[SET-III]

Group: Electrical, Electronics & Computer

Booklet Series A

Maximum Marks: 150 Time: 2:30 Hours

NOTE: There are 150 questions in this booklet. Against each question, four alternatives are given out of which only one is correct answer. Indicate your choice of answer by darkening the suitable circle with Black/Blue Ball Pen in the OMR answer sheet supplied to you separately. One mark will be awarded for each correct answer. It is important to note that for incorrect answers, negative marks will be awarded. Each wrong answer will result in deduction of 1/4 marks.

1	To prevent recurrence of scams in Indian Capital Market, the Government of India has assigned regulatory powers to	
	A. IDBI	C. RBI
	B. SBI	D. SEBI
2	The phrase "Castle in the air" is used for	
	A. Romantic design	C. Ideal projects
	B. Perfect plan	D. Visionary projects
3	My mother prefers milk _____ tea.	
	A. than	C. then
	B. to	D. none
4	I _____ swim this river when I was young.	
	A. shall	C. can
	B. should	D. could
5	He said; "O a cup of milk."	
	A. He strongly desired for a cup of milk.	C. He ordered for a cup of milk.
	B. He said for a cup of milk.	D. He requested for cup of milk.
6	He said to me, "Congratulations."	
	A. He told me to congratulations.	C. He congratulated me.
	B. He asked me to congratulate.	D. He wished me that I was congratulations.
7	Change into Past Continuous tense:- Does he take coffee?	
	A. Did he take coffee?	C. Did he taking coffee?
	B. Was he taking coffee?	D. Is he taking coffee?
8	The next number in the series 2,5,10,17,26,_ is	
	A. 29	C. 33
	B. 37	D. 31
9	Under which section President's Rule can be imposed in a state:	
	A. 351	C. 356
	B. 352	D. 370

10	On kidney failure, blood is purified by:	
	A. Biopsy	C. Endoscopy
	B. Angiography	D. Dialysis
11	Biological marriage should be avoided in between	
	A. Rh^+ male and Rh^- female	C. Rh^+ male and Rh^- female
	B. Rh^- male and Rh^- female	D. Rh^+ male and Rh^+ female
12	Which of the following is popularly known as Deshbandhu?	
	A. Aurobindo Ghosh	C. Bal Gangadhar Tilak
	B. G.B. Pant	D. Chittaranjan Das
13	Sultan Tipu died fighting the English forces under	
	A. Lord Wellesley	C. Lord Dalhousie
	B. Lord Cornwallis	D. Lord Hastings
14	Akbar defeated Hemu in the	
	A. Battle of Talikota	C. Battle of Haldighati
	B. Second battle of Panipat	D. Third battle of Panipat
15	The difference in years between Vikram Era and Christian Era is	
	A. 55	C. 57
	B. 56	D. 58
16	Who of following is the author of the famous book 'Das Kapital'?	
	A. Adam Smith	C. Karl Marx
	B. Rousseau	D. Voltaire
17	In which of the following countries did the Industrial Revolution first take place.	
	A. UK	C. Germany
	B. USA	D. France
18	As per the constitution of India, how many members can be nominated to the Rajya Sabha by the President of India?	
	A. 10	C. 14
	B. 12	D. 18
19	The strait of Malacca passes between:	
	A. Malaysia and Indonesia	C. Philippines and Vietnam
	B. Indonesia and Philippines	D. India and Myanmar
20	Which of the following contributes largely to the green-house effect?	
	A. Water vapour	C. Carbon monoxide
	B. Ozone	D. Carbon dioxide
21	Number of angular nodes for 4d orbital is _____.	
	A. 1	C. 3
	B. 2	D. 4
22	The electronic configuration of the outer most shell of the most electronegative element is	
	A. $2s^2 2p^5$	C. $4s^2 4p^5$
	B. $3s^2 3p^5$	D. $5s^2 5p^5$

