CGCAT FOR TECHNICAL OFFICERS ENTRY

(Electrical &Electronics)

Model Question Paper

Instructions for Candidates   **Time Allotted: 02 Hrs**

1. **Total No. of Questions 100. Each Question is of four marks.**
2. **One mark will be deducted for every wrong answer.**
3. **No mark will be deducted for un-attempted questions.**

(Section-A)

Q1-4. Choose the word which is nearest in meaning to the given word:-

Q1. Embellish
   (a)   Employ   (b)   Arrange
   (c)   Decorate   (d)   Design

Q2. Damp Squib
   (a)   Insignificant happening   (b)   An old technique
   (c)   Unsuccessful attempt   (d)   Short, shrill cry

Q3. Sagacious
   (a)   Stupid   (b)   Truthful   (c)   Lustful   (d)   Discerning

Q4. Pontificate
   (a)   To speak authoritatively (b)   To raise to higher office
   (c)   To act clumsily   (d)   To constitute

Q5-8. Choose the word which is nearly opposite meaning to the given word:-

Q5. Parsimonious
   (a)   Generous   (b)   Selfish   (c)   Religious   (d)   Hereditary

Q6. Vindicate
   (a)   Censure   (b)   Favour   (c)   Indicate   (d)   Eradicate

Q7. Sporadic
   (a)   Rare   (b)   Frequent (c)   Sharp   (d)   Coordinated

Q8. Exonerate
   (a)   Reject   (b)   Contract (c)   Accuse   (d)   Admit

Q9-10. Choose the correctly spelt word:-

Q9. (a)   Omminous   (b)   Omineous   (c)   Ominous   (d)   Omenous

Q10. (a)   Hindrance (b)   Hinderance (c)   Hindrence (d)   Hinderence

(Section-B)

Q11-15 In each of the following questions find out the alternative which will replace the question mark.

Q11.   Cerebrum : Brain :: ?:?
    (a)   Aorta : Hand   (b)   Ligament : Blood
    (c)   Ventricle : Heart   (d)   Country : Universe

Q12.   Monument : Cenotaph :: ?:?
    (a)   Orifice : Opening   (b)   Guide : Follower
    (c)   Protect : Protocol   (d)   Sponsor : Cleave

Q13.   Meadow : Sheep :: ?:?
    (a)   Stable : Horse   (b)   Hay : Insect
    (c)   Grass : Grasshopper   (d)   Pasture : Cattle

Q14.   Sadist : Injury :: ?:?
    (a)   Opportunist : Generosity (b)   Priest : Church
    (c)   Dentist : Teeth   (d)   Thief : Robbery

Q15.   Lecherous : Carnal :: ?:?
    (a)   Virile : Feeble   (b)   Diatribe : Abuse
    (c)   Impede : Begin   (d)   Sunder : Link

Q16.   If $a + b + c = 9$, $ab + bc + ca = 26$, $a^3 + b^3 = 91$, $b^3 + c^3 = 72$ and $c^3 + a^3 = 35$, then what is the value of abc?
    (a)   23   (b)   24
    (c)   25   (d)   26

Q17.   The value of x for which the expressions $19 - 5x$ and $19x + 5$ become equal is
    (a)   7/24   (b)   7/12
    (c)   11/12   (d)   11/24

Q18.   If $x + y = 10$ and $x^2 + y^2 = 68$, then find xy
    (a)   18   (b)   24   (c)   17   (d)   16

Q19.   The mode and mean is given by 7 and 8, respectively. Then the median is:
    (a)   1/13   (b) 13/3   (c) 23/3   (d)   33

Q20.   If Mean of a, a+3, a+6, a+9 and a+12 is 10, then a is equal to;
    (a)   1   (b)   2   (c)   3   (d)   4

(Section-C)

Q21.	What type of image is formed by the eye lens on the retina?
(A)	Real and erect
(B)	Virtual and inverted
(C)	Real and inverted
(D)	Virtual and erect

Q22.	The magnetic field is the strongest at
(A)	middle of the magnet.
(B)	north pole.
(C)	south pole.
(D)	both poles.

