

**GENERAL CERTIFICATE OF EDUCATION BOARD**  
Technical and Vocational Education Examination

JUNE 2025

KAWLO

INTERMEDIATE LEVEL

Specialty Name and Acronym	ELECTRONICS – ELN
Centre No.	
Centre Name	
Candidate No.	
Candidate Name	

Mobile phones are **NOT** allowed in the examination room.

**5260 ELECTRONIC SYSTEMS 1: MULTIPLE CHOICE QUESTION PAPER**

**Duration: One and a Half Hours**

**INSTRUCTIONS TO CANDIDATES**

*Read the following instructions carefully before you start answering the questions in this paper. Make sure you have a soft HB pencil and an eraser for this examination.*

1. USE A SOFT HB PENCIL THROUGHOUT THE EXAMINATION.
2. DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

*Before the examination begins:*

3. Check that this question booklet is headed “Intermediate Level – 5260 ELECTRONIC SYSTEMS 1.
4. Insert the information required in the spaces above.
5. Insert the information required in the spaces provided on the answer sheet using your HB pencil:  
**Candidate Name, Exam Session, Subject Code, Centre Number and Candidate Number.**

Take care that you do not erase or fold the answer sheet or make any marks on it other than those asked for in these instructions.

*How to answer the questions in this examination:*

6. Answer **ALL** the 50 questions in this Examination. All questions carry equal marks.
7. Each question has **FOUR** suggested answers: **A, B, C** and **D**. Decide which answer is correct. Find the number of the question on the Answer Sheet and draw a horizontal line across the letter to join the square brackets for the answer you have chosen.  
For example, if C is your correct answer, mark C as shown below:  
[A] [B] **[C]** [D]
8. Mark only one answer for each question. If you mark more than one answer, you will score a zero for that question. If you change your mind about an answer, erase the first mark carefully, then mark your new answer.
9. Avoid spending too much time on any one question. If you find a question difficult, move on to the next question. You can come back to this question later.
10. Do all rough work in this booklet, using, where necessary, the blank spaces in the question booklet.
11. **You must not take this booklet and the answer sheet out of the examination room. All question booklets and answer sheets will be collected at the end of the examination.**
12. **Non programmable calculators are allowed**



1. The colour code of a  $220\text{K}\Omega \pm 5\%$  resistor is
  - A Red, Red, Yellow, Silver
  - B Red, Red, Orange, Gold
  - C Red, Red, Yellow, Gold
  - D Red, Red, Orange, Silver
2. The two main characteristics of a resistor are
  - A resistance and power
  - B current and power
  - C voltage and current
  - D resistance and current
3. Wire Wound Resistors are usually used for
  - A low current systems
  - B low power systems
  - C high resistance systems
  - D high power systems
4. The tolerance of the E12 series is
  - A  $\pm 40\%$
  - B  $\pm 20\%$
  - C  $\pm 10\%$
  - D  $\pm 5\%$
5. Which of the following, in a four band of resistor, represents numbers in ohms?
  - A Second and third
  - B First
  - C First and second
  - D Second
6. Which of the following are resistors with colour coded values ?
  - A Wire wound resistors
  - B Potentiometer
  - C Carbon composition resistors
  - D Chip resistors
7. Which of the following resistors has the smallest physical size?
  - A Carbon composition resistor
  - B Wire wound resistor
  - C Surface mount resistor
  - D Rheostat
8. The name of the component represented in figure 1 is a(n)



Figure 1

- A rheostat
- B carbon composition resistor
- C potentiometer
- D metal film type resistor

9. The preferred resistance series of potentiometers is
  - A E12
  - B E24
  - C E6
  - D E3
10. The component with the reference 1N4001 is a(n)
  - A signal diode
  - B rectification diode
  - C zener diode
  - D varactor diode

11. Which of the following is the role of the circuit in figure 2 ?

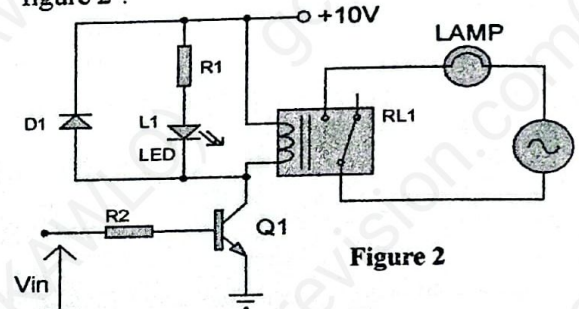


Figure 2

- A Interfacing a high voltage circuit to a low voltage circuit
  - B Interfacing a low voltage circuit to a high voltage circuit
  - C Interfacing a high voltage circuit to a high voltage circuit
  - D Interfacing a low voltage circuit to a low voltage circuit
12. Which of the following is the role of the diode D1 in figure 2?
    - A It protects the relay when the relay is on
    - B It protects the relay when the relay is off
    - C It protects the transistor when the transistor is on
    - D It protects the transistor when the transistor is off
  13. The appropriate reference of the diode D1 in the circuit of figure 2 is
    - A 1N4007
    - B BA157
    - C BY253
    - D 1N4148
  14. What is the role of the LED L1 in figure 2?
    - A It is used to protect the relay
    - B It is used to indicate when the relay is on
    - C It is used to indicate when the transistor is off
    - D It is used to indicate when the relay is off



