

श्री चित्रा तिरुवाल आयुर्विज्ञान और प्रौद्योगिकीसंस्थान, तिरुवनंतपुरम्-११ SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY THIRUVANANTHAPURAM—695 011

ENTRANCE EXAMINATION -

ACADEMIC SESSION JANUARY 2018

PROGRAMME: PG DIPLOMA IN CARDIAC LABORATORY TECHNOLOGY

Time:90 Minutes			Max.Marks: 100
((Select the most	t appropriate answer) e marks for wrong ansv	wers)
	There are no negative	· · · · · · · · · · · · · · · · · · ·	
1. The number of chambers		a) 2	d) 4
a) 1	b) 2	c) 3	u) +
2. The heart sound is record	ded by	•	
a) Electrocardiogra	ph y	b) Endoscope	•
c) Phonocardiograp	ohy	d) Angiocardiogra	phy
3. The Bio-electric generate	or of heart is situated a	nt	
a) Aortic valve	b) SA node	c) AV node	d) Brain
4. A zener diode is destroye	ed if it		
a) is forward biased	· }	b) is reverse biased	
c) carrier more tha	n rated current	d) none of the abo	ve
5. The active transducer in	the measurement of p	ressure is	
a) Piezoelectric tras	nsducer	b) Capacitive tran	
c) Strain gauge		d) Inductive trans	ducer
6. A half-wave rectifier has	an input voltage of 24	10 V r.m.s. If the step-d	own transformer has a turns
ratio of 8:1, what is the	peak load voltage? Ig	nore diode drop.	
a) 27.5 V	b) 86.5 V	c) 30 V	d) 42.5 V
7. The Blood is carried awa	ay from the heart thro	ugb	
a) Cells.	b) Veins	c) Arteries	d) Nerves.
8. What is displacement?			
a) Longest distance	e covered by a body in	a random direction.	
b) Shortest distanc	e covered by a body in	a random direction.	
c) Shortest distance	e covered by a body in	a definite direction.	
d) Longest distance	e covered by a body in	a definite direction.	
9. A series resistance is con	nected in the zener ci	reuit to	
a) properly reverse	e bias the zener	b) protect the zene	
c) properly forwar	d bias the zener	d) none of the abo	ve
10. Ophthalmoscope is an	instrument which is us	sed to	•
a) inspect the eye		b) inspect the stor	nach
c) inspect the thors	ax	d) inspect the abd	ominai cavity
11. A zener diode is	device		pal - Imm
a) a non-linear	b) a linear	c) an amplifying	d) none of the above
12. Which instrument is use	ed to measure the pow	er of electric circuit?	
a) Voltmeter	b) Wattmeter	c) Wavemeter	d) Viscometer

13. The average value of sys	stolic and diastolic		
a) 80 to 120 mm Hg		b) 120 to 80 mm H	
c) 70 to 140 mm Hg		d) 140 to 60 mm H	g
14. Which instrument is use	ed to measure sou	nd under water ?	•
a) Hygrometer		b) Hygroscope	
c) Hypsometer		d) Hydrophone	
15. The radio activity taken	nn is measured b	ov the means of	
a) PIN Diode detect		b) Thermal detector	or
c) Silicon detector	•	d) IR detector	
16. The unit of electric curr	ont is		
a) Coulomb	b) Volt	c) Ampere	d) Farad
	• .		
17. Which instrument is us	ed to measure pro	essure of gases ?	d) Micrometer
a) Manometer	b) Machmeter	c) Magnetometer	d) Micrometer
18. A conductor has Zero re	esistance at		
a) Zero degree Cent	tigrade	b) – 273 degree Ce	
b) Zero degree Fah		d) - 273 degree Fa	ahrenheit
19. Which instrument is use	ed to measure cur	vature of spherical objects?	•
a) Spectroscope		b) Spherometer	
c) Spectrometer		d) Sextant	
20. Calculate the universal	; ggs constant R. if	one mol of gas at S.T.P occi	upies 22.4 liters.
a) 7.31 J/mol/K	gas constant it, ii	b) 8.31 J/mol/K	-
e) 10 J/mol/K		d) 15 J/mol/K	
,	1.0 % B		
21. What is unit of Electrica		a)14	d) ohm
a) henry	b) farad	c) volt	u) oniii
22. In an ECG machine Lea	ad I, II, III are cal	lled	_
a) Augmental limb		b) Unipolar limb l	eads
c) Bipolar limb lead	ls	d) Unipolar augme	ented limb leads
23. Which of the following i	is dimensionally c	orrect?	
a) Pressure = Energ		b) Pressure = Ener	rgy/ unit volume
c) Pressure = Force		d) Pressure = mon	nentum/unit volume/unit tim
24. When a mass is rotating	y in a plane about	a fixed point its angular mo	mentum is directed along
a) radius	, 1	b) a line perpendicular to	the plane of rotation
c) tangent to the orl	bit	d) line at an angle 45° to t	he plane of rotation
25. What is the range of m	ercury thermome	eter ?	
a) 0 degree Celsius	to 350 degree Cels	sius	
b) -10 degree Celsiu	is to 350 degree C	elsius	
c) -20 degree Celsiu	s to 350 degree Co	elsius	
d) -30 degree Celsiu	is to 350 degree C	elsius	
			Lingad with Li
26. To operate properly, a t	transistor's base-c	emitter junction must be for	rward biased with reverse bi
applied to which juncti a) base-emitter	b) emitter-bas	e c) collector-emitte	r d) collector-base
a) dase-emitter	n) cinterer-nas	e ej concetor emitte	_,
27. An electron in the cond		h) in landed many	the top of the crystal
a) is bound to its pa	rent atom	a higher energy than an ele	ine top of the crystal actron in the valence hand
c) has no charge	d) has	a nigner energy than an ele	CU OH IN THE VAIENCE DANG

