BunkPoint MOCK TEST

NCRTC Supervisor (Electronics) 2026 Mock Test 1

Total Questions: **60** | Sections: **10**

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Electronic Components And Materials

Q.1–5 | 5 questions

Q.1 A resistor is marked with the colour bands brown, black, orange and gold in that order. Its resistance and tolerance are:

(A) 10 k□ ± 5% **(B)** 100 k□ ± 5% **(C)** 10 k□ ± 10% **(D)** 1 k□ ± 5%

Q.2 A 10 Ω and a 40 Ω resistor are connected in parallel across a DC source. The ratio of power dissipated in the 10 Ω resistor to that in the 40 Ω resistor is:

(A) 1 : 4 **(B)** 4 : 1 **(C)** 16 : 1 **(D)** 2 : 1

Q.3 Two inductors of 6 mH and 3 mH are connected in parallel with negligible mutual coupling. The equivalent inductance is:

(A) 4.5 mH **(B)** 18 mH **(C)** 2 mH **(D)** 9 mH

Q.4 In a relay, a normally open (NO) contact:

(A) stays closed when the relay coil is off

(B) opens when the relay coil is energised

(C) stays open even when the relay coil is on

(D) closes when the relay coil is energised

Q.5 Which practice is recommended to prolong the life of a lithium-ion battery pack?

(A) Avoid deep discharge and keep to the rated voltage

(B) Discharge it to zero volts before every recharge cycle

(C) Store it fully discharged in a very hot environment

(D) Charge it at a voltage above its rated cut-off level

Electronic Devices And Circuits

Q.6–9 | 4 questions

Q.6 In a voltage-divider bias circuit, the Q-point is thermally stable mainly because the:

(A) bypass capacitor is removed from the output side

(B) emitter resistance feeds back negative DC bias

(C) collector resistance is made as large as possible

(D) supply voltage is doubled across the junction

Q.7 An amplifier of open-loop gain $A = 100$ uses negative feedback with feedback factor $\beta = 0.1$. The closed-loop gain is:

(A) 110.00 **(B)** 11.00 **(C)** 9.09 **(D)** 10.00

Q.8 For sustained oscillation in a feedback oscillator, the Barkhausen criterion requires the loop gain magnitude and total loop phase shift to be:

(A) unity and a total phase that is an odd multiple of 180°

(B) greater than two and a total phase of exactly 90°

(C) less than unity and a total phase of exactly 0°

(D) unity and a total phase that is a multiple of 360°

Q.9 The minimum anode current that must be flowing at the instant the gate pulse is removed, so that an SCR stays in conduction, is called the:

(A) holding current **(B)** leakage current

(C) latching current **(D)** gate trigger current

Digital Electronics

Q.10–15 | 6 questions

Q.10 The BCD (8421) representation of the decimal number 59 is:

(A) 0011 1011 **(B)** 0101 1011 **(C)** 1001 0101 **(D)** 0101 1001

Q.11 The 8-bit 2's complement representation of -37 is:

(A) 11011011 **(B)** 11011010 **(C)** 11011100 **(D)** 10100101

Q.12 The Boolean expression $Y = AB + A\overline{B} + \overline{A}B$ simplifies to:

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

Q.13 A 2-to-1 multiplexer has data inputs $I_0 = 1$ and $I_1 = B$, with select input $S = A$. Its output is:

(A) $\overline{A} + B$ **(B)** $\overline{A}B$ **(C)** $A + B$ **(D)** $A + \overline{B}$

Q.14 A D latch is transparent while its enable input is high. If D changes during that period, the output Q:

(A) changes only at a rising edge of enable **(B)** toggles on every change of the D input

(C) keeps the value stored before enable **(D)** follows D throughout the enable period

Q.15 A 4-bit R-2R ladder DAC has a reference voltage of 8 V. For the digital input 1010, the analogue output is:

