OSSC ATO
(Mains)
Previous Year Paper
26 July, 2023

Communicative English

1. *Fill in the gap with suitable option given below :*

The names of the absentees have been _____ the register.

(a) cut out
(b) struck out
(c) struck off
(d) cut off

2. *Write the correct phrase in place of the underlined one :*

Though India is still **by far** a developing country, it can become the developed one if its natural and human resources are fully utilised.

(a) Few and far between
(b) By and by
(c) Out and out
(d) By and large

3. *Write the antonym of the underlined word :*

John was deeply affected by her colleague's **urbane** attitude.

(a) Rude
(b) Rural
(c) Irrational
(d) Indifferent

4. *Fill in the blank with suitable word :*

After one year of the dispute, both the parties were keen to have a/an _____ settlement.

(a) worthy
(b) amicable
(c) enviable
(d) lovable

5. *Fill in the gap with a suitable preposition :*

The political environment of Pakistan is not conducive _____ economic reforms.

(a) for
(b) to
(c) of
(d) by

6. Which is the most significant element of non-verbal communication?

(a) Gender of the speaker
(b) Position of the speaker
(c) Number of audience
(d) Personal appearance

7. *Fill in the gap with suitable option given below :*

Communication is a process in which we exchange our ideas, feelings and emotions that is absolutely based on _____.

(a) text
(b) context
(c) pretext
(d) prediction

8. A candidate writes a cover letter for applying for a job. Which is the most appropriate complimentary closing ?

(a) Yours faithfully
(b) Your's faithfully
(c) Yours Faithfully
(d) Faithfully yours

9. The report must reach my office by 10:00 a.m on Monday. Right, I repeat, sharp 10:00 a.m, Next Monday. What does this message indicate ?

(a) Communicative focus

(b) Loss of information

(c) Filter

(d) Redundancy

10. Which of the following is not an aspect of style in professional communication ?

(a) Formal language

(b) Clarity of text

(c) Pompous language

(d) Specialised vocabulary

11. Identify the statement which is True in relation to a Business Memo writing.

(a) Introduces the writer of the Memo

(b) Clarity, conciseness, unity of thought and semiformal tone

(c) It is a long piece of written communication

(d) It is always upward in nature

12. *Fill in the gap with suitable option given below :*

Communication broadly includes both _____ and _____ forms.

(a) verbal and non-verbal

(b) sign and signal

(c) oral and written

(d) listening & speaking

13. Fill in the blank with the most appropriate conjunction from the options given below.

The Principal _____ the staff encouraged the hockey players.

(a) but

(b) as well as

(c) as soon as

(d) nor

14. *Fill in the blank with a suitable form of the verb, from the options given below :*

He stopped _____ (talk) to me a month ago.

(a) to talk

(b) to talking

(c) talking

(d) none of these

15. *Fill in the blank with a suitable preposition :*

He is blind _____ his son's misdeeds.

(a) for

(b) with

(c) to

(d) at

16. *Fill in the blank with a suitable alternative :*

_____ Raju or his brother has won the trophy.

(a) Neither

(b) Either

(c) When

(d) After

Read the passage carefully and answer the questions that follow.

Illiteracy means stay in darkness. Education is light. It opens our eyes to the realities of the world around us and liberates us from many unfounded superstitions and puts us on the right track to progress and prosperity. Before, the advent of the English and the spread of western education, education in India was the prerogative of the upper strata of society. Bulk of the general public was living in an area of intellectual darkness. The rich few, with a view to keep the masses under their thumb, had spread a number of superstitions and unscientific beliefs which made the common people intellectual slaves of the feudal lords and the rich landholders. Due to illiteracy, the barbarian customs Sati, Infanticide, human sacrifice, animal sacrifice, purdah, child marriage and so many other evils were prevalent among the people. The current period is the age of science and technology. Our country is in a developing state. We have large manpower and resources. Our education system has been reformed. But it is unfortunate that we are producing the best minds but they have become assets in abroad.

17. Write the synonym of the word '**prerogative**' used in the passage ?

(a) Duty

(b) Obligation

(c) Peromyscus

(d) Privilege

18. What does the tone of the writer indicate ?

(a) Satire

(b) Humour

(c) Serious

(d) Descriptive

19. Which one is a suitable title of the above paragraph?

(a) Illiteracy and education

(b) Education system of our country

(c) Role of education in our society

(d) Superstition and Science

20. What does the last line express ?

(a) Happiness

(b) Sorrow

(c) Regret

(d) Boastful

Computer Application

21. The effectiveness of the cache memory is based on the property of _____.
    (a) Locality of reference
    (b) Memory localisation
    (c) Memory size
    (d) None of the mentioned

22. When generating physical addresses from a logical address the offset is stored in _____.
    (a) Translation look-aside buffer
    (b) Relocation register
    (c) Page table
    (d) Shift register

23. The technique of temporarily delaying out going acknowledgements so that they can be hooked onto the next outgoing data frame is called _____.
    (a) Piggybacking
    (b) Cyclic redundancy check
    (c) Fletcher's checksum
    (d) Parity check

24. Which protocol assigns IP address to the client connected in the internet ?
    (a) DHCP
    (b) IP
    (c) RPC
    (d) RSVP

25. If the wait for graph contains a cycle _____.
    (a) Then a deadlock does not exist
    (b) Then a deadlock exists
    (c) Then the system is in a safe state
    (d) Either deadlock exists or system is in a safe state

26. Which of the following is not a part of the file directory ?
    (a) Attributes
    (b) Protocol
    (c) Location
    (d) Ownership

27. What will be the output of the program ?

```
#include<stdio.h>
int main ()
{
int a [5] = {5, 1, 15, 20, 25};
 int i, j, m;
i = ++a[1];
j = a[1]++;
m = a[i++];
printf("%d, %d, %d", i, j, m);
 return 0;
}
```

    (a) 2, 1, 15
    (b) 1, 2, 5
    (c) 3, 2, 15
    (d) 2, 3, 20

28. What will be the output of the program ?

```
#include<stdio.h>
int main()
{
int i=0;
for(; i<=5; i++);
printf("%d", i);
return 0;
}
```

(a) 0, 1, 2, 3, 4, 5

(b) 5

(c) 1, 2, 3, 4

(d) 6

Which forms are based on the concept of functional dependency ?

