Set Code : No.: Booklet Code : B

Hall Ticket No.: Booklet No.: 105522

Candidate's Name:

Signature of the Candidate

Signature of the Invigilator

CIVIL ENGINEERING INSTRUCTIONS TO CANDIDATES

- Candidate should write their Hall Ticket Number and Name in the space provided on Question Paper Booklet and OMR Answer Sheet with Black Ball point pen.
- The Candidates should ensure that the Hall Ticket Number and Name of the Candidate are properly written
 in the OMR Answer Sheet provided to them. The Candidates are also further instructed to darken the
 appropriate circles provided for the Hall Ticket Numbers, Question Paper Booklet Number, Subject,
 Booklet Code, Zone, Category, Gender and Physically handicapped status.
- 3. Changing an answer is NOT Allowed.
 - The Candidates must fully satisfy themselves about the accuracy of the answer before darkening the appropriate circle with Black Ball Point Pen, as it is not possible to change or erase once darkened.
 - Use of Eraser or White Fluid on the OMR Answer Sheet is not permissible as the OMR Answer Sheets are machine gradable and it may lead to wrong evaluation.
- Immediately on opening this Question Paper Booklet, Check:
 - (a) Section A contains 80 questions of relevant Engineering and Section B contains 20 questions of General Awareness and Numerical Ability.
 - (b) Whether 100 multiple choice Questions in total are printed.
 - (c) In case of any discrepancy, immediately exchange the Question Paper Booklet with same code with the invigilator.
- Use of Calculators, Mathematics Tables, iphones, Mobile Phones and Log books is not permitted.
- 6. One mark will be awarded for every correct answer. There are no Negative Marks.
- Answer to the questions must be entered only on OMR Answer Sheet by completely shading the appropriate circle with Ball Point Pen (Black) only.
- The OMR Answer Sheet will be invalidated if the circle is shaded using Pencil or if more than one circle is shaded against each question.
- 9. The OMR Answer Sheet will not be valued if the candidate:
 - Writes the Hall Tickets Number in any part of the OMR Answer Sheet except in the space provided for the purpose.
 - b) Writes any irrelevant matter including religious symbols, words, prayers or any communication whatsoever in any part of the OMR Answer Sheet.
 - Adopts any other malpractice.
- Rough work should be done only in the space provided in the Question Paper Booklet.
- 11." No loose sheets or papers will be allowed in the examination hall.
- Examination duration: 120 minutes.
- 13. Timings of Test: 10.00 A.M. to 12.00 Noon.
- 14. Candidate should ensure that he/she enters his/her Hall Ticket Number, name and appends signature on the Question Paper Booklet and also on the OMR Answer Sheet in the space provided. Candidate should ensure that the invigilator puts his/her signature on the Question Paper Booklet and OMR Answer Sheet.
- Before leaving the examination hall, Candidate should return the Original OMR Answer Sheet. The candidate can take carbon copy of OMR Answer Sheet and Question Paper Booklet.
- 16. This booklet contains a total of 16 pages including Cover Page and the pages for Rough work.



Answer all questions. Note:

- (2) Each question carries 1 mark. There are no negative marks.
- (3) Answer to the questions must be entered only on OMR Answer Sheet provided separately by Completely shading with Ball Point Pen (Black) only.
- The OMR Answer Sheet will be invalidated if the circle is shaded using Pencil or if more than one circle is shaded against each question.

Section A : Civil Engineering

- 1. Bucking load in a steel column is
 - (1) related to length .
 - (2) directly proportional to the slenderness ratio-
 - (3) inversely proportional to the slenderness ratio.
 - non linearity of the slenderness ratio
- 2. The best arrangement to provide unified behaviour in built up steel columns is by

(lacing

battening (2)

(3) tie plates

- (4) perforated cover plates
- A plate used for connecting two or more structure members inter-secting each other is

(1) Template

(2) Base plate

Gusset plate

(4) Shoe plate

Which of the following soils has more plasticity index?

