

**ENGINEERING KNOWLEDGE TEST (EKT)**  
**ELECTRICAL AND ELECTRONICS STREAM**

**BOOKLET SERIES 'G'**  
**TIME ALLOTTED : 45 MINUTES**

**Set No 2/15**

**INSTRUCTIONS FOR CANDIDATES**

1. Total number of Questions 50. Each Question carries three marks.
  2. One mark will be deducted for every wrong answer.
  3. No mark will be deducted for un-attempted questions.
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- Q1. What is the next number in the series 1,3,11,19,37,\_\_\_\_\_
- (a) 55                      (b) 41                      (c) 56                      (d) None of the above
- Q2. A car travelled 75% of way from town A to town B at an average speed of 50 mph. The car travelled at the average speed of S mph for remaining part of the trip. The average speed for the entire trip was 40 mph . What is S?
- (a) 10                      (b) 20                      (c) 25                      (d) 30
- Q3. If the area of the square is increased by 69% the side of the square increases by
- (a) 13%                      (b) 30%                      (c) 39%                      (d) 130%
- Q4. The value of  $\sin \theta + \cos \theta$  will be greatest when  $\theta =$
- (a) 30                      (b) 45                      (c) 60                      (d) 90
- Q5. Out of the following pairs, choose the pair in which the physical quantities do not have identical dimension?
- (a) Pressure and Young's modulus                      (b) Planck's constant and Angular momentum  
(c) Impulse and moment of force                      (d) Force and rate of change of linear Momentum
- Q6. Out of the following, which one is least commonly emitted by radioactive substance?
- (a) electrons                      (b) electromagnetic radiations  
(c) alpha particles                      (d) neutrons
- Q7. Sound produced at a point is heard by a person after 5 seconds, while the same sound is heard by another person after 6 seconds. If the speed of sound is 300 m/s, what could be the maximum and minimum distances between the two persons?
- (a) 1.8 km, 0.15 km                      (b) 2.2 km, 0.20 km  
(c) 2.8 km, 0.25 km                      (d) 3.3 km, 0.30 km
- Q8. The most electronegative element among the following is
- (a) sodium                      (b) bromine                      (c) fluorine                      (d) oxygen
- Q9. The nuclear particles which are assumed to hold the nucleons together are
- (a) electrons                      (b) positrons                      (c) neutrons                      (d) mesons
- Q10. The most abundant rare gas in the atmosphere is
- (a) He                      (b) Ne                      (c) Ar                      (d) Xe
- Q11. Quantizing noise occurs in
- (a) PCM                      (b) Time - division - multiplexer  
(c) FDM                      (d) PPM
- Q12. Which of the following antennas is best excited from a waveguide?
- (a) Biconical                      (b) Horn                      (c) Helical                      (d) Discone
- Q13. The peak transmitted power in a radar system is increased by a factor of 16 the maximum range will be increased by a factor of
- (a) 2                      (b) 4                      (c) 8                      (d) 16
- Q14. The energy stored will be least in
- (a) coil                      (b) capacitor  
(c) resistor                      (d) same energy will be stored in all
- Q15. Thevenin's theorem is applied to networks with
- (a) DC source only                      (b) AC source only  
(c) both AC & DC source                      (d) none of the above

- Q16. The Shannon's Theorem sets limit on the  
 (a) highest frequency that may be sent over channel  
 (b) maximum capacity of a channel with a given noise level  
 (c) maximum number coding levels in a channel  
 (d) maximum number of quantizing levels in a channel.
- Q17. Maxwell's electromagnetic equations are valid under all conditions except one that is  
 (a) they do not apply to non-isotropic media  
 (b) they do not apply to non-homogeneous media  
 (c) they do not apply to media which move with respect to system coordinates  
 (d) they do not apply to non-linear-media
- Q18. Given a carrier frequency of 100 KHz and a modulating frequency of 5KHz, the bandwidth of AM transmission is  
 (a) 5KHz (b) 200KHz  
 (c) 10KHz (d) 20KHz
- Q19. In a modulation system, if modulating frequency is doubled, the modulation index also becomes double, the system is  
 (a) FM (b) AM  
 (c) PM (d) both FM and AM
- Q20. The bandwidth requirement of a telephone channel is  
 (a) 3KHz (b) 5KHz  
 (c) 10KHz (d) 15KHz
- Q21. In class A operation of an amplifier the current flows through the active device for  
 (a) whole of the input cycle  
 (b) half of the input cycle  
 (c) more than half of the input cycle  
 (d) more than three fourth of the input cycle
- Q22. P Type Semiconductor material as a whole is  
 (a) positively charged (b) negatively charged  
 (c) electrically neutral (d) dipole
- Q23. Hartley oscillator is  
 (a) an inductively coupled oscillator  
 (b) capacitor coupled oscillator  
 (c) switchable for low frequencies  
 (d) resistance coupled oscillator
- Q24. h parameters of a transistor  
 (a) are constant  
 (b) vary with temperature  
 (c) are dependant upon collector current  
 (d) none of the above
- Q25. The target cross section is changing, the best system for accurate tracking is  
 (a) monopulse (b) conical scanning  
 (c) sequential locking (d) lobe switching
- Q26. Waveguides are not used for frequencies below  
 (a) 1GHz (b) 10 GHz  
 (c) 100 Ghz (d) 500 Mhz
- Q27. The unit of magnetic susceptibility is  
 (a)  $\text{Wb}\cdot\text{m}^2$  (b)  $\text{Wb A}\cdot\text{m}$   
 (c)  $\text{Wb}/\text{A}\cdot\text{m}$  (d)  $\text{Wb}/\text{m}^2$
- Q28. Schmitt trigger can be used as a  
 (a) comparator (b) square wave generator  
 (c) flip flop (d) all of these

