VIDYASAGAR UNIVERSITY
MIDNAPORE

COMMON ENTRANCE TEST FOR PG ADMISSION, 2019

Question Booklet No. 2116202 Full Marks : 200

Subject: ELECTRONICS **Question Booklet Series: C**

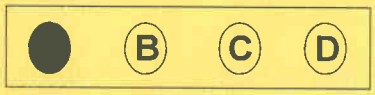
Subject Code No.: 21

Answer all the questions. Each question has the same weightage.

Read the following instructions carefully before you start answering.

INSTRUCTIONS

1. The question Booklet is printed in four Series e.g. (A), (B), (C) and (D). The candidate has to indicate the Series of the question booklet in the space provided in the OMR Answer Sheet . For example, if the candidate gets Series (A) booklet, he / she has to indicate on the front side of the OMR Answer Sheet with Black ink ball point pen only as indicated below:



2. There are 50 questions inside this question booklet. Immediately after you have been instructed to open this question booklet, ensure that any page / question is not missing / not printed / torn /repeated. In case you find any defect anywhere in the question booklet, immediately get it replaced by the Invigilator.

3. Each question carries 4 marks. 1(one) mark will be deducted for each wrong answer(negative marking).

4. Write your Form No and put signature in the space provided.

5. Before answering, write down the necessary information on the OMR Answer Sheet as per your Application Form and Admit Card in the specific space provided.

6. With each question you will find 4 possible answers marked by the letters A, B, C & D. Read each question carefully and find out which answer, according to you, is correct / most appropriate / best. Indicate your answer by darkening the appropriate circle completely in the OMR Answer Sheet corresponding to the question. For marking answers, use black ink ball pen only. If 'B' is the correct answer in a case, mark as below:

7. Do not fold or make any stray marks on the OMR Answer Sheet.

8. You can use the blank space of the last page for rough work. Do not tear it off from the Question Booklet.

9. After the examination has been over, you must submit OMR Answer Sheet to the Invigilator.

10. OMR Answer Sheet is designed for computer evaluation. If you do not follow the instructions given above and shown in the OMR Answer Sheet, it may make evaluation by computer difficult. Any resultant loss to the candidate on the above account shall be of the candidate only.

11. No candidate shall be allowed to use Mobile phone. Log tables or Calculator of any description in the examination hall / room.

1. The biasing conditions at input and output junctions in the saturation region of a transistor are
(A) Reverse, Reverse (B) Reverse, Forward (C) Forward, Reverse (D) Forward, Forward

2. Find the inverse Laplace transform of F (S) = $50/(S^2+2S+2)$
(A) $50e^{-t}$ (B) 50 Sin(t) (C) $50e^{-t}$ Cos(t) (D) $50e^{-t}$ Sin(t)

3. Entropy of a system remains constant in
(A) Reversible process (B) Irreversible process.
(C) Isobaric process (D) Isothermal process.

4. The current through a capacitor leads voltage by
(A) 0^0 (B) 90^0 (C) 180^0 (D) 270^0

5. The B-H curve for……is a straight line passing through origin.
(A) Cobalt (B) Air (C) Nickel (D) Iron

6. An analog signal is expressed by the signal $x(t) = 5\,Cos\,50\pi t + 20\,Sin\,300\pi t + Cos\,75\pi t$. What would be the Nyquist rate of the signal?
(A) 100Hz (B) 50Hz (C) 75Hz (D) 300Hz

7. Diode current is governed by the profile of
(A) Majority carriers. (B) Minority carriers.
(C) Both majority and Minority carrier. (D) None.

8. OPAMP is an
(A) RC coupled amplifier (B) CE amplifier
(C) Differential amplifier (D) Boots trap amplifier.

9. The input impedance of an infinitely long two wire transmission line of characteristics impedance Z_0 is
(A) $2\,Z_0$ (B) $\frac{1}{2}\,Z_0$ (C) $4\,Z_0$ (D) Z_0

10. BW and Q- factor of a resonator is ……proportional to each other.
(A) Directly. (B) Inversely (C) No relationship (D) none

11. What is the 9's complement of 115?
(A) 115 (B) 999 (C) 884 (D) 511

12. FET is preferred over BJT because of
(A) High input impedance (B) Low input impedance
(C) High output impedance (D) Low output impedance

13. 8085 is a ……bit microprocessor.
(A) 16 (B) 32 (C) 8 (D) 12

14. $(\bar{A}+\bar{B})\bar{C}+\overline{AB}$ =?
(A) $A+B$ (B) $\bar{A}+\bar{C}$ (C) $\overline{B+C}$ (D) $\bar{A}+\bar{B}$

15. The velocity of EM wave in medium of $\varepsilon_r = 4$
(A) $3*10^8$ m/s (B) $1.5*10^8$ m/s (C) $9*10^8$ m/s (D) $15*10^8$ m/s

16. Peak Inverse Voltage (PIV) of a Bridge rectifier is
(A) $2V_m$ (B) $-2V_m$ (C) $4V_m$ (D) V_m

17. A perfect black body is one which
(A) Reflects all energies (B) Transmits all energies
(C) Absorbs all energies. (D) None of these