(2) Sand

Silt (3)

Gravel (4)

5. Shear strength of the soil is

Directly proportional to angle of internal friction of soil

- Inversely proportional to angle of internal friction of soil
- Decrease with increase in normal stress
- Increase with increase in normal stress
- As per Terzaghi's equation, the bearing capacity of strip footing resting on cohesive soil 6. $C = 10 \text{ kN/m}^2$ for unit depth and unit width (Nc = 5.7) is

(1) 47 kN/m²

(3) 67 kN/m²

77 kN/m² (4)

According to Rankine's analysis minimum depth of the foundation is equal to 7.

$$(1) \frac{q}{\gamma} \left(\frac{1+\sin\phi}{1+\sin\phi}\right)^2 \quad (2) \quad \frac{q}{\gamma} \left(\frac{1+\sin\phi}{1-\sin\phi}\right)^2 \quad (3) \quad \frac{q}{\gamma} \left(\frac{1-\sin\phi}{1+\sin\phi}\right)^2 \quad (4) \quad \frac{q}{\gamma} \left(\frac{1+\sin\phi}{1+\sin\phi}\right)^2$$

8.	Granite is an example of	
	(1) Aqueous rock	(2) Sedimentary rock
	(3) Metamorphic rock	Igneous rock
9.	The degree of saturation for fully satura (1) 0.25 (2) 0.50	ated soil is (3) 0.75 (4) 1
10	The uniformly coefficient of soil is defi	
10.	(1) D_{40} to D_{10}	
	(3) D_{50} to D_{10}	(2) D_{40} to D_{20}
11		(4) D ₆₀ to D ₁₀
11.	A soil sample has void ratio of 0.5 and i	
45.6	(1) 50% (2) 66%	(3) 100% (4) 33%
12.	Plate load test is useful to estimate	inversely control in
	(1) Bearing capacity of foundation	and the survey of the No.
	(2) Settlement of foundation	
N	Both bearing capacity and settleme	ent of foundation
	(4) Depth of foundation	
13.	In order to determine the natural feature	res such as valleys, rivers, lakes etc. the surveying
	preferred is	
	(1) City surveying	(2) Location surveying
	(3) Cadastral surveying	Topographical surveying
14.	If the Back bearing of a line is 36° 15", i	its Fore bearing will be
	(1) 36° 15" (2) 126° 15"	(3) 143° 45" (4) 216° 15"
15.	Slack time in PERT analysis	y = 10 10
1.7.	(1) can never be greater than zero	is always zero for critical activities
	(3) can never be less than zero	is always zero for critical activities (4) is minimum for critical events
		- I have a market market and the contract of t
	Poisson's ratio is defined as the ratio of	
	(1) Longitudinal stress and longitudina	
	(2) Lateral strain and longitudinal strai	
	(3) Longitudinal stress and lateral stre	
	(4) Lateral stress and longitudinal stre	SS
17.	A mosque is situated on the far side of a	river and is inaccessible. It can be located by
	(1) Radiation (2) Traversing	
18.	Which will be the included angle AOB	if the bearings of the lines AO and OB are 130° and
17	40°, respectively	
	90° (2) 170°	(3) 270° (4) 130°

- 1	_
- 1	
	76. 1
	100
- 1	_

19.	A one dimensional flow is one which (1) is uniform flow (2) is steady uniform flow (3) takes place in straight lines involves zero transverse component	of flow
20.	Euler's dimensionless number relates the (1) Inertial force and gravity (3) Viscous force and buoyancy force	following (2) Viscous force and inertial force Pressure force and inertial force
21.	Pitot tube is used for measurement of (1) Pressure (2) Flow	Velocity (4) Discharge
22.	Let y_n be the normal depth of flow in a prising $y_n > y_c$, the flow is referred to as Subcritical (2) Critical	smatic channel, and y_c be the critical depth of flow. (3) Supercritical (4) Transcritical
23.	To generate 1000 hp under a head of 81 m choice would be (1) Pelton (2) Kaplan	while working at a speed of 500 rpm, the turbine of (3) Bulb Francis
24.	The theoretical velocity of jet at vena con	tracta is
	(1) $2 gH$ (2) $H\sqrt{2g}$ Where $H =$ Head of water at vena contract	(3) $2g\sqrt{H}$ $\sqrt{2gH}$ ta, and g is the acceleration due to gravity
25.	One poise is equal to 0.1 N-s/m ² (2) 1 N-s/m ²	(3) 10 N-s/m ² (4) 100 N-s/m ²
26.	The loss of head due to friction in a pipe of place, is (1) $1/R_N$ (2) $4/R_N$ Where R_N = Reynolds number	funiform diameter in which a viscous flow is taking (3) $16/R_N$ (3) $64/R_N$
27.	The maximum hydraulic efficiency of an i	impulse turbine is