Q23.	The heating element of an electric iron is made up of:
(A)	copper
(B)	nichrome
(C)	aluminium
(D)	iron

Q24.	A zygote which has an X-chromosome inherited from the father will develop into
(A)	girl
(B)	boy
(C)	either boy or girl
(D)	X-chromosome does not influence the sex of a child.

Q25.	The ability of a cell to divide into several cells during reproduction in Plasmodium is called
(A)	budding
((B)	multiple fission
(C)	binary fission
(D)	reduction division

Q26.	A and B together can complete a particular task in 4 days. If A alone can complete the same task in 6 days, how many days will B take to complete the task if he works alone?
(A)	8			(B)	7
(C)	12			(D)	None of these

Q27.	If the perimeter of a rectangle is 138 metres and the difference between the length and the breadth is 7 metres, what is the area of the rectangle?
(A)	1216 square meters		(B)	1147 square metres
(C)	1184 square metres		(D)	1178 square metres

Q28. What will come in place of question mark (?) in the following question?
25% of 84 × 24% of 85 =?
- (A) 144.4
- (B) 244.4
- (C) 428.4
- (D) 333.4

Q29. If in a triangle ABC, AB = AC, $\angle A = x + 15°$, $\angle B = 2x + 25°$ then value of $\angle C$
- (A) 71°
- (B) 51°
- (C) 61°
- (C) 41°

Q30. If $\sin A + \sin^2 A = 1$ then what is the value of $\cos^2 A + \cos^4 A$?
- (A) 0
- (B) 1
- (C) -1
- (D) 2

(Section-D)

Q31. Which country will host the XXXI Olympic Games in 2016?
- (a) Rio de Janeiro, Brazil
- (b) Chicago, USA
- (c) Tokyo, Japan
- (d) Doha, Qatar

Q32. The book, "A China Passage" was written by
- (a) MJ Akbar
- (b) Jagmohan
- (c) Anees Jung
- (d) John Kenneth Galbraith

Q33. Who was the founder of Nanda dynasty?
- (a) Bimbisara
- (b) Mahapadma Nanda
- (c) Ajatasatru
- (d) Dhana Nanda

Q34. Which of the following books is written by Arnold Toynbee?
- (a) Mankind and Mother Earth
- (b) Tom Sawyer
- (c) The Future of Freedom
- (d) The Moon"s Last Sigh

Q35. The national emblem, viz four lions standing back to back is an adaptation from which of thefollowing:-
- (a) Sarnath lions
- (b) Gir lions
- (c) Khajurao
- (d) Ajanta caves

Q36. Who was the person behind conversion of East India Company from a trading company into aregional power?
- (a) Lord Warren Hastings
- (b) Lord Clive
- (c) Lord Dalhousie
- (d) Lord Wellesley

Q37. Who inscribed the name of Khalifa of Baghdad on his coins?
- (a) Ala-ud-din Khilji
- (b) Iltutmish
- (c) Qutub-ud-in Aibak
- (d) Balban

Q38. Who among the following is not a recipient of the „Bharatiya Jnanpith" Award?
- (a) Ashapurna Devi
- (b) MF Hussain
- (c) Raghupati Sahay
- (d) VK Gokak

Q39. Global 500 awards are given for outstanding achievement in which of the following fields?
- (a) Population Control
- (b) Elimination of illiteracy
- (c) Campaigning against AIDS
- (d) Protection of environment

Q40. Who among the following Sultans of Delhi assumed the title, „Sikandar-i-Sani?