(a) 1NF

(b) 2NF

(c) 3NF

(d) 4NF

30. The memory which is used to store the copy of data or instructions stored in larger memories, inside the CPU is called _____.

(a) Level 1 cache

(b) Level 2 cache

(c) Registers

(d) TLB

Engineering Physics

31. Calculate the force on an electron moving with velocity $v = 2.5i \times 10^6$ m/s in a magnetic field $B = (10i - 6k) \times 10^2$ wb/m^2

[For the electron q = 1.6×10^{-19} coulomb]

(a) 3.4×10^{-10} jN

(b) 1.5×10^{-10} jN

(c) 2.4×10^{-10} jN

(d) 2.8×10^{-10} jN

32. A body sliding on a smooth inclined plane required 4 seconds to reach the bottom starting from the rest at the top. How much time does it take to cover one-fourth of the distance starting from rest at the top?

(a) 1 second

(b) 2 seconds

(c) 4 seconds

(d) 16 seconds

33. A tube well pumps out 40 kg of water per second. If water comes out with a velocity of 3ms^{-1}, how many watt-hours of work will be done if the pump runs for 10 hours ?

(a) 320 W hour

(b) 250 W hour

(c) 120 W hour

(d) 1800 W hour

34. T[redacted]

w[redacted]

y[redacted]

y[redacted]

se[redacted]

ar[redacted]

wi[redacted]

th[redacted]

(a)[redacted]

(b)[redacted]

(c)

(d)

35. Th[redacted]

rai[redacted]

incr[redacted]

of a[redacted]

J = [redacted]

(a)

(b)

(c)

(d)

36. An [redacted]

40 [redacted]

con[redacted]

of 3[redacted]

mov[redacted]

the r[redacted]

(a)

(b)

34. The equation of a progressive wave moving on a string is $y = 4 \sin\pi(0.01x - 2t)$. In this equation, y and x are in centimetres and t in seconds. If two particles at any instant are stimulated at 200 cm apart, what will be the phase difference between these particles ?

(a) 900

(b) 1800

(c) 2700

(d) 3600

35. The temperature of 5 gm of air is raised from $0^{\circ}C$ to $1^{\circ}C$, what is the increase in the internal energy of air at $C_v = 0.172$ cal g^{-1} C^{-1} and $J = 4.18 \times 10^7$ erg/cal.

(a) 3.595×10^7 erg

(b) 0.319×10^7 J

(c) 2.595×10^7 erg

(d) 20.595×10^7 erg

36. An object is placed at a distance of 40 cm on the principal axis of a concave mirror of radius of curvature of 30 cm. How much does the image move if the object is shifted towards the mirror through 15 cm ?

(a) – 3.33 cm

(b) 13.5 cm

(c) –10 cm

(d) 5.37 cm

37. What will be the electric field strength at the surface of the gold atom, Z for gold is 79 where the charge on an atom is distributed uniformly in a sphere of radius 10^{-10} meter. Given $e = 1.6 \times 10^{-19}$C.

(a) 0.08×10^{12} NC^{-1}

(b) 4.1×10^{13} NC^{-1}

(c) 9.0×10^{13} NC^{-1}

(d) 1.138×10^{13} NC^{-1}

38. 10^{20} electrons each having a charge of 1.6×10^{-19} C pass from one point X towards another point Y in 0.1 sec. What is the current ?

(a) 160 amp

(b) 1.6 amp

(c) 0.16 amp

(d) 1600 amp

39. The ratio of the magnetic field inside a solenoid at an axial point well inside and at an axial end point is :

(a) 2

(b) $\frac{1}{2}$

(c) 1

(d) $\frac{3}{2}$

40. A radiation of wavelength 3×10^{-7} m is capable of emitting photoelectrons from the gold cathode. What is the stopping potential for the photoelectrons, if the work function of gold is 3 eV ?

(a) 1.001 V

(b) 2.613 eV

(c) 1.141 V

(d) 1.77 eV

Engineering Chemistry

41. Which of the following sets of quantum numbers is correct for an electron in 4f-orbital ?

(a) $n = 4, l = 3, m = +4, s = +\frac{1}{2}$

(b) $n = 4, l = 4, m = -4, s = -\frac{1}{2}$

(c) $n = 4, l = 3, m = +1, s = +\frac{1}{2}$

(d) $n = 3, l = 2, m = -2, s = +\frac{1}{2}$

42. The sigma and π-bonds present in benzene ring are :

(a) Three sigma and three pi

(b) Six sigma and three pi

(c) Six pi and three sigma

(d) Nine sigma and three pi

43. 8 g NaOH is dissolved in one litre of solution. Its molarity is :