Where $\phi =$ Angle of blade tip at outlet

28. With an increase in size of the tube, the rise or depression of liquid in the tube due to surface tension will

(H) Decrease

(2) Increase

Remain unchanged

(4) Depends upon the characteristics of liquid

29.	Acti	vated carbon is used in war	ter treatment for re	moving	
	(1)	Colour	125	Taste and Odour	real mubra er er
	(3)	Turbidity	(4)	Corrosiveness	
30.	The	detention period for oxida	tion ponds is usual	ly kept as	rlovos
	(1)		Hours (3)		(A) 03 Months
31.	Turt	pidity of water is an indicat	ion of the present	ce of	
_	4	dissolved solids	(2)	dissolved gases	
7	(3)	floating solids	×	suspended inorg	ganic matter
32.	The		o the oxygen requ	ired for stabilisat	ion of sewage is called the
	(1)	Bacterial stability factor	(2)	Biological Oxy	gen Demend (BOD)
	238	Relative stability	(4)	Oxygen ion con	centration
33.		coagulant widely used for	sewage treatment,	is 7	1.6 merate 1000
54	(H)	Alum	(2)	Ferric sulphate	
	(3)	Ferric chloride	(4)	Chlorinated cop	operas
34.	Path	ogenic bacteria enter waste	e waters, primarily	from	
	(1)	Industrial waste			
	JET .	Domestic waste	FILL SEA SOUTH	HALL THE THE	Contract of the second
	(3)	Both Industrial as well as			
	(4)	Infiltration in sewers from	n the surrounding	soils	
35.	In a	high-rate trickling filter, th	e problem of pond	ing can be solved	i by
	(1)	Flooding and raking	(2)	Chlorination an	d supply of air
	2	Raking and chlorination	(4)	Flooding and su	ipply of air
36.	The	ultimate BOD value of a wa	aste		
	(1)	Increases with temperatur	re		
	(2)	Decreases with temperatu			
	JBS)	Remains the same as all t	emperatures		The second second
	(4)	Double with every 10°C	rise in temperature		
37.		ch of the following treatm	nent processes are	necessary for re	emoving suspended solids
	(1)	Coagulation	(2)	Flocculation	
	(3)	Sedimentation	W.	All of these	
		The state of the s	*.)		

38.	The	double mass curve technique is add		
	9	to check the consistency of raing	auge reco	rds
	(2)	to find the average rainfall over a		
	(3)	to find the number of raingauges	required	The state of the s
	(4)	to estimate the missing rainfall da	-	the state of the second
39.	A h	yetograph is a plot of		
	(1)	Cumulative rainfall Vs Time	125	Rainfall intensity Vs Time
	(3)	Rainfall depth Vs Duration	(4)	Discharge Vs Time
40.	The	rainfall in 5 successive days on	a catchme	ent was 3, 5, 9, 6, 1 cm respectively. The
	phi-	index for the storm can be assum hment due to this storm was	ed to be 3	cm/day. The total direct runoff from the
		8 cm (2) 11 cm	(3)	20 cm (4) 23 cm
41.	The	nearest object from a raingauge she	ould be at	a minimum distance equal to
	(1)	Its height	0	Twice its height
	(3)	Thrice its height	(4)	Height calculated using a formula
12.	A ur	nit hydrograph has one unit of	1	
	(1)	Rainfall duration	00	Rainfall excess
	(3)	Time base of direct runoff	(4)	Discharge
13.	A hy	vetograph is a graphical representat	ion of	
-	M	Rainfall intensity and time	(2)	Rainfall depth and time
46	(3)	Discharge and time	(4)	Cumulative rainfall and time
14.	Whi	ch of the following is a non-recordi	ing raingai	ige?
	(1)	Tipping bucket type raingauge	(2)	Simon's raingauge
	(3)	Weighing type raingauge	(4)	Floating type raingauge
15.	Wate	er stored in a reservoir below the m	inimum p	ool level is called
	(1)	Valley storage	(2)	Bank storage
	(3)	Surcharge storage	45	Dead storage
	The	net work output (kJ kg -1) of the cy	cle is	
	(1)	498 (2) 775	3/	860 (4) 957
7.	Fort	wo cycles coupled in series, the topp	ping cycle	has an efficiency of 30% and the bottoming
	cycle	e has an efficiency of 20%. The over	erall comb	oined cycle efficiency is
	(1)	50% (2) 44%	(3)	38% 55%

