	Roll No.	[Total No. of Pages	:3
9	8 _ 8 ^H	8E8096	
809	B. Tech. VIII Ser	iester (Main/Back) Examination, April-May, 201 Civil Engineering	7
8E	8CE4.3A Ear	thquake Resistant Construction and Design	
		Maximum Marl	ks : 80

Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. IS: 1893 (Part - I): 2002

Unit-I

- a) Explain seismic zoning map of India and its significance. Give the important cities/places lying under zone-V. (6)
 - b) With the help of neat sketch differentiate between p-waves and s-waves describing their characteristics. (10)

(**OR**)

- 1. a) Explain the occurrence of Tsunami gives two examples (of each) of recent earthquakes and Tsunami giving their important features. (6)
 - b) Describe the important seismic hazards and their preventive measures. (10)

Unit-II

- 2. Describe the following terms :
 - a) Seismic isolation
 - b) Types of damping
 - c) Liquefaction phenomenon
 - d) Non structural failures

[Contd....

 (4×4)

a)	Describe the principle of seismic instrument. Give typical labelled sk the same.	etch of (8)
b)	Explain the behaviour of masonry building subjected to earthquakes.	(8)
	Unit-III	
Des	scribe the following terms and their significance :	(4×4)
a)	Re-entrant corners	
b)	Centre of rigidity	
0211	1 L L L L L L L L L L L L L L L L L L L	

- c) Plinth band and Lintel band
- d) Integrity of different components of a building

(OR)

3. Describe the role of architectural and planning consideration in earthquake resistant construction. (16)

Unit-IV

- 4. a) Describe shore wells, their types and advantages for earthquake resistant construction. (8)
 - b) Explain the provisions of ductile detailing at beam-column junction and its advantages. (8)

(OR)

- 4. Describe the following :
 - a) Week beam strong column concept
 - b) Soft story and weak story
 - c) Adjacency of buildings
 - d) Stiffness irregularity in plan and elevation

Unit-V

Describe the procedure for calculating the base shear as per IS 1893:2002. Also mention the limitations of the method and importance of response reduction factor.
 (8+4+4)

2

2.

3.

 (4×4)

5. Determine the total base shear and distribute it along the height of the building as per IS: 1893 (part 1): 2002 for the following building (shown in fig) and the data given below: (16)



- Building situated in Delhi on the medium soil strata
- M_1 , M_2 and M_3 are the dead load and live load lumped at floor levels.
- Building is intended to be used as a school.
- Building is a R.C.C. framed structure type.

	Roll No	[Total No. of Pages : 3
37	8E4031	
0	B.Tech. VIII Semester (Old Back) Exami	nation, April/May-2017
T	Civil Engineering	
	8CE1(O) Geotechnical Engine	ering-II

t

Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

- Explain Westergard's' theory for determination of the vertical stress at a point. 1. a) Discuss various approximate methods for determination of the vertical stress at a point. What are their limitations. (8)
 - A concentrated load of 200t is applied at the ground surface. Compute the b) vertical pressure : (4+4)
 - i) At a depth of 5m below the load.
 - At a distance of 4m at the same depth. Use Boussinesq's equation. ii)

(OR)

- What do you understand by Isobar? Show the isobar for two load intensities 1. a) and explain the application of the same. (8)
 - What are the assumptions of Boussinesq's analysis of stresses due to vertical b) loads, draw stress distribution diagram due to point load. (4+4)
 - i) A long vertical line and
 - ii) A long Horizontal line

Unit-II

- What are assumptions of Terzaghi's one dimensional theory of consolidation? 2. a) (8) Discuss its limitations.
 - A clay soil sample 24mm thick was obtained from the field and tested in the b) laboratory. The sample reached 50%. Consolidation in 25minutes. If the thickness of the layer from which the sample was taken is 4.8m, how much it will take to reach same degrees of consolidation. (4+4)
 - If the layer has double drainage i)
 - If the layer has single drainage ii)

(OR)

- (8) What is difference between compaction and consolidation? 2. a)
 - Define the terms "Compression Index" "Coefficient of Consolidation" and b) coefficient of compressibility and indicate their units and symbols. (8)

Unit-III

- Describe culmann's method for stability analysis of homogeneous slope. 3. a) (8) What are its limitations?
 - Describe frictional circle method of stability of slope. b)

(OR)

What are different types of slope failure? Derive an expression for the factor of 3. (16)safety of infinite slope in a cohesionless soil.