(a) 0.8 M

(b) 0.2 M

(c) 0.4 m

(d) 0.1 m

44. The amount of silver deposited on passing 2F of electricity through aqueous solution of $AgNO_3$ is (Atomic mass of silver = 108 u) :

(a) 54 g

(b) 108 g

(c) 216 g

(d) 324 g

45. Electrolytic reduction process is used for the extraction of :

(a) Highly electropositive metals

(b) Metalloids

(c) Less active metals

(d) Transition metals

46. Alnico is used as the alloy to make

(a) Temporary magnets

(b) Permanent magnets

(c) Electromagnets

(d) Electro-mechanical magnets

47. What is the IUPAC name of $CH_2 = CH - CH = CH_2$?

(a) Butadiene

(b) Buta-1, 4-diene

(c) Buta-2, 3-diene

(d) Buta-1, 3-diene

48. The highest boiling point is expected for _____.

(a) Iso-Octane

(b) n-Octane

(c) 2, 2, 3, 3-Tetramethylbutane

(d) n-Butane

49. The compressed gas available in cooking gas cylinders is a mixture of _____.

(a) $C_6H_6 + C_6H_5CH_3$

(b) $C_2H_4 + C_2H_2$

(c) $C_2H_4 + CH_4$

(d) $C_4H_{10} + C_3H_8$

50. A water sample analysis data is given below:

Ion	Concentration (mg/L)	AtomicWeight (g/mole)
Ca^{2+}	60	40
Mg^{2+}	30	24.31
HCO_3^-	400	61

The carbonate hardness (expressed as mg/L, of $CaCO_3$, up to one decimal place) for the water sample is _____.

(a) 272.0 to 274.0

(b) 329.0 to 331.0

(c) 90.0 to 92.0

(d) 400.0 to 402.0

Engineering Mathematics-I

51. Given that A is a square matrix of order 3 and $|A| = -4$, then $|adj\ A|$ is equal to :

(a) -4

(b) 4

(c) -16

(d) 16

52. $[\cos 70^\circ \sin 20^\circ \sin 70^\circ \cos 20^\circ] = ?$

(a) 1

(b) 0

(c) $\cos 50^\circ$

(d) $\sin 50^\circ$

53. The value of $\sin 60^\circ \cos 30^\circ + \sin 30^\circ \cos 60^\circ$ is :

(a) 0

(b) 1

(c) 2

(d) 4

54. The distance of the point P(2, 3) from the x-axis is :

(a) 2

(b) 3

(c) 1

(d) 5

55. The points (1,1), (–2, 7) and (3, –3) are :

(a) Vertices of an equilateral triangle

(b) Collinear

(c) Vertices of an isosceles triangle

(d) None of these

56. The perpendicular bisector of the line segment joining the points A(1, 5) and B(4, 6) cuts the y-axis at :

(a) (0, 13)

(b) (0, –13)

(c) (0, 12)

(d) (13, 0)

57. If TP and TQ are the two tangents to a circle with centre O so that $\angle POQ = 110^\circ$, then $\angle PTQ$ is equal to :

(a) 60°

(b) 70°

(c) 80°

(d) 90°

58. Find the equation of the plane passing through the points P(1, 1, 1), Q(3, –1, 2), R(–3, 5, –4) :

(a) $x + 2y = 0$

(b) $x - y - 2 = 0$

(c) $-x + 2y - 2 = 0$

(d) $x + y - 2 = 0$

59. If a line has direction ratios 2, – 1, – 2, determine its direction cosines :

(a) $\frac{1}{3}, \frac{2}{3}, -\frac{1}{3}$

(b) $\frac{2}{3}, -\frac{1}{3}, -\frac{2}{3}$

(c) $-\frac{2}{3}, \frac{1}{3}, \frac{2}{3}$

(d) None of these

60. What is the diameter of sphere, whose surface area is 5544 cm^2 :

(a) 32 cm

(b) 42 cm

(c) 54 cm

(d) 65 cm

Engineering Mathematics-II

61. If $|a \times b|^2 + |a.b|^2 = 144$ and $|a| = 4$, then $|b|$ is equal to :

(a) 12

(b) 3

(c) 8

(d) 4

62. If a, b, c are unit vectors such that $a + b + c = 0$, then the value of $a.b + b.c + c.a$ is :

(a) 1

(b) 3

(c) $-\frac{3}{2}$

(d) None of these

63. If A.B = A × B, then angle between A and B is :

(a) 45°

(b) 30°

(c) 60°

(d) 90°

64. The value of $(\sin x)^{\tan x}$ is :

(a) 0

(b) 1

(c) 2

(d) None of these

65. $\lim_{x\to\infty} \sqrt{x^2 + x + 1} - x$ is :

(a) 0

(b) 1

(c) $\frac{1}{2}$

(d) None of these

66. If $f(x) = x \sin x$, then $f'(\frac{\pi}{2})$ is equal to :

(a) -1

(b) 0

(c) 1

(d) None of these

67. If $f(x) = x^{100} + x^{99} + \cdots + x + 1$, then $f'(1)$ is equal to :

(a) 4050

(b) 5050

(c) 5000

(d) None of these

68. If $y = x^3 + x^2 + x + 1$, then, y :

(a) has a local minimum

(b) has a local maximum

(c) neither has a local minimum nor local maximum

(d) None of the above

69. If $\int 2^x dx = f(x) + C$, then $f(x)$ is :

(a) 2^x

(b) $2^x \log_e 2$

(c) $2^x / \log_e 2$

(d) $2^{x+1}/x+1$

70. $\int \frac{\sin 2x}{2 \sin x} dx$ is :