г		_	_	_	1
Г	R	L	П	г	ı
	Г	٦	N	ı	ı
	1		٧		ı



Consider the following statements:

The overall efficiency of a steam power plant can be increased by

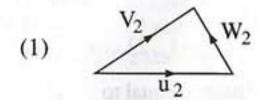
- Increasing the steam temperature.
- b) Increasing the condenser pressure.
- Improving turbine blade cooling.
- Providing air preheaters.

of these correct statements are:

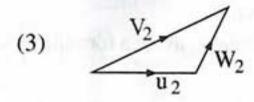
a, b and c (2) -b and e

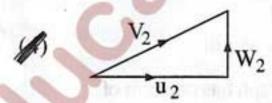
a and d

Which one of the following velocity triangles represents the one at the exit of a radial impeller with forward curved blades? (u_2 = peripheral velocity, V_2 = absolute velocity, W_2 = relative velocity)



(2)u2





In a 50% reaction stage, absolute velocity angle at intel is 45° mean peripheral speed is \75 m/s and the absolute velocity at the exit is axial. The stage specific work is

(1) 2500 m²/s²

(2) 3270 m²/s²

(3) 4375 m²/s²

(4) 5625 m²/s²

51) If n order to tune a parallel resonant circuit at a lower frequency, the capacitance must be

(1) Increased

(2) Decreased

(3) Remain same (4) Equal to zero

The current in a coil of resistance 90Ω is to be reduced by 90%. What the value of resistance should be connected in parallel with it?

9Ω

100Ω

(3) 90Ω

A moving iron instrument having meter resistance of 5Ω is to be used as voltmeter of range 0-100 V. If the full-scale deflection current is 10 mA, then required series resistance is

(1) 20Ω

(2) 95 Ω

- 995Ω

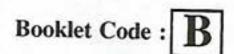
(4) 9995Ω

A large number of commutator segments are used in a dc generator to

- (1) Increase the magnitude of output voltage
- (2) Increase the output current
- (3) Increase the output power

Make the dc output voltage wave smooth





(4) ωL

P.T.O.

	(3) low efficiency	high power factor (4) high starting torque	
56.	When shear force at a point is zero, ther (1) Zero Minimum	pending moment at that point Maximum (4)	
57.	If the circular shaft is subjected to a torque bending stress and maximum shear stress	'T' and bending moment 'M'	
	$\frac{2M}{T} \qquad (2) \frac{M}{2T}$	$(3) \frac{M}{T} \qquad \qquad (4)$	$\frac{2T}{M}$
	The maximum bending moment in a bea (1) Shear force is minimum Shear force changes sign	(2) Shear force is maxim(4) Deflection is zero	meandain se
59.	A cantilever beam of span L is carrying a on the entire span. The deflection at the	niformly distributed load of in ee end is given by	ntensity w/unit length
	$(1) \frac{wL^4}{6EI} \qquad \qquad \frac{wL^4}{8EI}$	- 4	$\frac{wL^4}{48EI}$
60.	A thin spherical shell of diameter d and tensile stress in the shell will be	hickness t is subjected to int	ernal pressure p, the
	(1) $\frac{pd}{2t}$ $\frac{pd}{4t}$	$(3) \frac{pt}{2d} \qquad \qquad (4)$	$\frac{pt}{4d}$
1.	When a circular shaft is subjected to torsio (1) Minimum (2) Maximum		ft at its centre shall be Average
2.	The moment required to rotate the near extranslation, when the far end is pinned is	d of a prismatic beam through ven by	a unit angle without
/	The state of the s	$(3) 2EI/L \qquad \qquad (4)$	
3.	What is the magnitude of fixed end mom carrying a concentrated load 'P' at the mid	nt of a propped cantilever bearspan? Take <i>EI</i> = constant	m having length 'L'
	2.07	$\frac{5PL}{16} \tag{4}$	$\frac{PL}{4}$
4.	Simply supported beam of length L is load from zero at the left end to ω at the right ε	l with a triangularly varying lo	oad intensity, starting