Unit-IV

- Write short notes : 4. a)
 - Earth pressure at rest i)
 - Active earth pressure ii)
 - Passive earth pressure iii)
 - What are the assumptions of Rankine's theory? Derive the expressions for b) (10)active pressure.

(OR)

- Explain culmann's graphical method for active earth pressure. (8) 4. a)
 - A retaining wall has a vertical back and is 8m high, with horizontal backfill. b) Determine active and passive earth pressure on wall per unit length. (8) Take C = 100 kN/m^2
 - $\phi = 0$
 - $r = 1 \text{g kN/m^3}$

8E4031

 $(3 \times 2 = 6)$

(8)

Unit-V

- 5. a) Describe plate load test. What are its limitation and uses?
 - b) Explain the following :

i)

- Ultimate bearing capacity
- ii) Allowable bearing pressure
- iii) Gross load intensity

(OR)

- a) What are the assumptions of Terzaghi's theory of bearing capacity? Discuss its limitations.
 (8)
 - b) Determine net safe bearing capacity of a footing of size 2m × 3m resting at a depth of 1.5m on a soil having → C = 0, φ = 35°, r = 18kN/m³ Take N_c = 25, N_q = 13, N_r = 11.

TT

 $(3 \times 2 = 6)$

	Roll No [Total No. of Pages :] :
36	8E4036
0	B.Tech. VIII Semester (Back) Examination, April/May 2017
T	Civil Engineering
	8CE4.3 Advance Transportation Engg.

Maximum Marks : 80 Min. Passing Marks : 26

Instructions to the Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

- 1. a) Define the term traffic volume. What are the objectives of carrying out traffic volume studies? (8)
 - b) Enumerate the different methods of carrying out traffic volume studies. Indicate the principle of each. (8)

OR

- 1. a) Write detail note on :
 - i) Spot speed study ii) Parking studies
 - b) What do you understand by Thirtieth (30th) highest hourly volume. How average speed, cumulative speed & modal speed are differ from each other. (8)

Unit - II

- **2.** a) Write short note on :
 - i) Sampling Theory.
 - ii) Negative Binomial Distribution (Pascal).
 - iii) Linear Regression.
 - b) Vehicles at a stop sign require a seven second headway through the main street traffic flow to cross the stream. If the flow rate of the main stream is 1100 vehicles per hour, what is the probability that any given head way will be 7 seconds or greater? (7)

[Contd....

 $(2 \times 4 = 8)$

(3+3+3=9)

One hundred spot speeds were observed on a local road, as shown below. a) Analyze these observations to find the mean, standard deviation, and standard error of the mean. Also draw a histogram and a cumulative frequency distribution curve. (10)

mph	15	16	17	18	19	20	21	22	23	- 24	25
Frequency	1	0	3	16	18	24	21	14	2	0	1
Write sho	rt note			10	10					(3-	+3=

Write short note on : b)

2.

i) Discrete Distributions.

Continuous Distributions. ii)

Unit - III

- Briefly explain different vehicular characteristics which affect the road design. 3. a) (8)
 - What is the significance of road user characteristics in traffic engineering? b) Discuss briefly the various factors which affects the road user characteristics and their effects in traffic performance. (8)

OR

- 3. a) Explain briefly the various design factors that are to be considered in rotary (6) intersection design.
 - Design the timings of an isolated signal to be installed at a right angled b) intersection when roads 'A' and 'B' cross. The data available are : (10)

	Road A	Road B
Width, metre	10.5	14.0
Peak hour traffic volume, vehicles per hour per lane	120	200
Approach speed, kmph	35	50
	Width, metre Peak hour traffic volume, vehicles per hour per lane Approach speed, kmph	Road AWidth, metre10.5Peak hour traffic volume, vehicles per hour per lane120Approach speed, kmph35

Unit - IV

- What are the various types of traffic markings commonly used explain with 4. a) (8) suitable diagrams? What are the uses of each?
 - What are the various types of traffic islands used Explain with suitable diagram. b) (8)Explain the uses of each.