(a) $\sin x + c$

(b) $\frac{1}{2} \sin x + c$

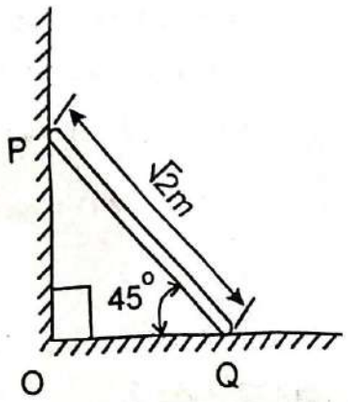
(c) $\cos x + c$

(d) $\frac{1}{2} \cos x + c$

Engineering Mechanics

71. The rod PQ of length L = $\sqrt{2}$m, and uniformly distributed mass of M = 10 kg, is released from rest at the position shown in the figure. The ends slide along the frictionless faces OP and OQ. Assume acceleration due to gravity, g = 10 m/s^2. The mass moment of inertia of the rod about its centre of mass and an axis

perpendicular to the plane of the figure is $(ML^2/12)$. At this instant, the magnitude of angular acceleration (in radian/s^2) of the rod is _____.



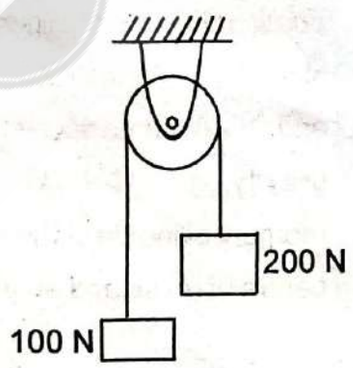
(a) 15

(b) 10.5

(c) 7.5

(d) 4

72. An inextensible massless string goes over a frictionless pulley. Two weights of 100 N and 200 N are attached to the two ends of the string. The weights are released from rest, and start moving due to gravity. The tension in the string (in N) is _____.



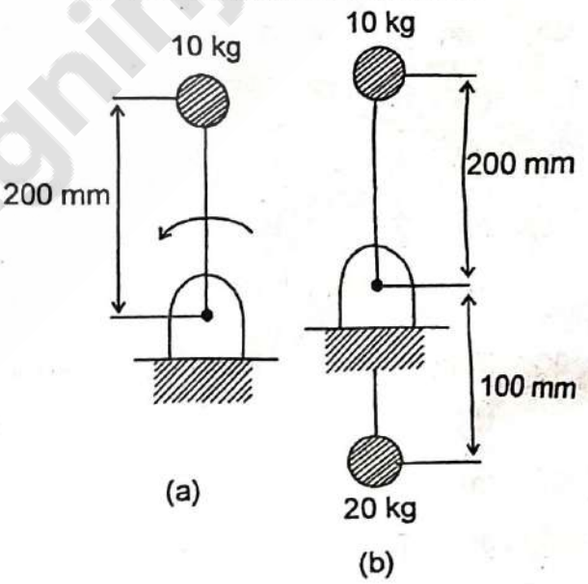
(a) 182.56

(b) 133.33

(c) 4.256

(d) 2.56

73. A rigid body shown in the Fig.(a) has a mass of 10 kg. It rotates with a uniform angular velocity 'w'. A balancing mass of 20 kg is attached as shown in Fig. (b). The percentage increase in mass moment of inertia as a result of this addition is :



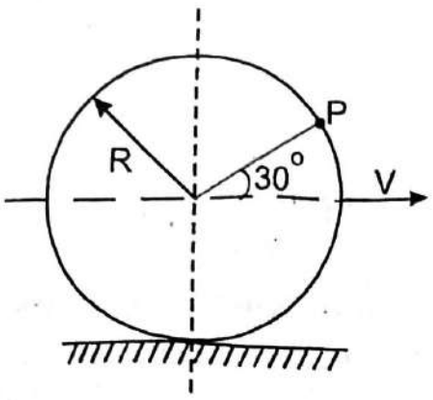
(a) 25%

(b) 50%

(c) 75%

(d) 80%

74. A circular disc of radius R rolls without slipping at a velocity V. The magnitude of the velocity at the point P (see figure) is _____.



(a) $\sqrt{3}V$

(b) $\sqrt{3}V/2$

(c) $V/2$

(d) $2V/\sqrt{3}$

75. Coefficient of restitution of a perfectly plastic impact is :

(a) 0

(b) 1

(c) 3

(d) ∞

76. A truck accelerates up a 10^{o} incline with a crate of 100 kg. Value of static coefficient of friction between the crate and the truck surface is 0.3. The maximum value of acceleration (in m/s^2) of the truck such that the crate does not slide down is _____.

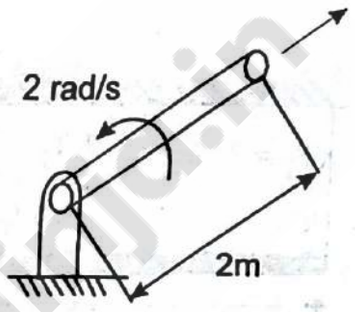
(a) $0.1948\ m/s^2$

(b) $2.15\ m/s^2$

(c) $3.214\ m/s^2$

(d) $1.1948\ m/s^2$

77. A shell is fired from a cannon. At the instant when the shell is just about to leave the barrel, its velocity relative to the barrel is 3m/s, while the barrel is swinging upwards with a constant angular velocity of 2 rad/sec. The magnitude of the absolute velocity of the shell is :



(a) 3m/s

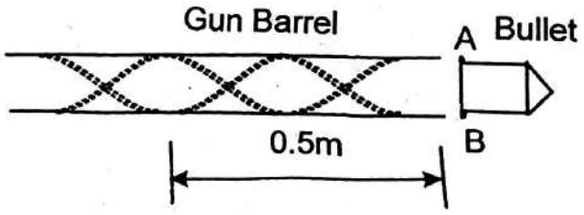
(b) 4 m/s

(c) 5 m/s

(d) 7 m/s

78. A bullet spins as the shot is fired from a gun. For this purpose, two helical slots as shown in the figure are cut in the barrel. Projections A and B on the bullet engage in each of the slots.