(a) Balban
(b) Ala-ud-din Khilji
(c) Muhammad-bin-Tughlaq
(d) Sikander Lodhi

(Section-E)

Q41. When a conductor cuts magnetic flux, an emf is induced in the conductor. This isknown as

(a) Joule's law
(b) Faraday's law
(c) Coulomb's law
(d) Ampere's law

Q42. X-rays are used for the study of crystal structure because

(a) X-rays are completely absorbed by the crystal
(b) the wavelength of X-ray is of the same order of magnitude in the inter atomicspacing in crystals
(c) the wavelength of X-rays is very small in comparison with the inter atomicspacing in crystals
(d) the crystals are completely transparent to X-rays

Q43. Emitter follower is used for
(a) reducing the gain
(b) increasing the distortion
(c) impedance matching
(d) none of these

Q44. Binary equivalent of $(45)_{10}$ is
(a) $(11101)_2$
(b) $(11110)_2$
(c) $(101101)_2$
(d) $(110101)_2$

Q45. In Computer memory size K indicates Kilo, which is equal to
(a) 1000
(b) 1024
(c) 100
(d) 10000

Q46. An astable multivibrator has
(a) no stable state (b) one stable state (c) three stable states (d) two stable states

Q47. An ideal Op Amp has
(a) infinite input and output impedance
(b) very low input and output impedance
(c) low input impedance and very high output impedance
(d) infinite input impedance and zero output impedance

Q48. An instruction used to set the carry flag in a computer can be classified as a
(a) data transfer instruction
(b) arithmetic instruction
(c) logical instruction
(d) program control instruction

Q49. An FET is a
(a) bipolar semiconductor device
(b) unipolar semiconductor device
(c) non semiconductor device
(d) both (a) and (c)

Q50. For Gunn diodes, semiconductor material preferred is
(a) Silicon (b) Germanium (c) Gallium Arsenide (d) all of these

Q51. In a JFET drain current is maximum when V_{GS} is
(a) zero
(b) negative
(c) positive
(d) equal to Vp

Q52. The output of Laser is

    (a)   Infrared   (b)   polarised   (c)   narrow beam (d)   coherent

Q53. As compared to a closed loop system an open loop system is
- (a) more stable as well as more accurate
- (b) less stable as well as less accurate
- (c) more stable but less accurate
- (d) less stable but more accurate

Q54. Transfer function of a system is used to calculate

(a) the steady state gain	(b)	the time constant
(c) the order of the system	(d)	the output for a given input

Q55. In a closed loop control system
- (a) control action depends upon the output and also on the input command
- (b) output signal is fed back to be compared with the reference signal
- (c) the accuracy is better than in the open loop system
- (d) all of the above

Q56. The difference of the reference input and the actual output signal is called

    (a) error signal (b) controlling signal (c) actuating signal (d) transfer function

Q57. If the transfer function of a system is $\frac{1}{Ts+1}$,the steady state error to unit step input is

    (a)   T   (b)   zero   (c)   infinite   (d)   none of these

Q58. In a PID controller,the values of proportional, integral and derivative are dependent on
- (a) future, past and present errors respectively
- (b) present, past and future errors respectively
- (c) past, present and future errors respectively
- (d) present, future and past errors respectively

Q59. The inverse Laplace transform of $\frac{2}{s+1}$ is

    (a)   2(t+1)   (b) $2e^{-t}$ (c) $2e^{t}$ (d) e^{-2t}

Q60. The signal is extended from 96KHz to 100KHz, so the minimum sampling frequency required is

    (a)   8KHz   (b)   200KHz   (c)   4KHz   (d)   100KHz

Q61. A differentiation circuit has a

(a) very high time constant	(b)	very low time constant
(c) infinite time constant	(d)	zero time constant

Q62. Ideally Voltage Standing Wave Ratio (VSWR) should be

(a) as large as possible	(b)	as small as possible
(c) as close to unity as possible	(d)	infinity

Q63. Following is/are a property/properties of quantization
    (a)   it is an nonlinear process   (b)   it is an irreversible process
    (c)   it maps a larger set of input   (d)   all of these
    values to a smaller set

Q64. Most commonly used filter in SSB generation are
    (a) mechanical filters   (b) RC filters   (c)   LC filters   (d)   low pass filters

Q65. If the antenna diameter in a radar system is increased by a factor of 4, the maximum range will be increased by a factor of
    (a)   2   (b)   4   (c)   8   (d)   16