8E4036

4. a) Enumerate in detail the various traffic laws used in India & abroad. (7)

(3+3+3=9)

- b) Write short note on :
 - i) Street lighting.
 - ii) Kerb Parking Control.
 - iii) Regulations and ordinances for Drivers.

Unit - V

- 5. a) Write detail note on the effects of noise pollution on ecological system. (8)
 - b) Write short note on : (4+4=8)
 - i) Visual Intrusion.
 - ii) Aesthetics.

OR

- a) Write detail note on the possible measures for improving pedestrian safety at intersections.
 (8)
 - b) Describe at least three facility design modifications that may be used to mitigate impacts on nearby wildlife habitat. (8)

(3)



Maximum Marks : 80 Min. Passing Marks : 26

Instructions to candidates :

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable by assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit - I

1.	a)	Write a brief note on classification of falls.	(8)
	b)	Write the various steps for design of sarda type fall.	(8)
		OR	
1.	a)	Describe various types of cross Drainage works.	(8)
	b)	What factors will you consider while selecting a suitable type of CD Wo	orks? (8)

Unit - II

- 2. a) Describe Bligh's creep theory with its limitation.
 - b) Determine the uplift pressure at the points E, D & C of the d/s pile shown in fig. Also determine the exit gradient. (8)



(8)

OR

- 2. a) Describe Khosla's theory.
 - b) Determine the uplift pressure at the sailent points E, D & C of intermediate pipe shown in fig. (8)



Describe various forces acting on a gravity dam, with their expressions. (8)

A masonary dam 6m high is 1.5 m wide at top & 4.5m wide at bottom, with

Unit - III

	0)	vertical water face. Determine the normal stresses at toe & heel for reserv	oir
		empty & full condition. Take $\rho = 2.4$ g/cc & C = 1.	(8)
		OR	
3.	a)	Describe various types of failure of Earth dam.	(8)
	b)	Explain the application of flow net & phreatic line in an earthen dam.	(8)
		Unit - IV	
4.	a)	What is siphon spillway? Sketch a saddle siphon spillway & explain function of various components.	ons (8)
	b)	Discuss various method used for energy dissipation below spillways.	(8)
8		OR	
4.	a)	Describe various elements of power house.	(8)
	b)	Describe factors effecting the selection of turbines.	(8)
		Unit - V	
5.	a)	What are the various impacts of water resource project.	(8)
	b)	Write a short note on water shed management.	(8)
		OR	
5.	a)	Explain the optimization techniques for irrigation projects.	(8)
	b)	Write in brief the application of GIS & computer aided irrigation design.	(8)

3.

a)

b)

(8)

Roll No.

[Total No. of Pages : 3



8E8092

B.Tech. VIII Semester (Main/Back) Examination, April/May - 2017 Civil Engineering 8CE2A Design of Steel Structures-II

Time : 3 Hours

Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates :

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. I.S. 800-2007 2. I.S. 875 - Part 3

3. Steel tables 4. Railway bridge rules

Unit - I

1. Design a gantry girder for an industrial building to carry on E.O.T. crane, from following data. (16)

i)	Crane capacity	. =	170 kN
ii)	Weight of crane excluding trolley	_	120 kN
iii)	Weight of trolley	=	50 kN
iv)	Span of crane	:==-;	12 m
v)	Span of gantry girders	=	7 m
vi)	Wheel base	=	3 m
vii)	Minimum approach of hook	=	1.1 m

OR

1. An industrial shed in kota measures $32 \text{ m} \times 16 \text{ m}$ in plan. The height of the building at the eaves level is 14 m. The fink type trusses have been used with span 16 m and rise 4 m. The spacing of trusses being 4m. Compute the design wind pressure, assuming low permeability.