Helical slots are such that one turn of helix is completed over a distance of 0.5 m. If velocity of bullet when it exits the barrel is 20 m/s, its spinning speed in rad/s is :



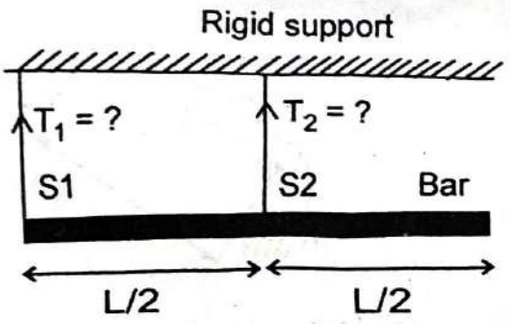
(a) 251.3274 rad/s

(b) 300.1574 rad/s

(c) 450.2154 rad/s

(d) 875.2654 rad/s

79. A bar of uniform cross section and weighing 100 N is held horizontally using two massless and inextensible strings S1 and S2 as shown in the figure :



The tension of the strings are

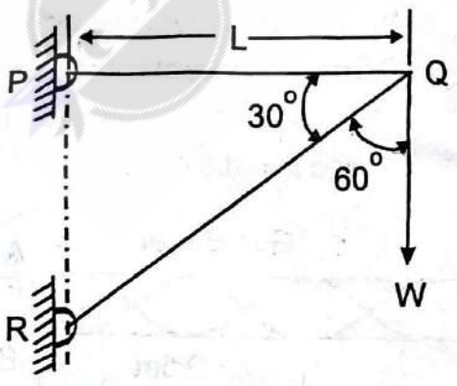
(a) $T_1 = 100N, T_2 = 0N$

(b) $T_1 = 0N, T_2 = 100N$

(c) $T_1 = 75N, T_2 = 25N$

(d) $T_1 = 25N, T_2 = 75N$

80. A two-member truss PQR is supporting a load W. The axial forces in members PQ and QR are respectively :



(a) 2W tensile and √3W compressive

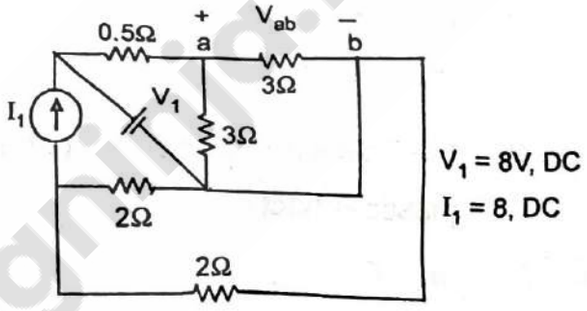
(b) √3 W tensile and 2W compressive

(c) √3W compressive and 2W tensile

(d) 2W compressive and √3 W tensile

Basic Electrical Engineering

81. For the circuit shown in the figure, $V_1 = 8V$, DC and $I_1 = 8$ A, DC. The voltage V_{ab} in Volts is _____ (Round off to 1 decimal place).



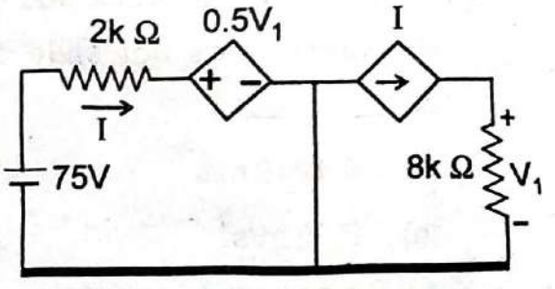
(a) 4.2

(b) 6

(c) 8

(d) 10.6

82. In the circuit shown below, the magnitude of the voltage V_1 in volts, across the 8kΩ resistor is _____. (Round off to nearest integer)