Q66. Following type of multiplexing cannot be used for analog signalling
    (a)   FDM   (b)   TDM   (c)   CDM   (d)   None of these

Q67. In TDM systems, channel separation is done with the use of
    (a) AND gates   (b) bandpass filters (c) differentiator circuit (d) integrator circuit

Q68. A radioactive isotope has a half-life of 10 days. If today there are 125 g of it left, what was its original weight 40 days earlier
    (a)   600 g   (b)   1000 g   (c)   1250 g   (d)   2000 g

Q69. Angles project true size only when the plane containing the angle and plane of projection are
    (a)   Aligned   (b)   Adjacent   (c)   Perpendicular (d)   Parallel

Q70. Tesla is a measure of
    (a)   magnetic flux density   (b)   electric flux density
    (c)   magnetic potential   (d)   electric potential

Q71. Admittance is reciprocal of
    (a)   susceptance (b) impedance   (c) reactance   (d)   conductance

Q72._____is an active filter
    (a) RC filter   (b) notch filter   (c) Butterworth filter   (d) band pass filter

Q73. For transmission line load matching over a range of frequencies , it is best to use a
    (a)   Balun   (b)   broadband directional coupler
    (c)   double stub   (d)   single stub

Q74. Data-link layer of the OSI model specifies
    (a)   data link procedures that provide for the exchange of data via frames thatcan be sent and received
    (b)   the interface between the X.25 network and packet mode device
    (c)   the virtual circuit interface to packet-switched service
    (d)   all of the above

Q75. FDDI is a
    (a) ring network   (b) star network   (c) mesh network (d) bus based network

Q76. Which of the following TCP/IP protocol allows an application program on one machine to send a datagram to an application program on another machine?
    (a)   UDP   (b)   VMTP   (c)   X.25   (d)   SMTP

Q77. The main difference between synchronous and asynchronous transmission is that
    (a)   the clocking is derived from the data in synchronous transmission
    (b)   the clocking is mixed with the data in asynchronous transmission
    (c)   the pulse height is different
    (d)   the bandwidth required is different

Q78. Transducer is a device which
(a) converts one form of power in to the other (b) is similar to transformer
(c) converts one form of energy in to other   (d) helps in measuring electricity

Q79. Principle of hysteresis is not used in
(a) electrical water geyser (b) electrical motor (c) multi-vibrators (d) Schmitt trigger

Q80. Which of the following motors would not be suitable for use as servomotors?
(a)   AC induction motor   (b)   brushless AC motor
(c)   stepper motor   (d)   permanent magnet DC motor

Q81. The stator of an induction motor is made of
(a) carbon (b) wood   (c) copper stampings   (d) silicon steel laminators

Q82. An ideal DC generator is one that has_____voltage regulation
(a)   low   (b)   high   (c)   zero   (d)   positive

Q83. Commutator is used in
(a) DC generator   (b) AC generator   (c) invertors   (d)   convertors

Q84. If x=a(cos t + t sin t), y=a(sin t − t cos t). The value of $\frac{dy}{dx}$ is
(a)   cos t   (b)   sin t   (c)   tan   (d)   sec^2 t

Q85. The area of three faces of a cuboid are in the ratio 2:3:4 and its volume is 9000 cm^3. The length of the shortest edge is
(a)   15 cm   (b)   30 cm   (c)   20 cm   (d)   60 cm

Q86. $\int \frac{dx}{x \log x}$ is equal to
(a)   log x+x+c   (b)   log(logx)+c (c)   xlogx+c   (d) $\frac{\log x}{x}$+c

Q87. Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?
(a)   8/2   (b)   9/20   (c)   8/15   (d)   2/20

Q88. The projection of a vector on another vector is
(a)   Scalar   (b)   Vector
(c)   neither vector nor scalar   (d)   either scalar or vector

Q89. In MKS system, we measure
(a)   mass in kilogram   (b)   distance in meter
(c)   time in second   (d)   all of these

Q90. When the separation between two charges is made four times, the force between them
(a)   increases four times   (b)   decreases four times
(c)   increases sixteen times   (d)   decreases sixteen times

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