Also calculate the value of dead, live and wind load acting on one purlin. The purlins are being placed at the nodes on principal rafters at four equal spacings.(16)

Unit - II

Design a simply supported welded plate girder of effective span 15 m if a superimposed load of 20 kN/m acts on the girder throughout the span. Its compression flange is laterally restrained against buckling. Stiffeners need not be designed. (16)

OR

- a) Discuss the functions of intermediate transverse stiffeners and bearing stiffeners in a plate girder. (4)
 - b) A plate girder has 21 m span and carries a u.d.l. of 60 kN/m including self weight. Design a suitable web splice at a distance of 7 m from each support. The section consists of a web plate 1400 mm × 8 mm and two flange plates each 360 mm × 40 mm provided at top and bottom. (12)

Unit - III

- 3. Write short notes on :
 - a) Top lateral bracing for deck type plate Girder railway bridges. (8)
 - b) Use of internal gusset plates in through type plate girder railway bridges. (8)

OR

3. A deck type plate girder railway bridge for B.G. Main line, has following data. (16)

i)	Effective span of the bridge	*	=	26 m
ii)	c/c spacing of plate girders		=	2.0 m
iii)	Overall depth of the section		=	2.2 m
iv)	Height of rail section		= 1	50 mm
v)	Height of sleepers		= 1	50 mm

Calculate the increase in stresses in the flanges of leeward girder due to. overturning effect of wind when

a) Bridge is unloaded b) Bridge is loaded.

Unit - IV

4. Design a stringer beam in a through type truss girder railway bridge for B.G. Main line from following data: (16)

i)	Effective span	=	30 m
ii)	c/c of stringers		2.0 m
iii)	c/c of cross beams		3.0 m
iv)	c/c of truss (main) girders	· =	5.0 m
v)	Weight of stock rails	. =	460 N/m

(2)

	Weight of quard rails	=	280 N/m
vi) vii)	Weight of fastenings per track	=	300 N/m
viii)	Sleepers size 250 mm × 120 mm × 2800mm		10121/23

ix) Density of wooden sleepers

= 10 kN/m

OR

An 'A' type portal bracing has been used in a through type truss girder railway bridge. It is subjected to a lateral horizontal force of 120 kN as shown in Fig. 1. Analyses the frame completely and state the assumptions made. (16)



Unit - V

5. Design an overhead cylindrical steel tank with hemispherical bottom for 150 kiloliters capacity. The tank is supported on 6 no. of columns uniformly placed along the periphery, for which M = .01482 WR, T = .00151 WR, F = W/12 and $\alpha = 12^{\circ}$ 44', where W is total vertical load, R the radius of circular girder and α is the angular distance from column to point of maximum torsion. (16)

OR

Design an elevated two tier rectangular pressed steel tank having capacity 120 kilo litres. Design the stays also and draw their arrangement. Show loads transferred to an intermediat top tier beam. Do not design the beam. (16)

TINC



Time : 3 Hours

Maximum Marks: 80

(6)

Min. Passing Marks : 26

Instructions to candidates :

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable by assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit - I

What are the main objectives of project management? Explain in detail about functions of construction project management. (16)

OR

1. Write short notes on following :

a) Risk cost management.

b) Main causes of project failure with special emphasis on project management failure. (10)

Unit- II

- 2. a) What is work breakdown structure? Explain with the help of example. (8)
 - b) From the help of given network in (fig.-1), determine total float, free float associated with each activity.
 (8)



Fig. (1)

- 2. The three time estimates optimistic time (t_o), most likely time (t_L), pessimistic time (t_p) are shown on the network of a project in following network (fig. (2)). Find out the following.
 - a) Standard deviation of network.
 - b) Probability of completion of project 10days prior to total completion period of project.
 (8)



figure (2)

Unit - III

- 3. a) Explain direct and indirect cost associated with project cost with the help of graph showing their variation with time. (12)
 - b) Write key differences between resources smoothing and resources levelling.