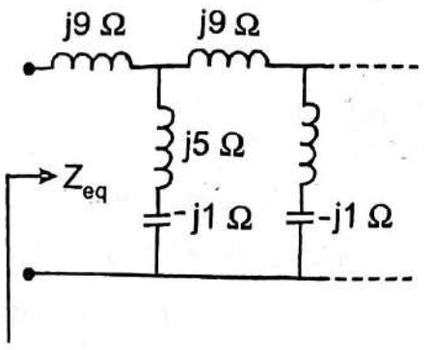
(a) 100

(b) 120

(c) 150

(d) 175

83. The equivalent impedance Z_{eq} for the infinite ladder circuit shown in the figure is :



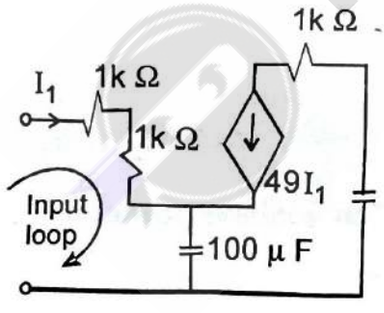
(a) + j12 Ω

(b) – j12 Ω

(c) + j13 Ω

(d) 13 Ω

84. The equivalent capacitance of the input loop of the circuit shown is :



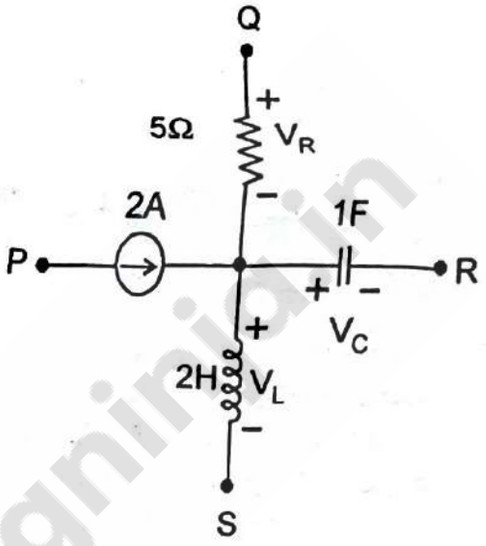
(a) 2 μF

(b) 100 μF

(c) 200 μF

(d) 4 μF

85. A segment of a circuit is shown in figure. $V_R = 5V$, $V_C = 4 \sin 2t$. The voltage V_L is given by :



(a) 3 – 8 cos 2t

(b) 32 sin 2t

(c) 16 sin 2t

(d) 16 cos 2t

86. A 2 kW water heater operates 8 hrs per day, If the cost of each unit is Rs. 3.00 per unit, then calculate the total bill for one month (30 days), assuming the charges for the first 100 units are nil :

(a) Rs. 1140.00

(b) Rs. 1440.00

(c) Rs.1740.00

(d) Rs. 840.00

87. A person bought 5 new light bulbs of 50 W each in addition to the 7 bulbs he already had in his house which were also 50 W each. Calculate his electricity bill, if he keeps the new bulbs on for 5 hours and the older bulbs on only for 3 hours, and the cost of one unit of electricity is Rs. 60 :

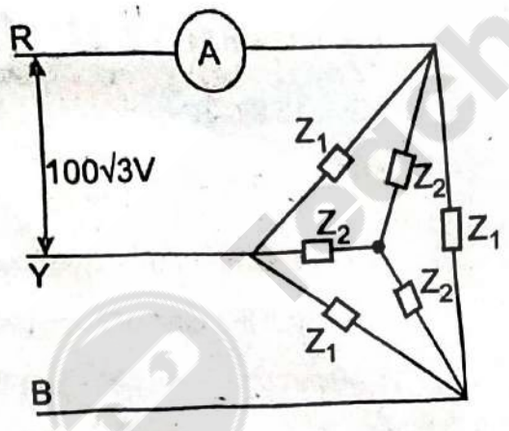
(a) Rs.136

(b) Rs.137

(c) Rs.138

(d) Rs.139

88. Two balanced three-phase loads, as shown in the figure, are connected to a $100\sqrt{3}$ V, three-phase, 50 Hz main supply. Given $Z_1 = (18 + j24)\ \Omega$ and $Z_2 = (6 + j8)\ \Omega$. The ammeter reading, in amperes, is _____.



(a) 15

(b) 20

(c) 18

(d) 22

89. A dc voltage with ripple is given by $v(t) = [100 + 10 \sin(\omega t) - 5 \sin(3\omega t)]$ volts.

Measurements of this voltage v(t), made by moving-coil and moving-iron voltmeters, show readings of V_1 and V_2 respectively. The value of $V_2 - V_1$, in volts, is _____.

(a) 0.1

(b) 0.31

(c) 0.66

(d) 1

90. A 50 Hz, bar primary CT has a secondary with 500 turns. The secondary supplies 5 A current into a purely resistive burden of 1Ω. The magnetizing ampere-turns is 200. The phase angle between the primary and second current is :

(a) 4.6°

(b) 85.4°

(c) 94.6°

(d) 175.4°

Basic Electronics Engineering

91. The average power of a periodic signal $c_n \exp(j 2\pi n f_0 t)$ is :

(a) c_n^2

(b) $|c_n^2|$

(c) $|c_n|^2$

(d) $c_n^2 \exp(j4\pi n f_0 t)$

92. In a dual slope integrating type digital voltmeter, the first integration is carried out for 20 periods of the supply frequency of 50 Hz. If the reference voltage used is 2 V, the total conversion time for an input of 1 V is ?

(a) 0.02 s

(b) 0.05 s

(c) 0.2 s

(d) 2 s

93. For a half wave or full wave rectifier the Peak Inverse Voltage of the rectifier is always :

(a) Greater than the input voltage

(b) Equal to the input voltage

(c) Smaller than the input voltage

(d) Greater than the input voltage for full wave rectifier and smaller for the half wave rectifier

94. Consider an n-channel Metal Oxide Semiconductor Field Effect Transistor (MOSFET) with a gate-to-source voltage of 1.5V. Assume that (W/L) = 4, $\mu_N C_{ox} = 70 \times 10^{-6}$ A/V^2, the threshold voltage is 0.5V, and the channel length modulation parameter is 0.09 V^{-1}. In the saturation region, the drain conductance (in μΩ) is :

(a) 12.6 μΩ

(b) 18.3 μΩ

(c) 50.4 μΩ

(d) 62.2 μΩ

95. For a n-p-n transistor, the collector current changed from 0.2mA to 0.22mA resulting a change of base emitter voltage from 0.8V to 0.8004V. What is the value of Stability factor ?

