Offi Exam	Manmohan Technical University ce of the Controller of Examinations 1 Year: 2082, Jestha (Model Question)	Exam Rol Exam Roll in	1:		······
School	: SOE	Level: BE		Invigilat	or's Sign:
Progra	nm: BCE	Year/Part	: III/II	Superin	tendent's Sign:
Subje	ct: Design of Steel & Timber Structure	(EG652CI	Ξ)	Code No	
i. ii.	≫> Answers should be given by filling the l The main answer sheet can be used for	X Multiple-Cho rough work	ice Questions' Answe	≯ r Sheet.	Code No.
GROU	P A (Multiple-Choice Questions)	[1	10x1=10]		Time: 20 Minut
1)	The Limit State Design approach aims for a) Be safe against collapse and perform w b) Minimize material cost c) Allow plastic deformations d) Avoid buckling completely	a structure t ell under sei	to: rvice loads	~	
2) a.	Which of the following factors affect the v Slope of the roof b. Height of the buil	vind load on ding c. Ge	a roof truss? eographic location	d. All of the a	above
3)	what is the purpose of slip-critical bolted a. To allow some slippage in the connection friction c. To reduce the number of bolts required	n n	s? b. To prevent slip a d. To eliminate the	nd transfer lo need for weld	ads via Is
4)	In a fillet weld, the effective throat thickness a. 0.5 times the leg length b. 0 c. Equal to the leg length d. 1.5 ti	ess is approx 0.707 times t imes the leg	kimately: the leg length length		
5)	The failure mode of a tension member du a. The net section. b. The gross section.	e to yielding c. The bolt	goccurs in: ed section. d. The w	velded section	
6)	The strength of a timber beam in bending a. Modulus of elasticity b c. Fiber stress in bending d	depends on . Section mo . All of the a	: odulus bove		
7)	Which type of joint is most suitable for exa. Lap jointb) Dovetail jc) Scarf jointd) E	tending the oint Bridle joint	length of a timber be	eam?	
8)	In a steel flexural member, shear stress is a) The top flange b) T c) The neutral axis d) T	maximum a `he bottom f `he extreme	t lange fibers		
9)	The maximum slenderness ratio of compr1. 180b. 200	essive mem c. 250	ber due to dead load d. 350	and superim	posed load
10	The factor of safety in the Working Stress a. Load c. Deflection	Design meth b. Mate d. Botl	nod is applied to: erial strength h load and material s	trength	

Mul	tiple Choice Questio	ns' Answer Sheet	
Marks Secured:	•		
In Words:	Corrected Fill	1. A B C D	6. A B C D
Examiner's Sign: Date:		2. A B C D	7. A B C D
Scrutinizer's Marks:		3. A B C D	8. A B C D
In Words:		4. A B C D	9. A B C D
Scrutinizer's Sign: Date:	J L J V	5. A B C D	10. A B C D

م ا مرتبعا ر ~L ., •

Manmohan Technical University Office of the Controller of Examinations Exam Year: 2082. Jestha (Model Ouestion)

School: SOE		Level: BE	Time: 3 Hours
Program: BCE		Year/Part: III/II	Full Marks: 50
Subiect: :	Design of Steel & Timbe	er Structure (EG652CE)	

- Candidates are required to give their answers in their own words as far as practicable.
- The figures in the margin indicate **Full Marks**.
- ✓ Assume suitable data if necessary.

