Enrollment No.....................................

Faculty of Engineering
End Sem Examination May-2023
FT3CO32 Building Planning & Machine Drawing
Programme: B.Tech.   Branch/Specialisation: FT

Duration: 3 Hrs.   **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i.   The angle which the stair makes with horizontal is called-   1
           (a) Rise   (b) Theta   (c) Pitch   (d) Stair angle
     ii.   Which of the following stair type is provided when going space is   1
           very limited?
           (a) Straight stairs   (b) Open-well stairs
           (c) Spiral stairs   (d) Doglegged stair
     iii. What is the bottom frame of a window called?   1
           (a) Foot rail   (b) Sill   (c) Bottom rail   (d) Brace
     iv.   FAR refers to-   1
           (a) Front area ratio   (b) Front aspect ratio
           (c) Floor area ratio   (d) Floor aspect ratio
     v.   If object is lying on picture plane, the apparent height of the object in   1
           the perspective view will be _____ as that of true height of object.
           (a) Larger   (b) Smaller   (c) Same   (d) None of these
     vi.   The pipe which carries discharges form urinals and water closets only   1
           is called-
           (a) Soil pipe   (b) Waste pipe
           (c) Vent pipe   (d) Anti-siphonage pipe
     vii. Basic size is in _____ between lower and upper limits.   1
           (a) Half   (b) Equal   (c) One half   (d) Double
     viii. _____ is equal to the differences of the two limits of size of the part.   1
           (a) Tolerance   (b) Low limit
           (c) High limit   (d) Design size

P.T.O.

ix.   Double-V and double-U butt welds are used for plates of thickness-   1
     (a) 1-5mm
     (b) 5-10mm
     (c) 10-15mm
     (d) Over 15mm

x.   Length of bolt is specified as measured from-   1
     (a) Top of head to end of bolt
     (b) Bottom of head to end of bolt
     (c) Where the threads starts to end
     (d) Bottom of head to start of threads

Q.2 i.   What is FAR?   2
   ii.   What are footing and their types?   3
   iii.   Enlist the different types of doors. Explain any two of them briefly   5
      with neat sketches.

OR iv.   How are buildings classified according to the NBC? Write all   5
      categories with proper examples

Q.3 i.   Define thermal insulation.   2
   ii.   What is a foundation? Enlist and explain the different three types of   8
      foundations with proper sketches.

OR iii.   Give a brief introduction on building services at least eight services.   8

Q.4 i.   Define perspective drawing.   3
   ii.   Describe the following with neat sketch.   7
      (a) Vanishing point
      (b) Two-point perspective view
      (c) One-point perspective view

OR iii.   Write a short note on "Energy Efficient Buildings".   7

Q.5 i.   Define limit, fit, tolerance and types of fit.   4

   ii.   Calculate the limits, tolerances and allowances for a 20 mm shaft and   6
      hole pair designated H8 d8.
      The standard tolerance is given by in micron, $i = 0.45 \sqrt[3]{D} + 0.001 D$
      Where, D is mean diameter varies from 18 mm to 24 mm.
      Tolerance grade 8 is 25i
      The fundamental deviation for fit d is given by $FD = -16D^{0.44}$

OR iii.   Determine allowance and tolerances for the following dimensions of   6
      mating parts according to the hole basis system. State types of fit.

Dimensions	Shaft	Hole
Diameter	27.470 mm	27.500 mm
Diameter	27.445 mm	27.523 mm

Q.6   Attempt any two:

   i.   Draw a welded machine parts with details of welding.   5
   ii.   What are coupler joints, nipple joints, socket, integral flanged joints   5
     and hydraulic joints
   iii. To draw three views of a hexagonal-headed bolt, 20mm diameter and   5
     100 mm long. Dimensions are for Hexagonal nut and bolt are given:

Thickness of the nut,	T = D
Distance across diagonally opposite corners	2D
Angle of chamfer	30°
Radius of chamfer	R = 1.5D

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Marking Scheme
FT3CO32 (T)Building Planning & Machine Drawing

Q.1	i)	C. Pitch	1
	ii)	B. Open-well stairs	1
	iii)	B. Sill	1
	iv)	C. Floor Area Ratio	1
	v)	C. Same	1
	vi)	B. Waste pipe	1
	vii)	B. Equal	1
	viii)	A. Tolerance	1
	ix)	D. Over 15mm	1
	x)	B. Bottom of head to end of bolt	1

Q.2	i.	Define FAR	2
	ii.	footing and their types	2/1
	iii.	types of doors	3/2
		Sketch	
OR	iv.	Classification of NBC	3/2
		Categories	

Q.3	i.	Define thermal insulation.	2
	ii.	Foundation definition	2/6
		Sketches of 3 foundations	
OR	iii.	Introduce 8 types building services each 1 mark	8

Q.4	i.	Define Perspective Drawing.	3
	ii.	a) Vanishing point 2 marks	7
		b) two-point perspective view 3 marks	
		c) one-point perspective view 2 marks	
		neat sketch	
OR	iii.	Short note on "Energy Efficient Buildings".	7

Q.5	i.	Define limit, fit, tolerance 3 marks	4
		types of fit? 1 mark	
	ii.	Calculate the limits, tolerances and allowances 2/2/2 marks	6
OR	iii.	Determine allowance 3marks	6

		Tolerances 3 marks	
Q.6			
	i.	Neat sketch welded machine parts 3 marks	5
		details of welding. 2 marks	
	ii.	coupler joints, nipple joints, socket, integral flanged joints and	5
		hydraulic joints short note each 1 mark	
	iii.	draw three views of a hexagonal-headed bolt	5

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