- Q29. For making a capacitor, it is better to select a dielectric having  
 (a) high permittivity (b) low permittivity  
 (c) same permittivity as that of air (d) very low permittivity
- Q30. The value of resistor creating thermal noise is doubled .the noise power generated is  
 (a) halved (b) doubled (c) unchanged (d) tripled
- Q31. Subtracting 0101 from 1110 in binary terms, we get  
 (a) 0110 (b) 1010 (c) 1001 (d) 0011
- Q32. The universal gate is  
 (a) AND (b) NOR  
 (c) XOR (d) NAND
- Q33. Fidelity in a communication receiver is provided by  
 (a) mixer stage (b) detector stage  
 (c) various amplifier section (d) audio stage
- Q34. The TWT is sometimes preferred to the magnetron as a radar transmitter output tube because it is  
 (a) capable of a longer duty cycle (b) a more efficient amplifier  
 (c) more broadband (d) less noisy
- Q35. Modulation system used for video modulation in tv transmission is  
 (a) DSB (b) VSB  
 (c) SSB (d) SSBSC
- Q36. A yagi antenna produces  
 (a) eight pattern (b) broadside pattern  
 (c) end fire array (d) helical pattern
- Q37. Medium frequency waves travel mainly as  
 (a) sky waves (b) surface waves  
 (c) space waves (d) ground wave
- Q38. In a two cavity klystron , the input cavity resonator is also known as  
 (a) velocity modulator (b) catcher cavity  
 (c) buncher cavity (d) accelerator
- Q39. When the gate of a P- channel junction field effect transistor is more positive, the drain current  
 (a) is increased (b) is reduced  
 (c) remains unaltered (d) decreases
- Q40. Multiplication of 2 binary numbers A and B yields 11011; if A is 101 B is  
 (a) 101 (b) 111  
 (c) 110 (d) none of these
- Q41. Which of the following can measure pressure directly?  
 (a) LVDT (b) strain guage  
 (c) Rotameter tube (d) bourdon tube
- Q42. The binary code of  $(21.125)_{10}$  is  
 (a) 10101.001 (b) 10100.001  
 (c) 10101.010 (d) 10100.111
- Q43. An op-amp zero crossing detector is basically \_\_\_\_\_ converter  
 (a) sine to square wave (b) square to sine wave  
 (c) sine to sine wave (d) sine to triangle wave
- Q44. Which of the following is not a 8 bit microprocessor  
 (a) INTEL8085 (b) MOTOROLA6800  
 (c) ZILOG280 (d) FAIRCHILD9440
- Q45. \_\_\_\_\_ is used for keeping oscillator frequency away from any drift  
 (a) PLL (b) VCO  
 (c) comparator (d) frequency synthesizer

- Q46. \_\_\_\_\_ is also an active filter
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|------------------------|----------------------|
| (a) RC filter          | (b) notch filter     |
| (c) butterworth filter | (d) band pass filter |
- Q47. In 8085 microprocessor -----is the highest priority interrupt
- |          |            |
|----------|------------|
| (a) INTR | (b) RST5.5 |
| (c) RST  | (d) trap   |
- Q48. In the standard TTL the totem pole stage refers to
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|---------------------------------|------------------------------|
| (a) the multi emitter l/p stage | (b) phase splitter           |
| (c) o/p buffer                  | (d) open collector o/p stage |
- Q49. Decimal equivalent of hex no E5 is
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|---------|----------|
| (a) 279 | (b) 229  |
| (c) 427 | (d) 3000 |
- Q50. Crossover distortion does not occur in \_\_\_\_\_ amplifiers.
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|---------------|--------------|
| (a) push-pull | (b) class-A  |
| (c) class-B   | (d) class-AB |