GROUP A (Multiple-Choice Questions in separate paper)

GROUP B (Attempt Any Five Questions)

- 1. Explain about method of analysis of design of steel.
- 2. Two plates of 200 x 16mm are to be connected by double cover butt joint with M22 of 4.6grade bolt. the service force on the plate is 220KN.the thickness of each cover plate is 8mm. Design the bolted connection and efficiency of the bolt.
- 3. A tension member carries of two unequal angle section and carries a load of factored 230KN. Design the member when both the angles are connected on same side of gusset plate.
- 4. Determine the wind pressure to be considered on a sloping roof from the following data: basic wind speed= 47 m/s. span of building 12m, pitch of roof = 1/3, height of eaves above ground =6m, Risk coefficient K_1 = 1, Terrain factor k_2 = 0.80, Topography factor K_3 = 1, assume moderate permeability Cpi, for Cpe see in table attached.
- 5. Determine the greatest load P per bracket plate that can be resisted by the bracket connection shown in figure below based on the strength of the weld if 6mm fillet weld are used. take field welding.



6. Descried the component of plate girders?

GROUP C (Attempt All Questions)

- A beam simply supported over an effective span of 6.2m carries an UDL of 40KN/m inclusive it's self-weight. The depth of beam is restricted to 375mm.design the beam assuming compression flange of the beam is laterally supported by floor construction. Assuming width of support is 250mm. [7]
- Design a built-up column to carry an axial load of 1100 KN. The length of column is 6.0m and it is pinned at both ends. Use single lacing system with bolted connection. Grade of steel E250, M20 Bolt 5.8 grade. The built-up column should be consisting of double channel backto-back. [7]
- Explain high Design a timber having clear span 5 m carries UDL of 12 KN/m excluding selfweight of the beam. Assuming beam is to made of group A timber for wet location. Take bearing length 250mm.make all check. [6]

THE END

[10×1=10] [5×4=20]

Building		Roof Angle α	Wind a	ngle 0	Wind a	ingle θ)°		Local Co	efficients	
Ratio		Degrees	Ħ	GH	EG	Ŧ				
		0	-0.8	-0.4	-0.8	-0.4	-2.0	-2.0	-2.0	I
	W	თ	-0.9	-0.4	-0.8	-0.4	-1.4	-1.2	-1.2	-1.0
h 1)]	10	-1.2	-0.4	-0.8	-0.6	-1.0	-1.4	10000	-1.2
	n -	20	-0.4	-0.4	-0.7	-0.6	-0.8			-1.2
W Z		30	0	-0.4	-0.7	-0.6				-1.1
		45	+0.3	-0.5	-0.7	-0.6				-1:1
		60	+0.7	-0.6	-0.7	-0.6				-1.1
1	20	0	-0.8	-0.6	-1.0	-0.6	-2.0	-2.0	-2.0	1
	L W J	J	-0.9	-0.6	-0.9	-0.6	-2.0	-2.0	-1.5	-1.0
1 h 3)]	10	-1.1	-0.6	-0.8	-0.6	-2.0	-2.0	-1.5	-1.2
	7	20	-0.7	-0.5	-0.8	-0.6	-1.5	-1.5	-1.5	-1.0
2 W 2	=	30	-0.2	-0.5	-0.8	-0.8	-1.0			-1.0
		45	+0.2	-0.5	-0.8	-0.8	1000000			
2		60	+0.6	-0.5	-0.8	-0.8			100,002	
2 2		0	-0.7	-0.6	-0.9	-0.7	-2.0	-2.0	-2.0	ľ
		ъ	-0.7	-0.6	-0.8	-0.8	-2.0	-2.0	-1.5	-1.0
3 h		10	-0.7	-0.6	-0.8	-0.8	-2.0	-2.0	-1.5	-1.2
9~ < 0		20	-0.8	-0.6	-0.8	-0.8	-1.5	-1.5	-1.5	-1.2
2 W	Ч	30	-1.0	-0.5	-0.8	-0.7	-1.5	10000	1100000-05	
		40	-0.2	-0.5	-0.8	-0.7	-1.0			
	•	50	+0.2	-0.5	-0.8	-0.7				
		60	+0.5	-0.5	-0.8	-0.7				

Table 6 External Pressure Coefficients (Cpe) for Pitched Roofs of Rectangular Clad Buildings (Clause 6.2.3.2)