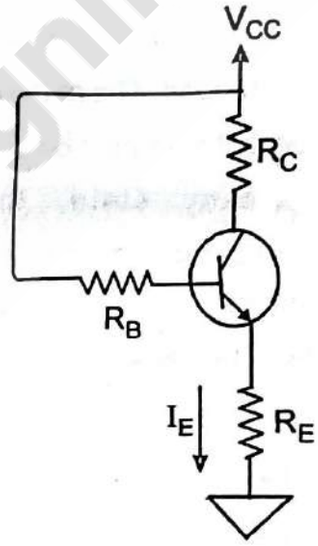
(a) 0

(b) 0.05

(c) 0.04

(d) 0.333

96. In the circuit given below, assume $V_{CC} = 5V$, $V_{BE} = 0.7V$, $R_E = 10k\Omega$, $R_B = 25k\Omega$, $\beta = 50$. How much is the current I_E ?



(a) 0.561 mA

(b) 0.335 mA

(c) 0.413 mA

(d) 0.409 mA

97. A silicon sample is uniformly doped with donor impurities with a concentration of 10^{16}/cm^3. The electron and hole mobilities in

the sample are $900cm^2/Vs$ and $300cm^2/Vs$ respectively. Assuming complete ionization of impurities, with electronic charge $q = 1.6 \times 10^{-19}$ C, the resistivity of the sample in Ω-cm is

(a) 2.08 Ω-cm

(b) 0.528 Ω-cm

(c) 0.694 Ω-cm

(d) 0.0023 Ω-cm

98. An n-type silicon is uniformly illuminated with light which generates 2×10^{18} electron hole pairs per cm^3 per second. The minority carrier lifetime in the sample is 0.5 μsec. In the steady state, the hole concentration in the sample is approximately 10^x, where x is an integer. The value of x is :

(a) 4

(b) 14

(c) 2

(d) 12

99. Fill in the blanks from the options below :

In Photodiode the dark current _____ rapidly with an increase in temperature.

(a) Decreases

(b) Increases

(c) May increase or decrease

(d) Becomes zero

100. Two carriers 40 MHz and 80 MHz respectively are frequency modulated by a signal of frequency 4 kHz, such that the bandwidths of the FM signal in the two cases are the same. The peak deviation in the two cases is in the ratio of :

(a) 1 : 4

(b) 1 : 2

(c) 1 : 1

(d) 2 : 1

Final Answer-key for CTSRE Main Examination -2022 (ATO Degree/Diploma) held on 26-07-2023

A	B	Correct option
1	81	c
2	82	d
3	83	a
4	84	b
5	85	b
6	86	d
7	87	b
8	88	a
9	89	d
10	90	c
11	91	b
12	92	a
13	93	b
14	94	c
15	95	c
16	96	b
17	97	d
18	98	c
19	99	c
20	100	c
21	1	a
22	2	b
23	3	a
24	4	a
25	5	b
26	6	b
27	7	c
28	8	d
29	9	b
30	10	a
31	11	c
32	12	b
33	13	d
34	14	d
35	15	a
36	16	b
37	17	d
38	18	a
39	19	a
40	20	c
41	21	c
42	22	Not valued
43	23	b
44	24	c
45	25	a
46	26	b
47	27	d
48	28	b
49	29	d
50	30	a

A	B	Correct option
51	31	d
52	32	Not Valued
53	33	b
54	34	b
55	35	b
56	36	a
57	37	b
58	38	d
59	39	b
60	40	b
61	41	b
62	42	c
63	43	a
64	44	Not Valued
65	45	d
66	46	c
67	47	b
68	48	c
69	49	c
70	50	a
71	51	c
72	52	b
73	53	b
74	54	a
75	55	a
76	56	d
77	57	c
78	58	a
79	59	b
80	60	b
81	61	b
82	62	a
83	63	Not Valued
84	64	a
85	65	b
86	66	a
87	67	c
88	68	b
89	69	b
90	70	a
91	71	c
92	72	c
93	73	c
94	74	a
95	75	b
96	76	d
97	77	c
98	78	d
99	79	b
100	80	b

Final Answer-key for CTSRE Main Examination -2022 (ATO Diploma/Degree- Basic Cosmetology) held on 26-07-2023			
Question No	Correct option	Question No	Correct option
1	b	51	b
2	c	52	a
3	d	53	a
4	d	54	a
5	b	55	c
6	c	56	b
7	a	57	b
8	a	58	d
9	a	59	a
10	c	60	a
11	d	61	a
12	d	62	d
13	c	63	b
14	b	64	a
15	a	65	a
16	b	66	a
17	c	67	c
18	c	68	d
19	b	69	a
20	b	70	b
21	c	71	c
22	c	72	a
23	d	73	a
24	c	74	c
25	b	75	b
26	a	76	c
27	b	77	d
28	d	78	d
29	b	79	d
30	b	80	c
31	a	81	b
32	b	82	b
33	a	83	c
34	b	84	a
35	a	85	a
36	c	86	a
37	a	87	b
38	c	88	a
39	c	89	a
40	d	90	b
41	c	91	c
42	b	92	d
43	d	93	c
44	d	94	d
45	a	95	c
46	b	96	c
47	b	97	d
48	c	98	c
49	b	99	c
50	b	100	c

Final Answer-key for CTSRE Main Examination -2022 (ITI-Engineering Trade) held on 27-07-2023