(A) 5.33 V **(B)** 5.00 V **(C)** 2.50 V **(D)** 6.25 V

Linear Integrated Circuits

Q.16–22 | 7 questions

Q.16 An ideal inverting op-amp amplifier has $R_f = 47\,\text{k}\Omega$ and $R_1 = 10\,\text{k}\Omega$. With input +0.5 V DC, the output voltage is:

(A) +2.85 V **(B)** +2.35 V **(C)** −2.35 V **(D)** −0.106 V

Q.17 A voltage follower built with an ideal op-amp has:

(A) unity gain, very low input impedance, very high output impedance

(B) gain of 2, very low input impedance, very low output impedance

(C) gain of −1, very high input impedance, very low output impedance

(D) unity gain, very high input impedance, very low output impedance

Q.18 A difference amplifier has $R_1 = 10\,\text{k}\Omega$ from V_2 to the inverting input and $R_f = 40\,\text{k}\Omega$ in feedback. V_1 feeds the non-inverting input through $10\,\text{k}\Omega$, with $40\,\text{k}\Omega$ to ground. For $V_1 = 5$ V and $V_2 = 3$ V, the output is:

(A) $+2$ V **(B)** -8 V **(C)** $+8$ V **(D)** $+10$ V

Q.19 A 555 timer astable circuit uses $R_A = 1\,\text{k}\Omega$ and $R_B = 2\,\text{k}\Omega$. The duty cycle of the output (fraction of time high) is:

(A) 40% **(B)** 60% **(C)** 66.7% **(D)** 50%

Q.20 A 555 timer monostable uses $R = 100\,\text{k}\Omega$ and $C = 10\,\mu\text{F}$. The output pulse width is approximately:

(A) 1.1 s **(B)** 1.0 s **(C)** 2.2 s **(D)** 0.69 s

Q.21 The IC 7912 is a:

(A) fixed regulator with -5 V output **(B)** fixed regulator with $+12$ V output

(C) fixed regulator with -12 V output **(D)** adjustable regulator, 12 V maximum

Q.22 Which feature makes an instrumentation amplifier preferable to a simple one-op-amp difference amplifier for bridge sensors?

(A) Output that equals the sum of both inputs for low noise

(B) High impedance at both inputs, gain set by one resistor

(C) Low input impedance so the bridge supply is not loaded

(D) Gain set only by changing two matched feedback resistors

Microprocessors And Microcontrollers

Q.23–26 | 4 questions

Q.23 The restart vector address of the RST 7.5 interrupt in the 8085 microprocessor is:

(A) 0024H **(B)** 002CH **(C)** 0034H **(D)** 003CH

Q.24 In an 8085 system, address lines A15 to A11 feed the chip-select decoder, leaving A10 to A0 connected to each memory chip. The capacity of each chip is:

(A) 2 KB **(B)** 8 KB **(C)** 1 KB **(D)** 4 KB

Q.25 In the 8051 serial control register SCON, the setting SM0 SM1 = 01 selects:

(A) shift-register mode with fixed baud rate

(B) 9-bit UART with fixed baud rate set by fosc

(C) 8-bit UART with baud rate set by Timer 1

(D) 9-bit UART with baud rate set by Timer 1

Q.26 In a microprocessor, the first machine cycle of every instruction is always the:

(A) opcode fetch **(B)** memory write **(C)** memory read **(D)** I/O read

Electronic Measurements

Q.27–31 | 5 questions

Q.27 A moving-coil meter has full-scale current 1 mA and internal resistance 90 Ω. To use it as a 100 mA full-scale ammeter, the shunt resistance required is:

(A) 90.9 Ω **(B)** 0.09 Ω **(C)** 9.09 Ω **(D)** 0.909 Ω

Q.28 A 10:1 passive CRO probe is used with an oscilloscope whose input resistance is 1 M□. The series resistance inside the probe is:

(A) 10 M□ **(B)** 9 M□ **(C)** 1 M□ **(D)** 0.9 M□

Q.29 On a CRO in XY mode, two sinusoids of equal frequency and amplitude produce a straight line rising to the right at 45°. The phase difference between them is:

(A) 0° **(B)** 180° **(C)** 90° **(D)** 45°

Q.30 A strain gauge works on the principle that the electrical _____ of a conductor changes when it is stretched or compressed.