Specimen

23	Which of the following has maximum number of atoms? Given: Masses of C,S,Na and Ag as 12 g mol^{-1}, 32 g mol^{-1}, 23 g mol^{-1}, 108 g mol^{-1} respectively.	
	A. 24 g of C	C. 23 g of Na
	B. 48 g of S	D. 108 g of Ag
24	Which of the following has highest mass?	
	A. 20 g phosphorous	C. 5 mol of water
	B. 2 equivalent of Na_2CO_3	D. $12x10^{24}$ atoms of Hydrogen
25	The normality of 0.3 M phosphorous acid (H_3PO_3) is	
	A. 0.1	C. 0.6
	B. 0.3	D. 0.9
26	The mass of AgCl precipitated when 4.68g of NaCl is added to a solution containing 6.8g of $AgNO_3$ is	
	A. 4.52 g	C. 7.18 g
	B. 5.74 g	D. 8.2 g
27	Which electron level allows the hydrogen atom to absorb a photon but not emit a photon?	
	A. 2s	C. 3s
	B. 2p	D. 3d
28	The atomic numbers of elements of the second inner transition elements lie in the range of	
	A. 88 to 101	C. 90 to 103
	B. 89 to 102	D. 91 to 104
29	Which of the following elements has the largest size?	
	A. Co	C. Ni
	B. Cu	D. Zn
30	The correct order of ionization energy is	
	A. C > N > O	C. C < N > O
	B. C > N < O	D. C < N < O
31	Which of the following will have the lowest value of electron affinity?	
	A. Be	C. Cl
	B. N	D. B
32	The molecule having one unpaired electron is	
	A. NO	C. O_2
	B. CO	D. CN^-
33	The bonds present in N_2O_5 are	
	A. Only ionic	C. Covalent and coordinate
	B. Only covalent	D. Covalent and ionic
34	Which of the following molecules is paramagnetic?	
	A. F_2	C. O_2
	B. C_2	D. N_2
35	On hybridization of one s and one p orbitals, we get	
	A. Two mutually perpendicular orbitals	C. Four orbitals directly tetrahedrally

Specimen

	B. Two orbitals at 180°	D. Three orbitals in a plane
36	Area bounded by the curve $y = x^3$, the x-axis and the ordinates $x = -2$ and $x = 1$ is	
	A. -9	C. $\frac{15}{4}$
	B. $\frac{-15}{4}$	D. $\frac{17}{4}$
37	The integrating factor of the differential equation $x\frac{dy}{dx} - y = 2x^2$ is	
	A. e^{-x}	C. e^{-y}
	B. $\frac{1}{x}$	D. x
38	What is the minimum value of $\frac{x}{\log x}$?	
	A. e	C. 1
	B. $\frac{1}{e}$	D. 0
39	Matrices A and B will be inverse of each other only if	
	A. AB = BA	C. AB = 0 , BA = 1
	B. AB = BA = 0	D. None of these
40	The diagonal element of Skew-Hermitian matrix is always	
	A. 1	C. k, where $k < 1$
	B. k, where $k > 1$	D. None of these
41	The general solution of differential equation $e^x dy + (y e^x + 2x)dx = 0$ is	
	A. $xe^y + x^2 = C$	C. $ye^x + x^2 = C$
	B. $xe^y + y^2 = C$	D. None of these
42	Solve system of linear equation $4x + 4y = 8$, $x + y = 2$	
	A. x=1, y=1	C. No solution
	B. x = 0, y= 1	D. Infinitely many solution
43	Convert the binary number to its decimal equivalent $(101.1011)_2 = (\ ?\ )_{10}$	
	A. 4.125	C. 5.6875
	B. 5.6125	D. 7.125
44	If θ is the angel between two vectors a and b then $a \cdot b \geq 0$ only when	
	A. $0 < \theta < \frac{\pi}{2}$	C. $0 > \theta > -\frac{\pi}{2}$
	B. $0 \leq \theta \leq \frac{\pi}{2}$	D. $0 \geq \theta \geq -\frac{\pi}{2}$
45	The equation of parabola which passes through the intersection of a straight line $x + y = 0$ and the circle $x^2 + y^2 + 4y = 0$ is	
	A. $y^2 = 4x$	C. $y^2 = 2x$
	B. $y^2 = x$	D. None of these
46	If $y = \cos^{-1}x$, Find $\frac{d^2y}{dx^2}$ in terms of y alone.	
	A. –coty cosec2y	C. –secy coty
	B. –tany sec2y	D. None of above
47	The anti derivative of $(\sqrt{x} + \frac{1}{\sqrt{x}})$ equals	