15. What is the voltage across the relay when the transistor is saturated?

A +10V  
B 0V  
C 220Vac  
D +5V

16. Which of the following is a polarized capacitor?

A Paper capacitor  
B Electrolytic capacitor  
C Ceramic capacitor  
D Plastic capacitor

17. If two capacitors with equal ratings (1000 $\mu$ F/16V) are connected in parallel, the rating of the equivalent circuit is

A 1000 $\mu$ F/16V  
B 2000 $\mu$ F/16V  
C 500 $\mu$ F/32V  
D 2000 $\mu$ F/32V

18. The name of the circuit in figure 3 that has the components C1, R1 and D1 is

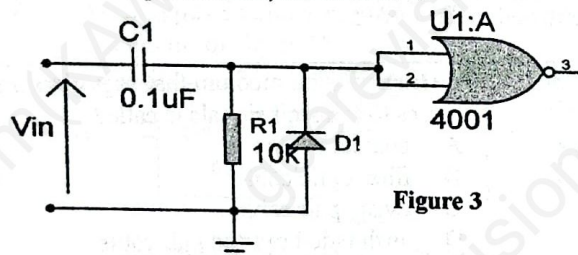


Figure 3

A differentiator  
B integrator  
C multivibrator  
D schmitt trigger

19. Which of the following is the role of the circuit in figure 3?

A Generate a pulse  
B Generate a triangular wave  
C Wave shaping  
D Amplification

20. What is the role of the diode D1 in figure 3?

A It is used to discharge the capacitor C1  
B It is used to charge the capacitor C1  
C It is used to protect the input of the NOR gate against negative voltages  
D It is used to protect the input of the NOR gate against positive voltages

21. Which of the following is the circuit time constant of the circuit in figure 3

A 1000ms  
B 100ms  
C 10ms  
D 1ms

22. Which of the following is the reference of the diode D1 in figure 3?

A 1N4001  
B 1N4148  
C 2N2222  
D BZX85C9V1

23. For a transistor to function as a amplifier,

A the CB junction must be forward biased and the EB junction must be reverse-biased.  
B the EB junction must be forward biased and the CB junction must be reverse-biased.  
C both the EB and CB junctions must be reverse-biased.  
D both the EB and CB junctions must be forward-biased.

24. A transistor operates as a switch when its operates at the

A saturation and cutoff regions.  
B active region  
C cutoff region.  
D breakdown and active region

25. When the collector current in a transistor is zero, the transistor is

A at saturation  
B within the active region  
C at cutoff  
D within the ohmic region

26. Which of the following is the most appropriate reference to be used as T2 in figure 4 below?

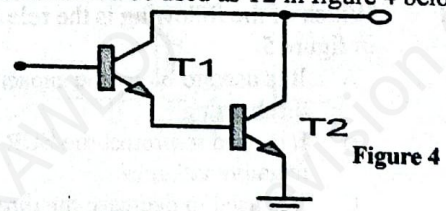


Figure 4

A 2N2222A  
B 2N1711  
C BC108  
D BD135

27. The minimum amount of current required to keep a relay energized or operating.

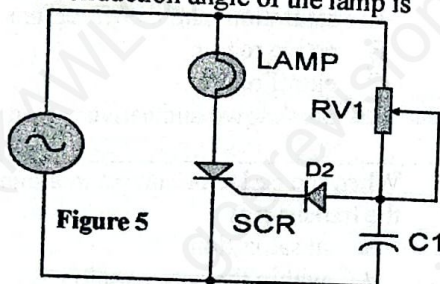
A Holding current  
B Pickup current  
C Drop out current  
D Contact current



28. One disadvantage of electromagnetic relays over transistors as switching devices is that they
- occupy less space on the pcb
  - bulkier
  - can not switch many contacts at once
  - are faster

29. For an SCR, the holding current,  $I_H$ , is defined as the
- maximum anode current that the SCR can safely handle
  - minimum amount of anode current that will keep the SCR off
  - minimum anode current required to hold the SCR in its conducting state
  - Minimum amount of current required to trigger on the SCR

30. If the firing angle of the SCR in figure 5 is  $45^\circ$ , the conduction angle of the lamp is



- $45^\circ$
- $90^\circ$
- $135^\circ$
- $145^\circ$

31. Which of the following is the role of the diode D2 in figure 5
- It is used to block the capacitor from discharging
  - It is used to protect the SCR from negative voltages
  - It is used to decrease the threshold voltage to trigger the gate of the SCR
  - It facilitates the triggering of the SCR

32. The component with reference CD4001 belongs to the
- CMOS logic family
  - TTL logic family
  - ECL logic family
  - Diode resistor logic family

33. Which of the following is a device that accepts an active level on one of its inputs representing a digit, such as a decimal or octal digit, and converts it to a coded output, such as BCD or binary?