28. Electromagnets are made a) high susceptibility a b) low susceptibility a c) low susceptibility a d) high susceptibility a	and low retentivity nd high retentivity nd low retentivity	oft iron has	
29. When a normal atom loses	s an electron, the aton	1 .	
a) becomes a positive	ion	b) becomes a negati	ive ion
c) becomes electrically		d) is the free to mov	ve about
c) pecomes electrically	ncutrai	u) 10 this 11 th	
•			
30. Which instrument is used	to measure heat radia	ition ?	
a) Radar		b) Salinometer	
c) Refractometer	•	d) Radio micromet	ter
•			
31. The number of significant			4) <i>E</i>
a) 3	b) 4	c) 5	d) 6
32. Cardiac output is defined	as	13.75	e studio volumo
a) Heart rate x strok		b) Respiration rate	x stroke volume
c) Blood flow rate x :	stroke volume	d) Heat rate x blo	od now rate
33. A super conducting substa	ance has		
a) positive temperatu	re coefficient	b) negative temper:	ature coefficient
c) low resistance		d) zero resistance	
		_	
34. When transistors are used	l in digital circuits the	y usually operate in th	1e:
a) linear region		b) breakdown region	
c) saturation and cuto	off regions	d) active region	
5, 54.52 -2.53	Ü		
	d :- a unit named		,
35. Nuclear sizes are expresse	O IN A UNIT HAMEG		IN TITLE I
a) Fermi	b) Angstrom	c) Newton	d) Tesla
,			
36. Cathode ray consists of		<u>. </u>	
a) high energy electro	ons	b) low energy electrons	
c) high energy proton		d) low energy protons	
, 5			
37. Name of the instrument to	o moosure atomsnher	ic pressure ?	
37. Name of the instrument to	· ·		D.C. Warana
a) Barometer	b) Barograph	c) Bolometer	d) Callipers
,		_	
38. Which of the following ha	is the highest wavelen	gth?	0.70
a) γ- rays	b) x- rays	c) UV rays	d) IR rays
, · ·			
39. An electron has the lowes	t energy when it is		•
a) at infinite distance	from the nucleus	b) in the ground state	
c) in the excited state		d) remaining stationary	
•			
40. Device used to measure p	otential difference be	tween two points in vo	lts is known as
a) ohmmeter	b) odometer	c) ammeter	d) voltmeter
a, ommeter	-,	•	
41. The modern periodic tal	ole is based on		
a) atomic weight	b) atomic number	c) atomic size	d) none of these
a) atomic weight	o) around named	= / =/	•
	,,	•	t nlaga ?
42. Which instrument is use	d to record physical h	iappenings at a distan	t prace :
a) Thermostat	b) Tonometer	c) Telemeter	d) Transponder
,			