(4)

(8)

OR

With the help of given table - (1), find the optimum duration and the cost associated with it. The project overhead costs are Rs. 2000 per week. (16)

Activity	Normal duration (week)	Normal cost (Rs.)	Crash duration (week)	Crash cost (Rs.)
1 - 2	4	4000	2	12,000
2 - 3	5	3000	2	7,500
2 - 4	7	3600	5	6,000
3 - 4	4	5000	2	10,000

Table - (1)

(2)

18E

Unit - IV

Danil-!

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	Explain in brief type of contracts.	(16)
	OR	
4.	Write short note on following terms :	
•	a) Arbritation	(5)
	b) Types of tenders	(5)
	c) Elements for inviting a tender	(6)
	Unit - V	(0)
5.	Explain causes and prevention of accidents at construction site.	(16)
	OR	a segur
5.	Explain environmental and social aspect of various types of construction pr	ojects
		(16)

[Total No. of Pages :



Time : 3 Hours

Maximum Marks: 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

IS: 8009 1.

IS: 2911 2)

Unit-I

- A strip footing of width 3m is founded at a depth of 2m below the ground surface 1. in a (C- ϕ) soil having a cohesion C = 30kN/m² and angle of shearing resistance $\phi = 35^{\circ}$. The water table is at a depth of 5m below ground level. The moist weight of soil above the water table is 17.25 kN/m3. Determine : (16)
 - The ultimate bearing capacity of soil, a)
 - The net bearing capacity, b)
 - The net allowable bearing pressure and the load/m for a factor of safety of 3. c) Use the local shear failure theory of Terzaghi's

Given data $\overline{Nc} = 25.2, \overline{Nq} = 12.7, \overline{Nr} = 9.7$

(OR)

Derive Terzaghi's bearing capacity equation. Write the assumptions and limitations 1. (16)of this equation.

Unit-II

Describe Schemartman's, Dee Beer's and Mortin method of finding out settlement 2. (16)from static cone penetration test.

8E8095/2017

[Contd....

A 2m×2m footing carrying a load of 1600kN rests on a normally consolidated saturated clay layer 10m thick below which hard rock exists. The life span of the structure is 150 years. Time taken for the completion of primary consolidation of 20mm thick laboratory specimen with double drainage facility is 20 minutes. Find the total settlement, if the soil properties are as follows. Soil modulus 20 MPa, Poisson's ratio 0.45, influence factor 0.9, liquid limit 50%, Natural water content 25%, specific gravity of grains 2.7, saturated density 20kN/m³ and coefficient of secondary compression 0.001. (16)

Unit-III

- 3. Define the following terms (any four) :
 - a) Frank, piles,
 - b) Bored piles,
 - c) Pressure piles,
 - d) Bamboo piles,
 - e) Negative skin friction.

(OR)

3. a) What will be the penetration of square R.C. pile per below which must be obtained in driving the pile with a 5 tonnes drop hammer falling through 1.2 metre. Allowable load is 30 tonnes.

b) Define the Engineering News formula.

(12+4=16)

Unit-IV

- 4. Draw and define the single under reamed pile and multi-under-reamed pile. (16) (OR)
- 4. Define the following terms (any four):
 - a) Soil exploration,
 - b) Depth of water table,
 - c) Chemical properties of soil,
 - d) Elastic displacement,
 - * e) Settlement of pile groups,
 - f) Efficiency of pile groups

Unit-V

5.	Explain in detail bearing capacity of Mat foundation.	(16)
	(OR)	

5. Describe the conventional Rigid method for designed of Raft foundation. (16)

(2)

(4+4+4+4=16)

e⁷

(4+4+4+4=16)



Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

1.	a)	Explain the basic model of real time system? (8)
1	b)	Explain the Radar signal processing system with diagram. (8)
		(OR)
1.	a)	Explain the difference between : (4+4=8)
		i) Tardiness v/s usefulness
		ii) Absolute deadline v/s relative Deadline
	b)	Explain the difference between soft real time system and hard real time system?
		(8) Unit-II
2.	a)	Explain the following: (5+5)
		i) Functional parameter of a job
		ii) Fixed, jittered and sporadic release time
	b)	What do you mean by precedence constraints among the jobs? Explain. (6)
		(OR)
2.	a)	Describe clock driven and weighted round robin scheduling algorithm with example. (10)
	b)	Explain dynamic versus static system. (6)