- Encoders
- multiplexers
- Counters
- Demultiplexers

34. If the input of a BCD – to – decimal decoder has as input 1001, then its output is

- 5
- 7
- 8
- 9

35. If a MOD 10 counter is initially at 0000, what is the output of the counter after 10 clock pulses?

- 0000
- 0001
- 0010
- 0011

36. The transmission medium that uses glass and plastics to transmit signals is called

- coaxial cable
- fiber optic cable
- twiste pair cable
- unshielded twisted pair cable

37. Which of the following is the transmission medium that is commonly used to set up office LANs?

- Fiber optic cable
- Twisted pair cable
- Coaxial cable
- unshielded twisted pair cable

38. If the input to a BCD-to-7 segment decoder is 1000, then the logic state of the outputs are

- $a=1, b=0, c=1, d=1, e=1, f=0, g=1$
- $a=1, b=1, c=1, d=0, e=1, f=0, g=0$
- $a=1, b=1, c=1, d=1, e=1, f=1, g=1$
- $a=1, b=1, c=1, d=1, e=0, f=1, g=1$

39. An example of an output peripheral is

- Microphone
- Loudspeakers
- Scanner
- Digital camera



40. The loudspeakers in the circuit of figure 6 are of equal ratings and of value  $8\text{W}$ ;  $16\Omega$ . What is the equivalent rating of the system?

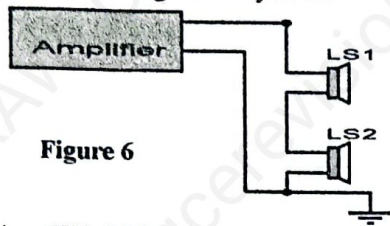


Figure 6

- A  $8\text{W}$ ,  $32\Omega$   
 B  $8\text{W}$ ,  $16\Omega$   
 C  $16\text{W}$ ,  $16\Omega$   
 D  $16\text{W}$ ,  $32\Omega$
41. If maximum power is transferred to the loudspeakers in figure 6, what is the output impedance of the amplifier?
- A  $8\Omega$   
 B  $16\Omega$   
 C  $4\Omega$   
 D  $32\Omega$
42. What type of voltage regulator is implemented in the circuit of figure 7?

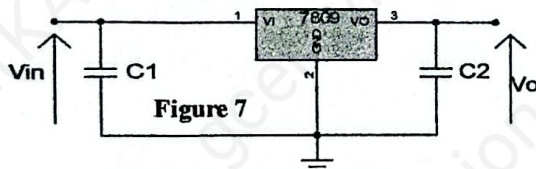


Figure 7

- A Switch mode power supply  
 B Discrete component linear power supply  
 C Integrated regulated power supply  
 D Discrete component nonlinear power supply
43. What is the output voltage of the circuit in figure 7?
- A  $-09\text{V}$   
 B  $+09\text{V}$   
 C  $+08\text{V}$   
 D  $-08\text{V}$
44. If the voltage drop across the regulator is  $2\text{V}$ , what is the minimum voltage required at the input of the regulated power supply?
- A  $-7\text{V}$   
 B  $-6\text{V}$   
 C  $+11\text{V}$   
 D  $-11\text{V}$
45. A filter that significantly attenuates all frequencies above a given frequency  $f_c$  and passes all frequencies below  $f_c$  is called
- A band pass  
 B band stop  
 C high pass  
 D low pass

46. What type of filter is implemented in figure 8?

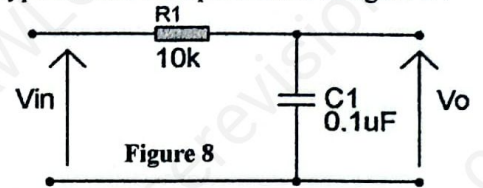


Figure 8

- A Band stop filter  
 B Band pass filter  
 C Low pass filter  
 D High pass filter
47. What is the cutoff frequency of the circuit in figure 7?
- A  $1\text{Krad/s}$   
 B  $4\text{Krad/s}$   
 C  $8\text{Krad/s}$   
 D  $16\text{Krad/s}$

48. The name of the components represented in figure 9 is

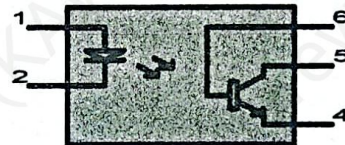


Figure 9

- A photodiode  
 B light emitting diode  
 C phototransistor  
 D phototriac
49. If  $R = 10\text{K}\Omega$  and  $C = 10\mu\text{F}$ , which of the following is the pulse width of the signal produced at pin 4 of figure 10?

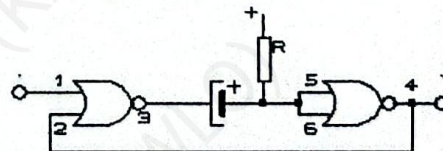


Figure 10

- A  $110\text{ms}$   
 B  $220\text{ms}$   
 C  $330\text{ms}$   
 D  $70\text{ms}$
50. The maximum supply voltage of the TTL family is
- A  $+5\text{V}$   
 B  $+10\text{V}$   
 C  $+15\text{V}$   
 D  $+18\text{V}$

**STOP**

**GO BACK AND CHECK YOUR WORK**