43. Which	law states, "The ra	te of loss of heat by a	body is directly proport	ional to the difference in
temperature between the body and the surrou		body and the surround	andings."	
a) [oppler's Effect		b) Newton's law of coo	oling
c) Kirchhoff's Law			d) Stefan's Law	
11 When	a negative ion is for	med, the effective nuc	lear charge	
	ncreases	b) decreases	c) remains same	d) cannot be predicted
,		·		•
	est electronegative o	element is	c) fluorine	d) nitrogen
a) c	hlorine	b) oxygen	c) nuorme	d) hiti ogen
46. Which	acid is present in le	mon?		n
a) n	narlic acid	b) citric acid	c) lactic acid	d) tartaric acid
47. What is	refractive index ?	tic of cross of light in	the medium to the spee	ed of light in vacuum.
a)it	: Is gettined as the re	atio of speed of light in	n vacuum to the speed o	f light in the medium.
D) I	is defined as the n	roduct of speed of light	t in medium and in vacu	ıum.
	None of the above	Out of the second of the secon		
40 An ioni	c bond is formed by	v		
40. AH 10111	nutual sharing of e	, lectrons	b) transfer of electron	15
c) d	lonation and sharin	g of electrons	d) none of these	
	l l l l l l l l l l l l l l l l l l l	was developed by		
	lence bond theory v	b) Bohr	c) Mullikan	d) Hund
a) :	Pauling	b) Don.		, i
50. The ter	m PVC used in the	plastic industry stand	ls for	
a) j	polyvinyl chloride		b) polyvinyi caroobai	
c) <u>I</u>	ohosphor vanadiu c	hloride	d) phosphavinyl chlo	ride
51. Forwa	rd reaction will hav	e lowest velocity		
	at the beginning		b) at equilibrium	
	towards the end		d) at half time	
52 In 2011	eous solution, Na ₂ S	O4 will be		
	acidic	b) basic	c) neutral	d) cannot be predicted
	n n .41.1.		o a magnetic field quant	tity that changes is
		b) speed	c) energy	d) moment of inertia
ŕ	momentum	<u> </u>	,	,
54. The m	athematical statem	ent of the first law of t	thermodynamics is	$\mathbf{d}) \Delta \mathbf{E} = -\mathbf{Q} - \mathbf{W}$
a) .	$\Delta \mathbf{E} = \mathbf{Q} - \mathbf{W}$	$\mathbf{b}) \Delta \mathbf{E} = \mathbf{Q} + \mathbf{W}$	c) $\Delta \mathbf{E} = \mathbf{W} - \mathbf{Q}$	a) & E = - Q - W
55 Which	one of these therm	ometers is portable as	s well as simple to use?	
a) (Constant-volume g	as thermometer	•	•
b)	resistance thermon	neter		
	Thermocouple			
	Mercury-in-glass t	hermometer		
EK What:	s unit of Electrical	Canacity ?		
	henry	b) farad	c) volt	d) ohm
a)	neni y	~,	,	
	rocess occurring in	atom bomb is	a) hoth a and h	d) none of these
a)	atomic fusion	b) atomic fission	c) both a and b	u) none or these
58. Carbo	n dating is used to	determine the age of		
	fossils	b) minerals	c) trees	d) all these

<i>59.</i> ¹	The half life period of a r a) 75%	adio isotope is 20min. b) 50%	what fraction of it will c) 25%	d) 12.5%
60.	h) amount of change i	ometer can register ch	rty for a unit change if	ı temperature
61.	The amplifier mostly use a) single ended amplifier c) inverting amplifier	d for biomedical applic r	cations is b) differential ampli d) chopper amplifie	
62.	Temperature of the hum	an body is 98.4°F. Find	l the corresponding ter	nperatures
	on the Celsius scale. a) 309.9°C	b) 39.9°C	c) 36.9°C	d) 40°C
63.	In physics, a common in: a) Rule	strument to measure d b) Measuring tape	iameter of a circle is ki c) Calipers	nown as d) Inch tape
64.	Newton's Second Law of a) definition for Force c) equation for force	Motion given	b) definition for tord d) none of these	que
65.	A sum of money amount interest. Find the sum. a) 4460	ts to Rs.6690 after 3 yes b) 4630	ars and to Rs.10035 aft	d) 5000
66.	Solar cell converts a) Sound energy into b) Electrical energy i c) Solar energy into d) Electrical energy i	nto mechanical energy electrical energy	·	•
67.	$ If (1 + ax)^n = 1 + 8x + 24x $ a) 1	² +, then a is equa b) 2	l to c) 0	d) 8
68.	SI unit for length is a) centimeter	b) inches	c) meter	d) yards
69.	. Light from the Sun reac a) 2 minutes	hes us in nearly b) 4 minutes	c) 8 minutes	d) 16 minutes
70.	. 4 cos 20° cos 40° cos 80° a) 1/16	b) 1/4	c) 1/2	d) -1/2
71.	Sound is produced due a) friction	to b) circulation	c) vibration	d) refraction
72.	The maximum value of c a) 9/8	cos 2θ + sin θ is b) 3/4	c) 5/4	d) 7/8
	The Pa (Pascal) is the un a) Pressure	b) conductivity	c) force	d) time
74	l. If the sides of a triangle a) 15°	are 7, 4√3 and √13, the b) 30°	en the smallest angle of c) 36°	f the triangle is d) 45°