(A) inductance **(B)** capacitance **(C)** permittivity **(D)** resistance

Q.31 A voltmeter of range 0 to 100 V has a guaranteed accuracy of ±1% of full-scale reading. The maximum possible error when it reads 50 V is:

(A) ±0.5 V **(B)** ±2 V **(C)** ±1 V **(D)** ±5 V

Communication Engineering

Q.32–37 | 6 questions

Q.32 A superheterodyne receiver is tuned to 1000 kHz with an IF of 455 kHz and the local oscillator above the signal. The image frequency is:

(A) 1455 kHz **(B)** 1910 kHz **(C)** 910 kHz **(D)** 545 kHz

Q.33 An 8-bit PCM encoder provides how many quantisation levels?

(A) 512 **(B)** 128 **(C)** 64 **(D)** 256

Q.34 Light is guided along an optical fibre mainly because of:

(A) refraction of the ray into the cladding region

(B) total internal reflection at the core boundary

(C) absorption of the ray by the coating layer

(D) diffraction at the end face of the fibre

Q.35 The shortest ground distance from the transmitter at which a sky wave of a given frequency first returns to Earth is called the:

(A) skip distance **(B)** radio horizon

(C) critical frequency **(D)** fading range

Q.36 In a TDM system, 24 voice channels are each sampled at 8 kHz with 8 bits per sample, and one framing bit is added per frame. The line rate is:

(A) 2.048 Mbps **(B)** 1.536 Mbps **(C)** 1.544 Mbps **(D)** 1.152 Mbps

Q.37 In a cellular mobile system, frequency reuse means that the:

(A) frequencies are reallocated only after a call is dropped

(B) each cell uses a band that no other cell may ever use

(C) same frequencies reused in well-separated distant cells

(D) whole system transmits on one carrier at any instant

Data Communication And Networks

Q.38–42 | 5 questions

Q.38 Which of the following is a private IPv4 address as defined for internal networks?

(A) 192.169.1.10 **(B)** 11.0.0.1 **(C)** 172.32.0.1 **(D)** 172.20.5.9

Q.39 The Internet checksum used in IP and TCP headers is calculated as the:

(A) complement of the end-around-carry sum of 16-bit words

(B) remainder after dividing the data by a generator polynomial

(C) bitwise AND of all the 16-bit words in the segment

(D) two's complement of the count of one-bits in the frame

Q.40 In a star topology, failure of the cable to one end node:

(A) stops service to every node on the net **(B)** isolates only the one affected node

(C) breaks the token path for every node **(D)** halts all nodes along the common bus

Q.41 In RS-232 serial communication, logic 1 (mark) is represented by a voltage:

(A) close to +5 V above ground **(B)** between +3 V and +15 V

(C) between 0 V and +0.8 V **(D)** between −3 V and −15 V

Q.42 Compared with circuit switching, packet switching:

(A) reserves no dedicated path for the whole session

(B) forces all packets to follow one fixed route

(C) guarantees constant bandwidth for each connection

(D) sets up a physical path before data transfer begins

Computer Programming

Q.43–50 | 8 questions

Q.43 In C (C99 standard), the values of the expressions `-7/2` and `-7 % 2` are respectively:

(A) −4 and 1 **(B)** −3 and −1 **(C)** −4 and −1 **(D)** −3 and 1

Q.44 How many times is the body of the loop `for(i=0; i<10; i+=3)` executed?