18. Bypass capacitor in CE amplifier is used to bypass.....
(A) AC only (B) AC and DC both (C) DC only (D) None

19. Fermi level of either n or p type semiconductor is
(A) Continuous (B) Discrete (C) Defective (D) Real

20. Total number of flag register in 8085 microprocessor is
(A) 9 (B) 7 (C) 5 (D) 3

21. Convert the binary number $(1011)_2$ to Gray Code.
(A) 1111 (B) 1110 (C) 0000 (D) 0110

22. Resistances of 6Ω are located at the each edge of a cube. Find the resistance of two diagonally opposite corner
(A) 5Ω (B) 5/6Ω (C) 6Ω (D) 6/5Ω

23. In 8085 microprocessor address and data bus are in.....condition.
(A) Demultiplexed (B) Combined (C) Discreat (D) Multiplexed

24. A 10gm of ice at 0^0 C melts to water at 0^0C. Find the change in entropy.
(A) 2.93cal/K (B) 3.93cal/K (C) 4.93 cal/K (D) 1.93 cal/K

25. The CMRR of an ideal OPAMP is
(A) Infinite (B) Zero (C) Undetermined (D) Close to unity

26. If the value of R in a RC circuit increases the charging time.....
(A) Decreases (B) Remains constant. (C) Increases (D) Oscillates

27. The Davison and Germer experiment relates to
(A) Interference (B) Electron diffractions.
(C) Polarisation (D) Fluorescence

28. Which one have the greater mobility
(A) Holes (B) Protons (C) Neutron (D) Electron

29. The Electric flux density is given by $\bar{D} = x^4\hat{\imath} + x^3y\hat{k}$. What is charge density?
(A) 2xy (B) $3x^2 + 2xy$ (C) $x^3 + x^2$ (D) $4x^3$

30. The number of ways three particles may be arranged in three compartment following B-E statistics is
(A) 12 (B) 10 (C) 8 (D) 6

31. An RC coupled amplifier has mid frequency gain of 200. A negative feedback network with B =0.02 is incorporated into the amplifier. What is the overall gain?
(A) 100 (B) 80 (C) 40 (D) 20

32. In a transistor circuit collector load is 6KΩ, V_{CC} = 12V whereas quiescent current is 1mA. Find V_{CE}.
(A) 5V (B) 12 V (C) 6V (D) 8V

33. In an intrinsic semiconductor the Fermi level lies
(A) Close to the conduction band
(B) Close to the valance band
(C) In between the conduction and valance band.
(D) Fermi level does not exist.

34. An amplifier becomes oscillator when feedback is ....
(A) Negative
(B) Positive
(C) No feedback
(D) Both negative and positive.

35. How many address lines are required to address a 256 byte of memory?
(A) 8 (B) 16 (C) 4 (D) 12

36. The displacement current is the flow of
(A) Electron (B) Proton (C) Holes (D) EM wave.

37. Find the value of β of a transistor if $\alpha = 0.98$
(A) 59 (B) 49 (C) 47 (D) 57

38. TEM wave cannot propagate through
(A) Coaxial cable
(B) Rectangular waveguide.
(C) Circular waveguide.
(D) Two wire transmission line.

39. When electromagnetic wave propagating in free space, the mode of propagation is known as
(A) TE (B) TM (C) TEM (D) quasi TEM

40. Ripple factor of a half wave rectifier is
(A) 1.21 (B) 0.42 (C) 0.38 (D) 0.48

41. In ABCD parameters AD-BC =.....?
(A) 1 (B) 0 (C) ∞ (D) None.

42. A non-inverting amplifier has $R_i = 1K\Omega$ and $R_f = 50K\Omega$. What is the gain of the amplifier?
(A) 101 (B) 71 (C) 61 (D) 51

43. The signal of 0.5V is applied to the input of an open loop OPAMP (IC 741). What is the output voltage?
(A) 0V (B) 0.5V (C) 5V (D) 12V

44. The maximum power efficiency of an AM modulator is
(A) 75% (B) 50% (C) 25% (D) 100%

45. A 50Ω transmission line is terminated with 75Ω load. What is reflection coefficient of the line?
(A) 0.5 (B) 0.4 (C) 0.3 (D) 0.2

46. Convert $(533)_{10}$ into Excess-3 code.
(A) 866 (B) 766 (C) 533 (D) 833

47. An AM signal has carrier signal frequency = 90 KHz and audio signal frequency = 4000Hz. What is the Bandwidth requirement for the transmission of the AM signal?
(A) 4000Hz (B) 90.4KHz (C) 89.6 KHz (D) 8000Hz

48. A series resonant circuit have L= 5mH, R =50mΩ. Find the value of Q- factor at resonant frequency of 100MHz.
(A) 62.83 (B) 102.83 (C) 72.83 (D) 42.83

49. The diode which can be used for the voltage regulation is
(A) Tunnel Diode (B) Gunn diode (C) Zener diode (D) IMPACT diode

50. Each stage of a two stage amplifier has gain of 3dB. What is the overall gain?

(A) 3 dB. (B) 6 dB. (C) 9 dB. (D) 0dB.