Specimen

	A. $\frac{1}{3}x^{\frac{1}{3}} + 2x^{\frac{1}{2}} + C$	C. $\frac{2}{3}x^{\frac{3}{2}} + \frac{1}{2}x^{2} + C$
	B. $\frac{1}{3}x^{\frac{3}{2}} + 2x^{\frac{1}{2}} + C$	D. $\frac{3}{2}x^{\frac{3}{2}} + \frac{1}{2}x^{\frac{1}{2}} + C$
48	$\int \frac{dx}{x^2+2x+2}$ equals	
	A. $x\tan^{-1}(x+1) + C$	C. $\tan^{-1}(x+1) + C$
	B. $(x+1)\tan^{-1}x + C$	D. None of these
49	$\int_0^{\pi} [\sin x]\,dx =$	
	A. -1	C. 1
	B. 0	D. Does not exist
50	Let $A = \begin{bmatrix} 1 & \sin\theta & 1 \\ -\sin\theta & 1 & \sin\theta \\ -1 & -\sin\theta & 1 \end{bmatrix}$, where $0 \le \theta \le 2\pi$ then	
	A. Det(A) = 0	C. Det(A) ∈ (2, 4)
	B. Det(A) ∈ (2, ∞)	D. Det(A) ∈ [2, 4]
51	$\sin(\tan^{-1}x)$, $\lvert x\rvert < 1$ is equal to	
	A. $\frac{x}{\sqrt{1-x^2}}$	C. $\frac{1}{\sqrt{1-x^2}}$
	B. $\frac{x}{\sqrt{1+x^2}}$	D. $\frac{1}{\sqrt{1+x^2}}$
52	The local maximum value of $f(x) = x + \frac{4}{x}$, $x \in R - \{0\}$ is	
	A. -4	C. 2
	B. -2	D. 4
53	The range of F: R→ R, for f(x) = [sinx] is	
	A. {-1, 0, 1}	C. Z
	B. {1, 0, 2}	D. R
54	Distance between two planes 2x + 3y + 4z = 4 and 4x + 6y + 8z =12 is	
	A. 2 units	C. 8 units
	B. 4 units	D. None of these
55	If ${}^{n}C_{12} = {}^{n}C_{8}$ then find ${}^{n}C_{2}$	
	A. 72	C. 306
	B. 153	D. 2556

56	Electromagnetic waves are produced by	
	A. Neutral particles	C. A static charge
	B. A uniformly moving particle	D. An accelerated charge
57	In a plane electromagnetic wave the phase difference between electric and magnetic field vectors is	
	A. zero	C. π/2
	B. π/4	D. π
58	A TV tower is 245 m high. taking earth's radius to be 6.4×10^6 m, the TV coverage range is.	
	A. 410 m	C. 41 km
	B. 4.1 km	D. 56 km

59	In a frequency modulated wave	
	A. Amplitude varies with time	C. Amplitude and frequency both vary with time
	B. Frequency varies with time	D. Amplitude and frequency both are steady
60	If the speed of light were 1/3 of the present value, the energy released in a given atomic exposure will be decreased by a fraction	
	A. 2/3	C. 1/3
	B. 1/9	D. 8/9
61	The phenomenon of diffusion occurs in	
	A. Gases only	C. Solid only
	B. Liquid only	D. Solid, Liquid and Gases
62	Boyle's law is applicable for an	
	A. adiabatic process.	C. isobaric process.
	B. isothermal process.	D. isochoric process.
63	1 mole of H_2 gas is contained in a box of volume V = 1.00 m^3 at T = 300K. The gas is heated to a temperature of T = 3000K and the gas gets converted to a gas of hydrogen atoms. The final pressure would be (considering all gases to be ideal)	
	A. same as the pressure initially.	C. 10 times the pressure initially.
	B. 2 times the pressure initially.	D. 20 times the pressure initially.
64	A 200m long train travelling at speed 40m/s overtakes another train of 300m length travelling at 30m/s. The time taken by the first train to pass the second train is	
	A. 10 s	C. 50 s
	B. 30 s	D. 70 s
65	A body is whirled in a horizontal circle of radius 20 cm. it has an angular velocity of 10rad/s. What is the linear velocity at any point on circular path.	
	A. 2 m/s	C. $\sqrt{20}$ m/s
	B. 10 m/s	D. 20 m/s
66	If a particle moves in a circle, describing equal angles in equal times, its velocity vector	
	A. Remains constant	C. Changes in magnitude
	B. Changes in direction	D. Changes both in direction and magnitude
67	Time of flight of a projectile over an inclined plane depends upon	
	A. Angle of projection	C. Vector direction of initial velocity
	B. Angle of inclination of the plane	D. All of the above
68	Two circular disc A and B are of the same thickness. The diameter of A is twice that of B. The moment of inertia of A as compared to that of B is	
	A. Twice as large	C. 16 times as large
	B. 4 times as large	D. 64 times as large
69	Time period of simple pendulum in a geostationary satellite is	
	A. Infinite	C. 10 sec
	B. zero	D. Irregular
70	Kepler's second law regarding constancy of orbital velocity of a planet is a consequence of the law of conservation of	
	A. Energy	C. Angular momentum
	B. Linear momentum	D. None of these

