ENGINEERING KNOWLEDGE TEST (EKT) ELECTRICAL AND ELECTRONICS STREAM

Set No 1/15

Instructions for Candidates

Time Allotted: 45 Minutes

Booklet Series 'K'

- 1. Total No. of Questions 50. Each Question is of three marks.
- 2. One mark will be deducted for every wrong answer.
- 3. No mark will be deducted for un-attempted questions.
- 4. Do not write on the Question Paper or make any mark on it.
- Q1. When a conductor cuts magnetic flux, an emf is induced in the conductor. This is known as
 - (a) Joule's law (b) Faraday's law
 - (c) Coulomb's law (d) Ampere's law

Q2. X-rays are used for the study of crystal structure because

- (a) X-rays are completely absorbed by the crystal
- (b) the wavelength of X-ray is of the same order of magnitude in the inter atomic spacing in crystals
- (c) the wavelength of X-rays is very small in comparison with the inter atomic spacing in crystals
- (d) the crystals are completely transparent to X-rays

Q3. Emitter follower is used for

- (a) reducing the gain (b) increasing the distortion
- (c) impedance matching (d) none of these
- Q4. Binary equivalent of $(45)_{10}$ is (a) $(11101)_2$ (b) $(11110)_2$ (c) $(101101)_2$ (d) $(110101)_2$
- Q5. In Computer memory size K indicates Kilo, which is equal to (a) 1000 (b) 1024 (c) 100 (d) 10000

Q6. An astable multivibrator has(a) no stable state(b) one stable state(c) three stable states(d) two stable states

Q7. An ideal Op Amp has

- (a) infinite input and output impedance
- (b) very low input and output impedance
- (c) low input impedance and very high output impedance
- (d) infinite input impedance and zero output impedance

Q8. An instruction used to set the carry flag in a computer can be classified as a

- (a) data transfer instruction
- (b) arithmetic instruction(d) program control instruction
- (c) logical instruction
- (u) program control instr

- Q9. An FET is a
 - (a) bipolar semiconductor device
 - (c) non semiconductor device
- (b) unipolar semiconductor device
- (d) both (a) and (c)
- Q10. For Gunn diodes, semiconductor material preferred is
 - (a) Silicon (b) Germanium (c) Gallium Arsenide (d) all of these

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Q11.	In a JFET	drain cur	rent is	maximum wh	en V _{GS}	is			
	(a) zer		(b)	negative	(C)	positive	(d)	equal to Vp	
Q12.	The output of Laser is								
	(a) Infr	ared	(b)	polarised	(c)	narrow bear	m (d)	coherent	
Q13.	 As compared to a closed loop system an open loop system is (a) more stable as well as more accurate (b) less stable as well as less accurate (c) more stable but less accurate (d) less stable but more accurate 								
Q14.	Transfer function of a system is used to calculate								
	(a) the	steady st	tate ga	in	(b)	the time cor	nstant		
	(c) the	order of t	the sys	tem	(d)	the output for	or a giv	en input	
Q15.	(a) cor(b) out(c) the	 (b) output signal is fed back to be compared with the reference signal (c) the accuracy is better than in the open loop system 							
Q16.	The difference of the reference input and the actual output signal is called (a) error signal (b) controlling signal (c) actuating signal (d) transfer function								
Q17.	If the transfer function of a system is $\frac{1}{T_{s+1}}$, the steady state error to unit step input is (a) T (b) zero (c) infinite (d) none of these								
Q18.	 In a PID controller, the values of proportional, integral and derivative are dependent on (a) future, past and present errors respectively (b) present, past and future errors respectively 								
	• •	(c) past, present and future errors respectively							
010	· · ·			past errors re	spectiv	/ely			
Q19.	(a) 2(t-		e trans (b)	form of $\frac{2}{s+1}$ is $2e^{-t}$	(c)	2e ^t	(d)	e ^{-2t}	
		,	. ,		. ,				
Q20.	I he signa required is (a) 8KI	6	ded fro (b)	m 96KHz to 1 200KHz	00KHz (c)	, so the minir 4KHz	num sa (d)	Impling frequency	
004	()		. ,		(0)	11 (112	(u)	1001112	
Q21.	(a) ver						very low time constant zero time constant		
Q22.	(a) as	ltage Star large as p close to u	ossible		(b) (d)	should be as small as infinity	possibl	e	