Question No	Correct option
1	c
2	a
3	c
4	c
5	b
6	b
7	d
8	c
9	d
10	c
11	a
12	b
13	d
14	b
15	a
16	c
17	b
18	d
19	a
20	b
21	b
22	c
23	a
24	d
25	b
26	c
27	d
28	a
29	c
30	a
31	c
32	b
33	c
34	b
35	c
36	c
37	b
38	d
39	a
40	d
41	a
42	c
43	Not Valued
44	b
45	a
46	c
47	a
48	d
49	b
50	a

Question No	Correct option
51	b
52	c
53	c
54	a
55	d
56	c
57	d
58	a
59	b
60	c
61	a
62	b
63	a
64	d
65	a
66	b
67	a
68	c
69	d
70	b
71	b
72	a
73	a
74	d
75	a
76	d
77	c
78	a
79	b
80	d
81	d
82	a
83	b
84	b
85	a
86	b
87	a
88	b
89	c
90	d
91	b
92	a or d
93	c
94	c
95	d
96	a
97	c
98	d
99	c
100	a

Final Answer-key for CTSRE Main Examination -2022 (ITI-COPA) held on 29-07-2023			
Question No	Correct option	Question No	Correct option
1	c	51	a
2	a	52	d
3	c	53	a
4	d	54	d
5	b	55	d
6	b	56	c
7	a	57	a
8	c	58	a
9	a	59	a
10	c	60	b
11	c	61	d
12	a	62	d
13	b	63	c
14	a	64	a
15	b	65	c
16	a	66	c
17	a	67	a
18	a	68	c
19	b	69	c
20	a	70	d
21	d	71	c
22	b	72	b
23	c	73	a
24	c	74	b
25	b	75	b
26	d	76	b
27	b	77	d
28	a	78	b
29	d	79	c
30	a	80	b
31	c	81	c
32	c	82	a
33	a	83	a
34	d	84	a
35	c	85	a
36	b	86	c
37	d	87	d
38	d	88	a
39	b	89	c
40	c	90	d
41	d	91	a
42	c	92	c
43	a	93	a
44	c	94	d
45	a	95	c
46	d	96	c
47	c	97	a
48	b	98	c
49	b	99	a
50	a	100	a

Final Answer-key for CTSRE Main Examination -2022 (ITI- Bakery and Confectionery) held on 30-07-2023			
Question No	Correct option	Question No	Correct option
1	b	51	b
2	d	52	a
3	b	53	b
4	a	54	c
5	a	55	a
6	a	56	d
7	d	57	a
8	b	58	b
9	c	59	c
10	b	60	c
11	c	61	b
12	b	62	d
13	c	63	a
14	d	64	d
15	b	65	b
16	d	66	a
17	d	67	b
18	b	68	b
19	d	69	d
20	c	70	d
21	b	71	c
22	c	72	a
23	c	73	b
24	d	74	c
25	a	75	c
26	b	76	d
27	c	77	a
28	c	78	c
29	b	79	c
30	a	80	d
31	d	81	c
32	c	82	a
33	c	83	d
34	b	84	a
35	a	85	c
36	a	86	d
37	d	87	a
38	c	88	d
39	b	89	c
40	c	90	d
41	b	91	b
42	b	92	b
43	b	93	d
44	d	94	a
45	b	95	b
46	c	96	a
47	b	97	a
48	c	98	b
49	c	99	b
50	d	100	b

Final Answer-key for CTSRE Main Examination -2022 (ITI-Sewing Technology) held on 01-08-2023			
Question No	Correct option	Question No	Correct option
1	b	51	c
2	a	52	a
3	b	53	b
4	d	54	a
5	c	55	d
6	a	56	c
7	a	57	a
8	c	58	b
9	a	59	b
10	c	60	a
11	b	61	a
12	a	62	a
13	d	63	b
14	b	64	a
15	b	65	d
16	c	66	b
17	c	67	a
18	a	68	c
19	a	69	b
20	a	70	c
21	b	71	d
22	b	72	a
23	b	73	b
24	c	74	b
25	d	75	d
26	b	76	b
27	b	77	d
28	b	78	d
29	a	79	c
30	c	80	c
31	a	81	a
32	d	82	c
33	d	83	a
34	b	84	d
35	b	85	d
36	c	86	a
37	c	87	a
38	d	88	a
39	c	89	a
40	c	90	a
41	b	91	c
42	b	92	c
43	d	93	a
44	a	94	b
45	d	95	b
46	b	96	d
47	c	97	b
48	c	98	d
49	c	99	a
50	a	100	a

Final Answer-key for CTSRE Main Examination -2022 (ITI-Dressmaking) held on 31-07-2023			
Question No	Correct option	Question No	Correct option
1	d	51	d
2	a	52	a
3	c	53	a
4	c	54	c
5	a	55	c
6	b	56	d
7	c	57	a
8	c	58	d
9	c	59	a
10	d	60	b
11	a	61	a
12	d	62	c
13	c	63	a
14	b	64	a
15	d	65	c
16	b	66	a
17	c	67	d
18	a	68	c
19	c	69	a
20	a	70	b
21	a	71	c
22	b	72	c
23	b	73	d
24	d	74	a or b
25	a	75	d
26	b	76	b
27	a	77	b
28	a	78	d
29	d	79	b
30	a	80	c
31	c	81	c
32	b	82	a
33	b	83	b
34	a	84	c
35	b	85	c
36	a	86	b
37	c	87	b
38	b	88	b
39	d	89	c
40	c	90	d
41	c	91	d
42	a	92	c
43	a	93	b
44	a	94	d
45	d	95	b
46	c	96	a
47	d	97	a
48	b	98	b
49	c	99	b
50	d	100	a