Specimen

71 Which of the following represents the life-cycle of software development?

A) Analysis → Design → Coding → Testing → Operation and Maintenance
B) Design → Analysis → Coding → Testing→ Operation and Maintenance
C) Design → Analysis → Coding → Testing
D) Analysis → Design → Coding → Operation and Maintenance → Software Development

72 In software engineering, if requirements are frequently changing, which model is best suited?

A) Water fall
B) Spiral
C) Prototype
D) RAD

73 _____abstraction is used in both structured design and object-oriented design, while _____ abstraction is only used in object-oriented design.

A) Fast, Slow
B) Data, Procedural
C) Procedural, Data
D) Off-line, On-line

74 What term is used to describe a function that calls itself in a programming language and what is the value returned by the function call F(2)?

```
int F(int n) {
        if (n = = 4) return 2;
        else     return 2*F(n+1);
}
```


A) Iterative and 2
B) Recursive and 4
C) Recursive and 8
D) Iterative and 16

75 What is the value of variable z after executing the following C-code?

```
int x = 5;
int y = 5;
int z = 5;
if (x > 3)
        if (y > 4)
                if (z > 5)
                        z += 1;
        else
                z += 2;
else
        z += 3;
        z += 4;
```

A) 9
B) 5
C) 11
D) 7

76 The simplified form of the Boolean expression $(A+\overline{B}+C)(A+\overline{B}+\overline{C})(A+B+C)$ is:

A) $(C+\overline{A}B)$
B) $(C+AB)$
C) $(A+\overline{B}C)$

	D) $(\overline{A}+\overline{B}C)$
77	Which of the following decimal numbers has an exact representation in binary notation? A) 0.2 B) 0.3 C) 0.4 D) 0.5
78	If an integer needs two bytes of storage, then maximum value of a signed integer is: A) $2^{16}-1$ B) $2^{15}-1$ C) 2^{16} D) 2^{15}
79	The 16-bit two's complement form of –93 is A) 1111111110100011 B) 1111111110100010 C) 1000111111110000 D) 1000111111110001
80	The addressing mode for an operand defines how the address of the operand is determined. In which addressing mode, the operand is given explicitly in the instruction (example instruction: Add R4, #3)? A) Absolute mode B) Immediate mode C) Register Indirect mode D) Based Indexed mode
81	Which of the following is true about cloud computing? A) Cloud firms often have wasteful excess capacity to account for service spikes and are not as green as traditional computing. B) Cloud firms are often located in warehouse-style buildings designed for computers, not people. C) Cloud firms are usually crammed inside inefficiently cooled downtown high-rises. D) Cloud computing firms often have data centers that are not designed to pool and efficiently manage computing resources.
82	An analog signal carries 4 bits in each signal unit. If 1000 signal units are sent per second, find the baud rate and the bit rate. A) Baud rate = 1000 bauds per second (baud/s); Bit rate = 1000 x 4 = 4000 bps B) Baud rate = 4000 bauds per second (baud/s); Bit rate = 4000 / 4 =1000 bps C) Baud rate = 4000 bauds per second (baud/s); Bit rate = 4000 bps D) Baud rate = 1000 bauds per second (baud/s); Bit rate = 1000 bps
83	What is the difference between network architecture and application architecture? A) Network architecture refers to organization of communication into layers (e.g., the five-layer Internet architecture). Application architecture, on the other hand, is designed by an application developer and dictates how the application is (e.g., client-server or P2P) B) Network architecture is designed by a network administrator and dictates how the network is (e.g., client-server or P2P). Application architecture, on the other hand, refers to organization of communication into layers (e.g., the five-layer Internet architecture). C) Network architecture and Application architecture are the same concepts. D) Network architecture means client-server and Application architecture means P2P.
84	Match Column P with Column Q, in the context of computer networking. Column P | Column Q