(A) 5 **(B)** 10 **(C)** 4 **(D)** 3

Q.45 In C, a pointer `int *p` holds the address 2000 and an int occupies 4 bytes. The value of `p+3` is:

(A) 2016 **(B)** 2003 **(C)** 2012 **(D)** 2008

Q.46 In C, `g(int *p, int q)` executes `*p = *p + q; q = q + *p;`. If `a=3, b=4` and the call is `g(&a, b)`, the values of a and b afterwards are:

(A) a = 3, b = 11 **(B)** a = 7, b = 11 **(C)** a = 3, b = 4 **(D)** a = 7, b = 4

Q.47 Which statement about the C storage class `register` is correct?

(A) Such a variable is guaranteed to occupy a CPU register

(B) Such a variable cannot have its address taken

(C) Such a variable has file-wide scope by default

(D) Such a variable retains its value between function calls

Q.48 In C, `char s[] = ``ABC'';` reserves how many bytes, and what does `strlen(s)` return?

(A) 4 bytes and 3 **(B)** 4 bytes and 4 **(C)** 3 bytes and 4 **(D)** 3 bytes and 3

Q.49 The three-step swap `a = a OP b; b = a OP b; a = a OP b;` exchanges two integers without a temporary variable when OP is the bitwise:

(A) AND **(B)** left shift **(C)** OR **(D)** XOR

Q.50 In a flowchart, the diamond-shaped symbol is used to represent:

(A) decision or branching **(B)** process or assignment

(C) input or output **(D)** start or stop

Basic Electrical Engineering

Q.51–60 | 10 questions

Q.51 A 12 V source feeds a 2 Ω series resistor, followed by a 4 Ω resistor connected across terminals ab. The Thevenin equivalent at ab is:

(A) $V_{th} = 12$ V, $R_{th} = 2\,\Omega$ **(B)** $V_{th} = 8$ V, $R_{th} = 1.33\,\Omega$

(C) $V_{th} = 4$ V, $R_{th} = 1.33\,\Omega$ **(D)** $V_{th} = 8$ V, $R_{th} = 6\,\Omega$

Q.52 A source of EMF 20 V and internal resistance 5 Ω supplies a variable load. The maximum power that can be delivered to the load is:

(A) 10 W **(B)** 80 W **(C)** 20 W **(D)** 40 W

Q.53 A series RLC circuit has $L = 10$ mH and $C = 0.1\,\mu$F. Its resonant frequency is approximately:

(A) 1.59 kHz **(B)** 50.3 kHz **(C)** 15.9 kHz **(D)** 5.03 kHz

Q.54 A load draws 10 kVA at a power factor of 0.8 lagging. Its reactive power is:

(A) 12.5 kVAR **(B)** 2 kVAR **(C)** 6 kVAR **(D)** 8 kVAR

Q.55 A balanced three-phase load has a line voltage of 400 V and a line current of 10 A at unity power factor. The total power is approximately:

(A) 4.00 kW **(B)** 6.93 kW **(C)** 2.31 kW **(D)** 12.00 kW

Q.56 The speed of a DC shunt motor can be raised above its rated speed by:

(A) decreasing the shunt field current **(B)** adding armature circuit resistance

(C) reducing the applied supply voltage **(D)** increasing the shunt field current

Q.57 A 4-pole, 50 Hz induction motor runs at 1440 rpm. Its percentage slip is:

(A) 2% **(B)** 4% **(C)** 6% **(D)** 3.5%

Q.58 Two parallel plates are separated by 2 mm and have 100 V across them. The electric field strength between them is:

(A) 500 kV/m **(B)** 5 kV/m **(C)** 50 kV/m **(D)** 200 V/m

Q.59 When a capacitor charges through a resistor from a DC source, after one time constant its voltage reaches about what percentage of the source voltage?

(A) 99.3% **(B)** 36.8% **(C)** 86.5% **(D)** 63.2%

Q.60 The main purpose of earthing the metal body of an electrical appliance is to:

(A) divert fault current to ground and prevent shock

(B) improve the power factor of the connected load

(C) stabilise the supply voltage at the load terminals

(D) reduce the power drawn by the appliance load

Get the Answers with Explanations

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