

Indian Air Force Electrical And Electronics Instrumentation Paper 2011 Engineering Knowledge Test (EKT) Papers 2010

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1. In order for a 30 volt, 90 watt lamp to work properly in a 120 volt supply the required series resistor in ohm is

- (A) 10 (B) 20
- (C) 30 (D) 40

2. According to Thevenin's theorem, any linear active network can be replaced by a single voltage source

- (A) in series with a single impedance
- (B) in parallel with a single impedance
- (C) in series with two impedances
- (D) in parallel with two impedances

3. The internal resistance of ammeter is

- (A) very small (B) very high
- (C) infinite (D) zero

4. Hay bridge is used mainly for the measurement of

- (A) resistance (B) inductance
- (C) conductance (D) capacitance

5. Which of the following is true about series resonance

- (A) The reactance becomes zero and impedance becomes equal to resistance
- (B) The current in the circuit becomes maximum
- (C) The voltage drop across inductance and capacitance cancels each other
- (D) All of the above statements are correct

6. A 3-phase, 4 wire, 400/230 v feeder supplies 3-phase motor and an unbalanced lighting load. In this system

- (A) all four wires will carry equal current
- (B) neutral wire will carry no current
- (C) neutral wire will carry both motor current and lighting load current
- (D) neutral wire will carry current only when lighting load is switched on

7. Equalizing connections are required when paralleling two

- (A) alternators
- (B) compound generators
- (C) series generators
- (D) both (B) and (C)

8. An ideal transformer is one which

- (A) has a common core for its primary and secondary windings
- (B) has no losses and magnetic leakage
- (C) has core of stainless steel and windings of pure copper metal
- (D) has interleaved primary and secondary windings

9. The principle of operation of a 3-phase induction motor is most similar to that of a

- (A) synchronous motor
- (B) repulsion-start induction motor
- (C) transformer with a shorted secondary
- (D) capacitor-start, induction-run motor

10. In the forward region of its characteristic, a diode appears as

- (A) an OFF switch
- (B) a high resistance
- (C) a capacitor
- (D) an ON switch

11. The common-emitter forward amplification factor β_{dc} is given by

- (A) I_C/I_E (B) I_C/I_B
- (C) I_E/I_C (D) I_B/I_F

12. A common emitter amplifier is characterized by

- (A) low voltage gain
- (B) moderate power gain
- (C) signal phase reversal
- (D) very high output impedance

13. After V_{DS} reaches pinch-off value V_P in a JFET, drain current I_O becomes

- (A) zero (B) low
- (C) saturated (D) reversed

14. An electronic oscillator

- (A) needs an external input
- (B) provides its own input
- (C) is nothing but an amplifier
- (D) is just a dc/ac converter

15. In an SCR, the function of the gate is to

- (A) switch it off
- (B) control its firing
- (C) make it unidirectional
- (D) reduce forward breakdown voltage

16. NAND and NOR gates are called 'universal' gates primarily because they

- (A) are available everywhere
- (B) are widely used in IC packages
- (C) can be combined to produce AND, OR and NOT gates
- (D) are the easiest to manufacture

17. Registers and counters are similar in the sense that they both

- (A) count pulses
- (B) store binary information
- (C) are made from an array of flip-flops and gates integrated on a single chip
- (D) are in fact shift register

18. A flip-flop

- (A) is a sequential logic device
- (B) is a combinational logic device

(C) remembers what was previously stored in it
(D) both (A) and (C)

19. An operational amplifier

(A) can be used to sum two or more signals
(B) can be used to subtract two or more signals
(C) uses to principle of feed back
(D) all of the above

20. TTL logic is preferred to DRL logic because

(A) greater fan-out is possible
(B) greater logic levels are possible
(C) greater fan-in is possible
(D) less power consumption is possible