(a)	The Web	(i)	FTP
(b)	File Transfer	(ii)	Telnet
(c)	Remote Login	(iii)	SMTP
(d)	Network News	(iv)	HTTP
(e)	email	(v)	NNTP

A) (a)-(iv); (b)-(i); (c)-(ii); (d)-(v); (e)-(iii)
B) (a)-(iii); (b)-(iv); (c)-(i); (d)-(ii); (e)-(v)
C) (a)-(ii); (b)-(iii); (c)-(i); (d)-(iv); (e)-(v)
D) (a)-(v); (b)-(ii); (c)-(i); (d)-(iii); (e)-(iv)

85 The value of the following arithmetic expression written in post-fix notation and using a stack will be:

P: 40, 16, 8, /, 4, 5, +, *, -

A) 11
B) 22
C) 33
D) 44

86 The memory address of fifth element of an array can be calculated by the formula
A) LOC(Array[5]=Base(Array)+w(5-lower bound), where w is the number of words per memory cell for the array
B) LOC(Array[5])=Base(Array[5])+(5-lower bound), where w is the number of words per memory cell for the array
C) LOC(Array[5])=Base(Array[4])+(5-Upper bound), where w is the number of words per memory cell for the array
D) LOC(Array[5]=Base(Array)+w(5-Upper bound), where w is the number of words per memory cell for the array

87 Which of the following C-declarations can be used to construct a linked list data structure?
A) struct node { int element; struct node *next ;};
B) struct node { int element; struct node next ;};
C) struct node { int element; struct *node next ;};
D) struct node { int element; int *next ;};

88 In databases, referential integrity dictates that
A) the value of a primary key must appear in a foreign key of the related table.
B) the value of a foreign key must appear in a primary key of the related table.
C) the value of a primary key cannot appear in a foreign key of the related table.
D) the value of a foreign key cannot appear in a primary key of the related table.

89 When you discuss use of disks as storage media, what do you mean by the term seek time?
A) The time spent waiting for the disk to start spinning fast enough
B) The time spent deciding where we should look on the disk for the data in question
C) The time spent waiting for disk drive to move its heads to the correct position
D) The time spent for a requested sector to rotate under the R/W head

90 Multiprogramming permits the UNIX/Linux Operating System to overlap the execution of _____ processes with that of _____ processes.

A) Background, Foreground
B) Parent, Child
C) I/O Bound, CPU Bound
D) Critical, Non-critical

91 Consider the following direct process state transitions. By direct it is meant that a process can transition directly from the first state to the second without passing through any intermediate state. Which of the direct state transitions listed below can or cannot occur (Yes if it can occur and No if it cannot occur.)?

I. Running → Ready
II. Ready → Running
III. Ready → Blocked
IV. Blocked → Ready
V. Running → Blocked
VI. Blocked → Running

A) I→Yes; II→Yes; III→No; IV→Yes; V→Yes; VI→No
B) I→Yes; II→No; III→No; IV→Yes; V→Yes; VI→No
C) I→Yes; II→Yes; III→No; IV→Yes; V→Yes; VI→Yes
D) I→Yes; II→Yes; III→Yes; IV→Yes; V→Yes; VI→No

92 When analyzing a real-world problem for eventual implementation as an object-oriented system, it is typical to...

I. First write a main function, focusing on the control flow, and then keep refining the algorithm in a top-down fashion.
II. First look for objects in the real world whose behavior and relationships the system should model.
III. First look for templated classes in the standard library which can solve the problem.

Which of the above statements are TRUE?

A) I only
B) II only
C) III only
D) All of I, II, and III

93 The OS of a computer may periodically collect all the free memory space to form contiguous block of free space. This is called

A) Concatenation
B) Garbage collection
C) Collision
D) Dynamic Memory Allocation

94 The initial phase of a compiler is:

A) lexical analysis or the scanner
B) syntactic analysis or parsing
C) semantic analysis and intermediate code generation
D) machine independent code improvement

95 _____ refers to the technology in which some space in hard disk is used as an extension of main memory.