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65.	over	am having rectar a span of 5 m. imum bending s	It is ca	rrying a concen	trated	load of 10 kN a	t the ce	p is simply supporte entre of the span. The
	(1)	2.34 N/mm ²	(2)	1.25 N/mm ²	138	1.17 N/mm ²	(4)	2.0 N/mm ²
66.	A re	ctangular beam ies a uniformly o	200 n listribu	nm wide and 40 tted load 40 kN/	0 mm m. De	deep spans over termine the max	a dist	ance of 4 meters and shear stress acting of
		beam cross secti						L. C. Lind
	SX	1.5 N/mm ²	(2)	1.0 N/mm ²	(3)	3.0 N/mm ²	(4)	2.0 N/mm ²
67.	Whi	ch of the follow	ing do	not have same o	limens	ions?	-	9 - 1
		Kinetic energy	100000			Torque and En	ergy	
	138	Impulse and M		100	(4)			and Momeht of force
68.	Acc	ording to Hooke	s's lav	v of elasticity		The Control of the Co		
	W	Stress is propo	rtional	to strain withir	the p	roportionality li	mit	
	(2)			in within the pr				
	(3)			on between stres			propo	rtionality limit
	(4)			oportional to str				
69.	Gyp	sum is added in	the ma	nufacture of Po	rtland	Cement in orde	r to	
	(1)	Shorten the set	ting ti	me of cement	125	Lengthen the	etting	time of cement
	(3)	Decrease the b	urning	temperature	(4)	Decrease the g	rindin	g time
70.	Acc	ording to BIS co	de, the	e curing tempera	ature o	f concrete shou	ld be	
	(1)	5°C	28	10°C	(3)	27°C	(4)	40°C
71.	Incre	eased fineness of	f ceme	ent			× 100	CI THE STATE OF
	(1)	Affects only ea	rly de	velopment of st	rength			
	(2)	Affects only ul	timate	strength				
	35	Both (1) and (2)	2)					
	(4)	Does not affec	t the st	rength				
72.	The	doubly reinforce	ed bear	m is less econor	nical t	han singly reinf	orced b	eam because
	.(1)			is more than ba	alance	d section		
	(2)	Shear reinforce						
4		Concrete rema						
	(4)	Compressive s	teel re	mains under util	ized			



13.		aforcement and the maxim	design, the distance	between the centroid of the area of tensio
	(1)	Overall depth	(2)	
	135	Effective depth	(4)	Lever arm Depth of neutral axis
74.	Ifa	ny tension reinforcement:		
	in th	he compression zone fails	n a beam attains its y	vield stress during loading before the concrete
	X	Under-reinforced	s due to crushing, th	
	(3)	Balanced	(4)	Over-reinforced Non homogeneous
75.	Stre	ngth of cement concrete	primarily dance do	
	(1)	quantity of water		
	(3)	quantity of cement	(2)	quantity of aggregate
		The second second		water-cement ratio
76.	Add	lition of fibers to concrete	e mix results in imp	rovement in
	(1)	compressive strength	12	tensile strength
	(3)	bond strength	(4)	flexural strength
77.	Forc	e acting on web splice of	a plate girder are	the second of the second of the second of
	(1)	Axial force	(2)	Axial and Bending
	(3)	Shear and Axial force	4	Shear and Bending
78.	Ina	roof truss, which compon	ent of the truss may	be subjected to unsymmetrical bending
	(1)	Principal rafters	(2)	Struts
	(3)	Ties	ist	Purlin
79.	Inaj	plate girder, the web is pr	imarily designed to	reciet
	(1)	Torsional moment	(2)	Bending moment
	(3)	Diagonal buckling	· W	Shear force
20	۸ -:			
80.	load :	at the centre. The length	tangular section and	span L is subjected to a uniformly distributed of the plastic hinge will be
	(1)	1/3	. S	4/3
3	(3) .	L/3 L/2	(4)	I./
	N =2	12	(4)	78