75. If r1 = r2 =r3, then the r a) right angled	triangle is b) isosceles	c) equilateral	d) obtuse angled
76. Metals are good conduct a) the atoms are ligh c) they contain free e	tly packed	nuse b) they have l d) none of the	nigh melting point above
77. Which terminal of a PNF a) collector	transistor is connected b) emitter	ed to positive supply? c)base d)colle	ector & emitter
78. A stick partially immerso a) Reflection	ed in water looks bend b) Parallax view	l, it is a phenomenon of c) Radiation	d) Refraction
79. Sound waves can pass th	rough		
a) vacuum		b) air only	.
c) air and other state	es of matter	d) vacuum and other	states of matter
80. A car travels 50 miles an when the plane travels 50	hour, and a plane tra 00 miles?	vels 10 miles a minute. H	
a) 50.4 miles	b) 37.5 miles	c) 41 .6 miles	d) 39.7 miles
81. If a circle of constant rad	lius 3 k passes through	h the origin and meets the	
a) $x^2 + y^2 = 4k^2$	b) $x^2 + y^2 = 9k^2$	$c) x^2 + y^2 = k^2$	d) $x^2 + y^2 = 3k^2$
82. Two inputs A and B of N	AND gate have 0 outp	out, if	N 1 4 1
a) A is 0	b) B is 0	c) both are zero	d) both are 1
83. The sum of the three ang a) 180°	cles in an equilateral to b) 60°	riangle is c) 360°	d) 30°
84. Optical fiber works on the a) Refraction	ne o) Total internal reflec	tion c) interfere	nce d) polarization
85. If one root of the equation	an 6x2 + ax + 6 = 0 is 2	/3. then the value of a is	
a) 2	b) 3	c) 13	d) -13
c) -20 degree Celsius	o 350 degree Celsius s to 350 degree Celsius s to 350 degree Celsius	I	
d) -30 degree Celsius	s to 350 degree Celsius	3	
87. If A is a square matrix	, then A + A ^T is		
a) unit matrix	,	b) null matrix	
c) symmetric matrix	•	d) skew symmetric m	natrix
: 00 Te4l J AD 40 4	han		
88. If the product $AB \neq 0$, t a) $A=0$, $B\neq 0$	nen	b) A=0 and B=0	
c) either A=0 or B=0	•		eed to be equal to zero
•			
89. In op-amp, signal applie	d at inverting termina	l appears at output term	inal with a phase d) 45
a) 0	b) 90	c) 180	u) 43
90. Electrocardiogram is an a) Electrical activity b) Electrical activity	of Heart	easure the	
c) Movement of hear			
d) Heart's sound			

at Which of the followi	no is an electromagnetic	wave?	•	
91. Which of the following is an electromagnetic a) Cathode rays c) Ultrasonic wave		b) Sound waved) Infra red rays		
a) 0	b) 90	<i>t)</i> 100	.,	
93. The phase difference	hotwoon velocity and di	splacement of a particl	e executing SHM is	
a) 0	b) π/2	c) π/4	d) π/6	
94. One watt-hour is equ	rivalent to	10 ⁷ T	d) 3.6 x 10 ⁷ J	
a) $3.6 \times 10^3 \text{ J}$	b) 6.3 x 10 ³ J	e) $6.3 \times 10^7 \text{J}$	u) 5.0 x x 0 0	
95. If an elevator is mov	ing vertically up with ac	celeration a, the force	exerted on the floor by a	
passenger of mass M	lis			
a) Ma	b) Mg	c) M(g+a)	d) M(g-a)	
96. Which are the prim a) Yellow, Green b) Red, Magent c) Red, Green, V d) Red, Green, I	n, Blue a, Blue White			
97. P wave of an ECG s	ignal is related to		olo signation	
a) Atrial depolarisation		b) ventricular depolarizationd) Atrial repolarization		
c)) ventricular	repolarization	d) Atrial repolar	IZACION	
98. Input resistance of	op-amp is	.)	d) one	
a) very high	b) very low	c) zero	u , 020	
99. Ampere second cou	ld be the unit of	• >		
a) Charge		b) current		
c) Voltage		d) power		
h) Stress is dire	aw ? ersely proportional to stractly proportio	ILD.		

- c) Stress and strain are dependent on each other.d) Stress and strain are independent of each other.