A) Cache memory
B) Paging
C) Virtual memory
D) Associative memory

96 Which of the following is TRUE regarding linking-loader and linkage editor?

I. A linking-loader performs both linking, loading and execution on one step.
II. A linkage editor generates an executable file that needs to be processed by a loader for execution at any moment.

III. A linking-loader would be useful in situations where it is not necessary to execute the application program immediately.

A) I and II only
B) I, II and III
C) II and III only
D) I and III only

97 If $(211)_x = (152)_8$, then the value of base x is:
A) 6 B) 5 C) 7 D) 9

98 An RLC resonant circuit has a resonance frequency of 1.5 MHz and a band width of 10 kHz. If C=150 pF, then the effective resistance of the circuit will be
A) 29.5 Ω B) 14.75 Ω C) 9.4 Ω D) 4.7 Ω

99 A 3-phase, 3-wire supply feeds a load consisting of three equal resistors connected star. If one of the resistors is open circuited, then percentage reduction in the load will be
A) 75 B) 66.66 C) 50 D) 33.33

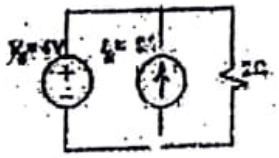
100 The average power delivered to an impedance (4 + j3)Ω by a source voltage 14.14sin(377t) is
A) 44.2W B) 16W C) 62.5W D) 125W

101 The bridge method commonly used for comparing capacitances of two capacitors is
A) Maxwell's bridge B) Schering bridge C) De Sauty bridge D) Wien bridge

102 1ph wattmeter is connected to measure power consumed by 1.45 KVA loads which makes the supply voltage to lead the current by 30 deg. What is wattmeter reading?
A) 1.25 *103 B) 0.725 *103 C) 0.837*103 D) 1.45*103

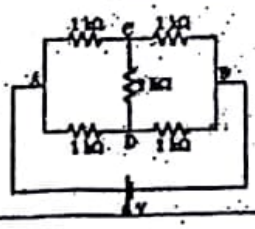
103 The primary winding of 220/6V transformer is energized from 110V, 60Hz supply, the secondary output voltage will be
A) 3.6V B) 3V C) 2.5V D) 6V

104 For the circuit shown, find out the current flowing through the 2Ω resistance.



A) 5A B) 2A C) 10A D) 7A

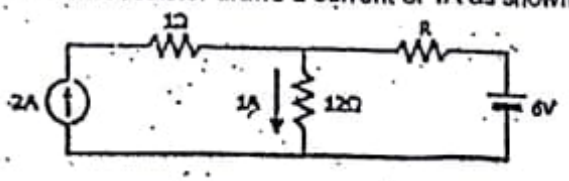
105 The current through the 2KΩ resistance in the circuit shown is



A) 0 mA B) 1 mA C) 2 mA D) 6 mA

106 The ideal OP-AMP has the following characteristics
A) Ri=∞,A=∞,R0=0 B) Ri=0,A=∞,R0=0 C) Ri=∞,A=∞,R0=∞ D) Ri=0,A=∞,R0=∞

107 A Wheatstone bridge cannot be used for precision measurements because errors are introduced into on account of
A) resistance of connecting leads

	B) thermo-electric emfs C) contact resistances D) all of the above
108	By using two wattmeter method one can measure A) Power in Balanced circuit only B) Power in unbalanced circuit only C) Power in both balanced as well as unbalanced circuits. D) only single phase power
109	Core of transformer is laminated in order to A) Increase the mechanical strength B) Decrease the hysteresis loss C) Decrease the eddy current loss D) Increase the leakage reactance
110	A 4 pole dc generator is running at1500rpm. The frequency of current in the armature winding will be A) 25Hz B) 50Hz C)100Hz D) 200Hz
111	If an induction machine is run above synchronous speed, it acts as A) synchronous motor B) an induction generator C) an induction motor D) none of these
112	Two meters X and Y require 40 mA and 50 mA, respectively, to give full scales deflection, the A) Sensitivity cannot be judged with given information B) both are equally sensitive C) X is more sensitive D) Y is more sensitive
113	As compared to squirrel cage induction motor, a wound rotor induction motor is preferred when the major consideration is A) high starting torque B) low windage losses C) slow speed operation D) all of the above
114	The number of turns of a coil having a time constant T are doubled. Then the new time constant will be A) T B) 2T C) 4T D) T/2
115	A wattmeter has a range of 1000 W with an error of ±1% of full scale deflection. If the true power passed through it is 100 W, then the relative error would be A) ± 10% B) ± 5% C) ± 1% D) ± 0.5%
116	If the 12Ω resistor draws a current of 1A as shown in the figure, the value of resistance R is  A) 4Ω B) 6Ω C) 8Ω D) 18Ω
117	A voltmeter should have A) Low internal resistance B) High internal resistance C) Electrostatic plates D) A sensitive amplifier
118	An ammeter has reading range of 0-5A and internal resistance of 0.2 ohm, in order to make the range 0-25A we need to add a resistance in