Section B: General Awareness and Numerical Ability

81.	Wha	it is the stand	ard 'curr	ency' of G	olconda king	gdom.		C. LEWIS CO.
	1	Honnu	(2)	Paisa	(3)	Dinar	(4)	Halisikka
82.	Whi	ch of the foll	owing pro	gramming	languages a	are considere	ed as low le	evel language?
	(1)	BASIC, CC	BOL, For	tran	(2)	C, C++		
	25	Assembly la	anguage		(4)	Prolog	-	
83.	Basi	c building b	locks for a	a digital cir	rcuit is		07	ovien in the
	(1)	CMOS	(2)	DMOS	(3)	BIOS	J.	Logic gates
84.	A di	gital signatu	re is		-	70		
	(1)	a bit string	giving ide	entity of a c	corresponde	nt		
	(2)	a unique id	entification	on of a send	der	ulti via		
	3	an authentic	cation of a	n electroni	c record by t	ying it uniqu	ely to a key	only a sender knows
	(4)	an encrypte	ed signatu	re of a send	der		SOUTH BELLEVIA	
85.	Whi	ch of the fol	lowing is	not function	onally a com	plete set?		
	M	AND, OR		-	(2)	NAND		
	(3)	NOR			(4)	NOT, AND	O, OR	
86.	Fino	the remaind	ler when 2	is divide	ed by 7			
	(1)	3	- 98	1	(3)	5	X	2
		telaeros II	0					3
87.		d.	D	16.27		120		ottle and 2 pens full of
,	ink	was poured i	nto it, it w	$\frac{1}{4}$ full.	How many	pens can be	filled with	the full bottle of ink?
	(1)	12	(2)	14	(3)	8	(4)	16



88.	The	average o	of 7 numb	ers is	28. The aver	age of	first	two number	s is $12\frac{1}{2}$ ar	nd that o	f the next three
	is 16	$6\frac{1}{3}$. If the	sixth nur	nber	is less than th	e seve	enth i	number by 5	, then the so	eventh n	umber is
	(1)				72				K	63	O
89.	The	ratio of t	he ages o	of a n ratio	nan and his w was 1:2, the	vife is	5:3. mar	After 5 years ago	rs, this rati	o will b	e 3:2. If at the
	X	12			18					32	
90.	Air	Marshal_	is ap	point	ed as the nev	v chie	f of	Western Air	Command	l of Indi	an Air Force?
-	M	S.B. De	0					Rohit Nano			1077
	(3)	K. Vijay	Raghva	n			(4)	Devendra (400		
								1	POOD FIRM PARTY		
91.	Best	Hindi Fi	lm awar	d in t	he 62nd Nati	onal l	Film	Awardshas	been give	n to	
	(1)	100	New Year				128	Queen	lici)	- 3x-	
	(3)	Highwa	у		117	Ć	(4)	Veer Zaara			
92.	Dro	nacharya	Award is	s give	en for excelle	ence i	n the	field of -			
		literary		l i	==-	10	(2)	social serv	rice		
	SK	coachin	g in spor	t	15		(4)	winners of	Olympics		
93.	Whi	ch of the	followin	g is i	used in penci	12	57				
		graphite		100	charcoal		(3)	silicon	(4)	phosp	horous
94.	You day.	could tell	I the time	by h	e because he	alwa	ys_	worl	k at exactly	the san	ne time every
	(1)	ends	2,	(2)	ended		(3)	finish	LAN	finishe	es
95.	Whi	ch is the	correct e	xnre	ssion?						
					who I am ang	ידע	01	Ine's the ne	rson with	whom I	am anory
	1000				angry on			Joe's the pe			



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96. Wh	ich sentence uses the present tense co		
	Look, it rains	(2)	No, I am not listening you
(3)	I'm playing cricket every Thursday	(4)	She works for a bank
97. The	manager was terrified that his employee	s would	d stop work and walk without warning.
(1)	over (2) about	98	out (4) at
98. Nar	ne the author of 'Basavapuranam'.		Deratio of many of this
JA)	Palkuri somanath	(2)	Vallabharaya
(3)	Sreenatha	(4)	Jayapa
99. Wh	o built the famous 'Ramappa temple' lo	cated a	nt Palampet.
(1)	Recherla Venna	(2)	Recherla Prasaditys
(3)	Recherla Mallanna .	<u> 144</u>	- Recherla Rudra
.9			
	ntify the Peshwa and famous engineer of plan of Hyderabad.	of Muha	ammad Quli-Qutub Shah, who has designed
(1)	Mir-khadir	(2)	Mir-Muneer
200	Mir-Momin-Astrabadi	(4)	Gawan
U			even in with the Assumption of the