GBCS SCHEME

	USN											A			16/17	MDE24
(55111)	TIE	DA TO										~0				
8/ N	100	13	Seco	nd S	eme	ester	r M .'	Гесh	. De	gree E	xami	natio	n, Au	g./Sep	ot. 202	0
The state of the s	-716		IN IN			\dv	and	ed	The	eory	of Vi	brat	ions	5		
1 1000			2							- pag	y				for Ma	wlear 90
a many	Tin	10	hrs.							. 0	1			45b.	lax. Ma	
WONLORE.	. 37. 4	N	ote: A	nswer	any	FIVI	E full	questi	ons, c	hoosing	ONE j	full qu	estion j	from ea	ich mod	ule.
ice									M	odule-1	<u>_</u>		•			
s blank pages. = 50, will be treated as malpractice	1	a.	Deriv	ve an e	expre	essior	for a	a natu	ral fre	quency	of a sp	pring n	nass sy	stem b	y consid	dering the
mal			mass	of the	sprir	ng.		4	1			100				(08 Marks)
se as		b.						fined	by th	e follov	ving pa	aramete	ers : n	1 = 3K	.g, K =	100N/m,
treat			C = I	N-Sec/: The da				1			- 3					
ages.			ii)					of da	mped	vibratio	n 🦳	y				
nk pa ', wil			,	Logar	ithm	ic de	creme	nt			9					(00 M L)
5 bla = 50			iv)	The ra	atio o	of two	cons	ecutiv	e amp	litudes.					,	(08 Marks)
ining 2+8					4 9					69						
rema eg, 4				A	S					OR						
the	2	a.	A m	achine	of	100k	g ma	ss in	suppo	rted on	spring	gs of to	otal sti	ffness	700kN/1	n and an
es on		570	unba	lanced	rota a dan	ting (facto	niwni rof E	= 0.2	determi	ine :	omg to	100 01	3301N a	i a speci	d 300rpm.
s lin atior			i)							e unbala	1900	3		100		
cros			ii)				bility	Sin.			3		- (
leno; o/ b		1_	iii)				d force	e.		(0)	8		de			(08 Marks)
diag or an		b.	Writ	e a not			tion al	bsorbe	rs	()	P		0-			
draw aluat			ii)					ibratio		lysis.		C)			(08 Marks)
compulsorily draw diagonal cross lines on the remaining blank pages. α , appeal to evaluator and /or equations written eg, $42+8=50$, will be									(y		4				
pulsc peal t				, allers,	4			19	M	odule-	, .					
comj	3		Expl	ain the	follo	owin	g:	a.) <u>IV</u>	louule-		7				
ers,	J		i)	Trans			(P					
answ			ii)	Vibra						A	107					
your f ide		· ph	iii) iv)	Vibra Signa			State P			W'						(16 Marks)
On completing your answers, c Any revealing of identification		Pala) 11)	Digita			*appell		- 40%	4						
mple veali					1	1		/		() () () () () ()						
n co ny re	4		Evnl	lain the	a foll	owin	α.	9		OR				IBRAI	RA	
1. O 2. A	4		i)					analy	sis			CM	RITL	(BKA) (E.560	037	
ote :			ii)	Mac	hine	cond	ition r	nonito	ring a	ınd diagı	nosis.	BAN	NGADO.			(16 Marks)
Ž ti)							ě	ā.
Important Note: 1. On completing your answers, 2. Any revealing of identification						2	#		\mathbf{N}	Iodule-	3					
Ī	5	a.	Sho	w that	the r	natura	al peri	od of				nust be	greate	r than	six times	s the pulse
		1	rate.		41.4			Pasis	da DC)E avata	m to th	a unit i	mnulca			(06 Marks) (10 Marks)
		b.	Dete	ermine	the r	espo	iise oi	a silig	ie DC	F syster 1 c	of 2	c unit i	призс	•		(20 11201110)

16/17MDE24

OR

- 6 a. Show that the auto correlation of a deflection at a given point due to separate loads $F_1(t)$ and $F_2(t)$ cannot be determined by simply adding the autocorrelations $R_x(z)$ and $R_y(z)$. (08 Marks)
 - b. Explain the following as regard to Random vibrations
 - i) Frequency response function
 - ii) Probability distribution

(08 Marks)

Module-4

- 7 a. Determine the isoclines for the simple pendulum. (08 Marks)
 - b. Determine the phase plane of a single DOF oscillator: $\ddot{x} + w^2x = 0$

(08 Marks)

OR

- 8 a. Explain in detail about perturbation method. (08 Marks)
 - b. Explain in detail the method of iteration. (08 Marks)

Module-5

- 9 a. Derive an expression for longitudinal vibration of a uniform bar. (08 Marks)
 - b. Derive an expression for a transverse vibration of a cable. (08 Marks)

OR

- 10 a. Derive an expression for torsional vibration of a uniform shaft. (08 Marks)
 - b. Derive an expression for lateral vibration of Beams. (08 Marks)

* * * * *