	A) parallel to the meter B) series to the meter C) any one of the above D) both A & B
119	When comparing the conversions from digital-to-analog and analog-to-digital, the A/D conversion is generally A) less complicated but more time consuming than the D/A conversion B) more complicated and more time consuming than the D/A conversion C) more complicated but less time consuming than the D/A conversion D) less complicated and less time consuming than the D/A conversion
120	What term describes the maximum expected error associated with a measurement or a sensor? A) Resolution B) Precision C) Range D) Accuracy
121	A 3-phase, 400 volts, 50 Hz, 100 KW, 4 pole squirrel cage induction motor with a rated slip of 2% will have a rotor speed of A) 1500 rpm B) 1470 rpm C) 1530 rpm D) 1570 rpm
122	The color code of a resistor 2.7 kOhm with the tolerance of 10% is A) Red, violet, red and silver B) Red, violet, yellow and gold C) Red, violet, orange, silver D) Red, violet, red, gold
123	A certain appliance uses 350 W. If it is allowed to run continuously for 24 days, how many kilowatt-hours of energy does it consume? A) 20.16 kWh B) 201.6 kWh C) 2.01 kWh D) 8.4 kWh
124	Electricity can be generated by rotating a wire loop between poles of a magnet. In which of the following positions would induce the greatest current in the loop A) The plane of the loop is parallel to the magnetic field. B) The plane of the loop is perpendicular to the magnetic field. C) The plane of the loop makes an angle of 45° with the magnetic field. D) The induced current is the same in all positions
125	An intrinsic semiconductor has some holes in it at room temperature. What cause these holes? A) Doping B) Free electrons C) Thermal energy D) Valence electrons
126	An n-type semiconductor is A) Positively charged B) Electrically charged C) Negatively charged D) Neutral
127	An Infrared LED is usually fabricated from A) Ge B) Si C) GaAs D) GaAsP
128	In AM if the total modulation index exceeds the unity then A) The system will fail B) Amplifier will be damaged C) Distortion will occur D) resonant waves will be generated
129	Which of the following type of negative feedback increases the input resistance and decreases the output resistance of an amplifier? A) Current Series feedback B) Voltage Series feedback C) Current Shunt feedback D) Voltage Shunt feedback

130	Choose the correct order of efficiency of power amplifier. A) Class A < Class B < Class AB < Class C B) Class C < Class B < Class AB < Class A C) Class A < Class AB < Class B < Class C D) Class A < Class B < Class C < Class AB
131	Which of the following is used for converting a sine wave into a square wave? A) Astable multivibrator B) Monostable multivibrator C) Bistable multivibrator D) Schmitt trigger
132	To avoid thermal runaway A) $V_{CE} < V_{CC}/2$ B) $V_{CE} > V_{CC}/2$ C) $V_{CE} < V_{CC}$ D) $V_{CE} > V_{CC}$
133	A voltmeter is connected across a silicon diode having cut off voltage 0.6 V. What will be the reading of the voltmeter? A) 0 V B) 0.6 V C) 0.7 V D) Reading will fluctuate
134	A power supply has a full load voltage of 24 V. What is its no load voltage for 5 % regulation (rounded to nearest integer)? A) 12 V B) 23 V C) 25 V D) 6 V
135	A FET is a better chopper than a BJT because it has A) Lower offset voltage B) Higher series ON resistance C) Lower input current D) higher input impedance
136	An eight bit binary ripple up counter with a modulus of 256 is holding the count 01111111. What will be the count after 135 clock pulses? A) 0000 0101 B) 1111 1001 C) 0000 0110 D) 0000 0111
137	A 10 kW carrier is sinusoidally modulated by two carriers corresponding to a modulation index of 30 % and 40 % respectively. The total radiated power is A) 11.25 kW B) 12.5 kW C) 15 kW D) 17 kW
138	In a super heterodyne receiver the IF is 455 kHz. If it is tuned to 1200 kHz, the image frequency will be A) 745 kHz B) 910 kHz C) 1655 kHz D) 2110 kHz
139	A 4-bit ripple counter consisting of flip-flops that each have a propagation delay of 12 ns from clock to Q output. For the counter to recycle from 1111 to 0000, it takes total of A) 12 ns B) 24 ns C) 26 ns D) 48 ns
140	A band pass signal has a significant frequency components in the range of 1.5 MHz to 2 MHz if the signal is said to be reconstructed from its samples, the minimum sampling frequency will be A) 4 MHz B) 1 MHz C) 2 MHz D) 3.5 MHz
141	The free electron density in a conductor is $(1/1.6) \times 10^{22}$ cm^2. The electron mobility is 10 cm^2 v/s. What is the value of it resistivity? A) 10^{-4} ohm-m B) 1.6×10^{-2} ohm –m C) 10^{-4} ohm-cm D) 10^{4} mho-cm^{-1}