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Q23.	 Following is/are a property/properties of quantization (a) it is an nonlinear process (b) it is an irreversible process (c) it maps a larger set of input (d) all of these values to a smaller set
Q24.	Most commonly used filter in SSB generation are (a) mechanical filters (b) RC filters (c) LC filters (d) low pass filters
Q25.	If the antenna diameter in a radar system is increased by a factor of 4, the maximum range will be increased by a factor of (a) 2 (b) 4 (c) 8 (d) 16
Q26.	Following type of multiplexing cannot be used for analog signalling (a) FDM (b) TDM (c) CDM (d) None of these
Q27.	In TDM systems, channel separation is done with the use of (a) AND gates (b) bandpass filters (c) differentiator circuit (d) integrator circuit
Q28.	A radioactive isotope has a half-life of 10 days. If today there are 125 g of it left, what was its original weight 40 days earlier (a) 600 g (b) 1000 g (c) 1250 g (d) 2000 g
Q29.	Angles project true size only when the plane containing the angle and plane of projection are (a) Aligned (b) Adjacent (c) Perpendicular (d) Parallel
Q30.	Tesla is a measure of(a) magnetic flux density(b) electric flux density(c) magnetic potential(d) electric potential
Q31.	Admittance is reciprocal of (a) susceptance (b) impedance (c) reactance (d) conductance
Q32.	is an active filter (a) RC filter (b) notch filter (c) Butterworth filter (d) band pass filter
Q33.	For transmission line load matching over a range of frequencies , it is best to use a(a)Balun(b)broadband directional coupler(c)double stub(d)single stub
Q34.	 (d) any of the order (d) any of the order (e) bangle order (f) bangle order (g) bangle order (h) bangle order (
Q35.	FDDI is a (a) ring network (b) star network (c) mesh network (d) bus based network
Q36.	Which of the following TCP/IP protocol allows an application program on onemachine to send a datagram to an application program on another machine?(a)UDP(b)VMTP(c)X.25(d)SMTP
Q37.	 The main difference between synchronous and asynchronous transmission is that (a) the clocking is derived from the data in synchronous transmission (b) the clocking is mixed with the data in asynchronous transmission (c) the pulse height is different (d) the bandwidth required is different

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Q38.	Transducer is a device which (a) converts one form of power in to the other (c) converts one form of energy in to other (d) helps in measuring electricity							
Q39.	Principle of hysteresis is not used in (a) electrical water geyser (b) electrical motor (c) multi-vibrators (d) Schmitt trigger							
Q40.	Which of the following motors would not be suitable for use as servomotors?(a) AC induction motor(b) brushless AC motor(c) stepper motor(d) permanent magnet DC motor							
Q41.	The stator of an induction motor is made of (a) carbon (b) wood (c) copper stampings (d) silicon steel laminators							
Q42.	An ideal DC generator is one that has voltage regulation (a) low (b) high (c) zero (d) positive							
Q43.	Commutator is used in							
	(a) DC generator (b) AC generator (c) invertors (d) convertors							
Q44.	If x=a(cos t + t sin t), y=a(sin t - t cos t). The value of $\frac{dy}{dx}$ is (a) cos t (b) sin t (c) tan t (d) sec ² t							
Q45.	The area of three faces of a cuboid are in the ratio 2:3:4 and its volume is 9000 cm^3 . The length of the shortest edge is (a) 15 cm (b) 30 cm (c) 20 cm (d) 60 cm							
Q46.	$\int \frac{dx}{x \log x}$ is equal to							
	(a) $\log x + x + c$ (b) $\log(\log x) + c$ (c) $x \log x + c$ (d) $\frac{\log x}{x} + c$							
Q47.	Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?							
	(a) 8/2 (b) 9/20 (c) 8/15 (d) 2/20							
Q48.	The projection of a vector on another vector is							
	(a) Scalar (b) Vector							
Q49.	 (c) neither vector nor scalar (d) either scalar or vector In MKS system, we measure 							
	(a) mass in kilogram (b) distance in meter							
050	(c) time in second (d) all of these							
Q50.	When the separation between two charges is made four times, the force between them							
	(a) increases four times (b) decreases four times							
	(c) increases sixteen times (d) decreases sixteen times							