In a single phase VSI bridge inverter, the load current is $I_o = 200 \sin(\omega t - 45^\circ)$ mA. The d.c. supply voltage is 220 V. what is the power drawn from the supply?

- (A) 9.8 W (C) 27.25 W
(B) 19.8 W (D) 34.03 W

52. A dynamometer type wattmeter is rated for 10A and 100V and a full scale reading of 1000W. the inductance of the voltage circuit is 5mH and its resistance is 3000Ω . If the voltage drop across current coil of wattmeter is negligible, the error in wattmeter at the rated volt amperes with zero power factor is _____ (in Watts). When the frequency is 50Hz

53. The disc of an energy meter makes 600 revolutions per minute per unit of energy, when a 1000 Watt load connected, the disc rotates at 10.2 rpm. If the load is on for 12 hours, how many units are recorded as error is _____ kWh

54. The closed loop system shown below becomes marginally stable if the constant k is chosen to be _____



55.
$$A = \begin{bmatrix} x & 0 & 0 \\ 0 & y & 1 \\ 0 & -1 & -2 \end{bmatrix}$$

The system matrix of a continuous time system shown above in the state variable form is stable if

- (A) $x < 1/2, y < 1/2$ (C) $x < 0, y < 2$
 (B) $x > 1/2, y > 1/2$ (D) $x < 0, y < 1/2$

General Aptitude One Marks Question Q. 56 to Q. 60

56. Three bells chime at an interval of 18, 24 and 32 minutes respectively. At a certain time they begin to chime together. What length of time will elapse before they chime together again?

- (A) 2 hours 24 minutes (C) 1 hour 36 minutes
 (B) 1 hour 12 minutes (D) 4 hours 48 minutes

57. In a one day cricket match, the total runs made by a team were 200. Out of these 160 runs were made by spinners.

Conclusion I: 80% of the team consists of spinners.
 Conclusion II: The opening batsmen were spinners.

- (A) Only conclusion I follows (C) Either I or II follows
 (B) Only conclusion II follows (D) Neither I nor II follows

58. In a car race of 12km, a participant covers a distance of the first 3 km in 6 minutes. He then increases his speed and covers twice the distance already covered in 6 minutes. He covers the rest of the distance in 12 minutes. Find his average speed.

- (A) 9.23m/s (C) 6.20m/s
 (B) 7.44m/s (D) 8.33m/s

Directions for Q. No. 59: Choose the option which is FARTHEST to the word mentioned in Question

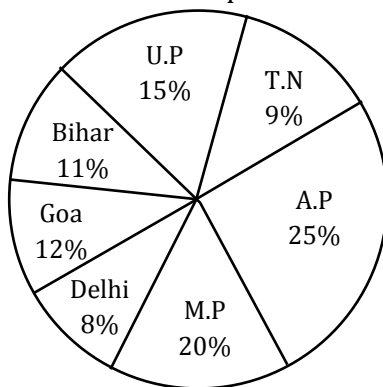
59. **MOROSE**

- (A) Exuberant (C) Mortified
 (B) Moron (D) Crestfallen

60. A team of five is to be selected from amongst five boys A, B, C, D and E and four girls P, Q, R and S. Some criteria for selection are as follows
C and P have to be together, Q cannot go with R. E cannot go with S. B and D have to be together. Q cannot go with A. Unless stated otherwise, these criteria apply to all the following questions.
If two of the members have to be boys, the team will consist of
(A) CEPQS (C) ACPRS
(B) AEPQS (D) BDPRS

General Aptitude Two Marks Question Q. 61 to Q. 65

Direction for Q. No 61: Data of different states regarding population of states in the year 1998 is shown in pie chart study the graph and answer the question that follows.



Total population of given states = 32,76,000

Following table shows that sex & literacy wise population ratio

States	Sex		Literacy	
	Male	Female	Literate	Illiterate
Andhra Pradesh	5	3	2	7
Madhya Pradesh	3	1	1	4
Delhi	2	3	2	1
Goa	3	5	3	2
Bihar	3	4	4	1
Uttar Pradesh	3	2	7	2
Tamil Nadu	3	4	9	4

61. What will be the total percentage of total number of males in U.P, M.P & Goa together to the total population of all given states ?
(A) 28.5% (C) 23%
(B) 18.5% (D) 32%
62. A cube is coloured red on one of the face, green on the opposite face, yellow on another face and blue on a face adjacent to the yellow face. The other two faces are left uncolored. It is then cut into 125 smaller cubes of equal size. How many cubes uncolored on the all the faces?
(A) 27 (C) 48
(B) 36 (D) 64

63. NOVICE: SEASONED
(A) Opulent: Grand (C) Affluent: Impecunious
(B) Nefarious : Wicked (D) Filthy: Disgusting

Direction for Q. No 64: Consider the information in the statements to be true. On the basis read the following questions and mark:

64. The Minister said that the teachers are still not familiarised with the need, importance and meaning of population education in the higher education system. They are not even clearly aware about their role and responsibilities in the population education programme.
I. Population education programme should be included in the college curriculum.
II. Orientation programme should be conducted for teachers on population education
(A) If only I follows (C) If neither I nor II follows
(B) If only II follows (D) If both I and II follow
65. The question is followed by two statements I and II. Mark the answer.
(A) If the question can be answered by using one of the statements alone, but cannot be answered using the other statement alone.
(B) If the question can be answered by using either statement alone.
(C) If the question can be answered by using both statements together, but cannot be answered using either statement alone.
(D) If the question cannot be answered even by using both statements together
- What is the value of the ratio $(a + c) : c$?
1. The ratio of $a : b = 1 : 5$.
 2. The ratio of $b : c = 3 : 2$.