142 In a MOSFET, the transfer characteristics can be used to determine which of the following device parameters
A) Threshold voltage and output
B) Trans – conductance and output resistance
C) Threshold voltage and trans-conductance
D) Trans-conductance and channel length modulation parameters

143 As the Fermi level energy of silver is 8.8×10^{-19} joules, the velocity of the fastest electron in silver at 0 Kelvin (Given rest mass of electron = 9.1×10^{-31} kg) is
A) 3.33×10^{5} m/s B) 1.39×10^{6} m/s C) 4.40×10 m/s D) 3×10^{8} m/s

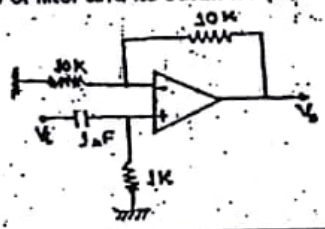
144 A hole in semiconductor has
1) Positive charge equal to the electron charge 2) Positive mass equal to mass of electron 3) an effective mass greater than effective mass of electron 4) Negative mass and positive charge equal to charge in nucleus

Which of the following is the correct answer
A) 1,2,3 and 4 B) 1 and 3 only C) 2 and 3 only D) 3 and 4 only

145 Consider the following devices:
1. BJT in CB mode 2.BJT in CE mode 3. JFET 4. MOSFET

The correct sequence of these devices in increasing order of their input impedance is
A) 1,2,3,4 B) 2,1,3,4 C) 2,1,4,3 D) 1,3,2,4

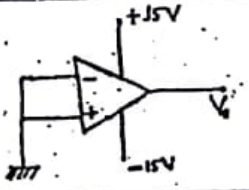
146 The Op-amp circuit shown in figure below is a filter. The type of filter and its cutoff frequency are respectively:
A) High pass, 1000 rad/sec
B) Low pass, 1000 rad/sec
C) High pass, 10000 rad/sec
D) Low pass, 10000 rad/sec



147 A BJT has $\alpha = 0.98$, $I_{CBO} = 5\mu A$, $I_{BO} = 100\mu A$. I_{CO}, I_{EO} in mA respectively are:
A) 5.15, 5.25 B) 4.65, 4.75 C) 5.05, 5.15 D) 4.65, 4.55

148 A FET has a drain current of 8mA, I_{DSS} = 8mA, V_{GS}(OFF)= -6V, V_P and V_{GS} respectively are:
A) -1.75V, -6V B) -6V, 0V C) -6V, +1.75V D) +6V, 0V

149 If the op-amp in the figure has an input offset voltage of 5mv and open loop gain of 10,000 then V_o will be
A) 0V B) 5mV C) +15V or -15 V D) +50V or -50 V



150 Let m(t) be a periodic triangular wave with period 10^{-3} sec with $m(t)_{max} = |m(t)_{min}| = 1V$. The message signal is applied to a phase modulator having $K_P = \pi$ rad/V. The minimum and maximum values of instantaneous frequency are
A) 95 kHz and 105 kHz
B) 90 kHz and 100 kHz
C) 98 kHz and 102 kHz
D) 80 kHz and 100 kHz