(1)

Unit-III

3.	a)	What are the frames and major cycles in cyclic schedules? different frame size constraints?	What are the (4+6)	
	b)	What are the different method to improve the average resaperiodic jobs? Explain.	sponse time of (6)	
		(OR)		
3.	a)	Explain RM and DM algorithm with suitable example.	(10)	
	b)	What do you mean by fixed priority algorithm? Explain.	(6)	
		Unit-IV		
4.	Exp	lain the following in detail:	(8+8=16)	
	a)	Polling server		
	b)	Deferrable server		

(OR)

4. a) Explain the priority exchange algorithm. (8)
b) What is flexible computation? Explain the characterization of flexible application. (8)

Unit-V

5.	a)	What is critical section? Explain mutual exclusion.	
	4)	that is entreal section. Explain mutual exclusion,	

b) What do you mean by resource conflicts and blocking? Explain. (8)

(OR)

5. Explain the rules of basic priority ceiling protocol. Consider the following system of five jobs, schedule the following five jobs with basic priority ceiling protocol.

(6+10=16)

Job	r_i	e_i	π_i	Critical section
J ₁	7	3	- 1	[Shaded;1]
J ₂	5	3	2	[black;1]
J ₃	4	2	3	-
J ₄	2	6	4	[Shaded; 4[black;1.5]]
J ₅ .	0	6	5	[black; 4]

(2)



Maximum Marks : 80 Min. Passing Marks : 26

[Contd....

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

1.	a)	What do you mean by abelian group? Prove that a set of integer under ad $(Z,+)$ is an abelian group?	dition (10)
	b)	What is key equivocation and unicity distance explain in detail?	(6)
2		OR	
1.	Wh prol	at are the problem with the pseudoprimalitiy test and how can overcome blem by using the miller rabin randomized primality test algorithm?	these (16)
		Unit-II	
2.	a)	What is cryptography? Draw and explain the model of convent cryptography and it's components.	ional (8)
	b)	Explain S-box theory in detail.	(8)
		OR	
2.	a)	What is the concept of IDEA? Explain the concept of round IDEA	(8)

- What is the concept of IDEA? Explain the concept of round IDEA. a) (8)
 - Explain the Lucifer algorithm in detail and what are the limitation of Lucifer b) algorithm. (8)

Unit-III

Describe the Diffie-hellman key exchange algorithm in detail. Also decuess "Non in 3. the middle attack" problem associated with the algorithm. (16)

OR

3.	a)	Perform incryption and decryption using RSA algorithm.	(8)
		P = 3 Q = 11E (public key) = 7	
	i	M (plain text) = 5	
	b)	Differentiate between symmetric and asymmetric key cryptography.	(8)
		Unit-IV	
4.	a)	Explain the concept of MAC and it's function.	(8)
	b)	What is the property of digital signature? Explain.	(8)
		OR	
4.	a)	Explain MD5 message digest algorithm with its logic and compression fi	inction.
			(10)
	b)	Explain the model of authentication system.	(6)
		Unit-V	
5.	Wh	at is certificate revocation? Why we need certificate revocation and what	at is the
	Cor	ncept of Certificate Revocation List (CRL)?	(16)
		OR	
5.	Wri	ts short note :	(4×4)
	a)	PGP trust model	
	b)	R64 conversion	* .
			Sec. and

c) Need of MIME

d) Three way authentication

7.7.7.7.



Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

- a) Describe the software testing principle. How does testing help in producing quality software?
 (6)
 - b) What is White Box Testing? Discuss the pros and cous of white box testing. What is structural testing? (3+3+4=10)

OR

- 1. a) What is the difference between unit verification and unit varidation? (6)
 - b) Define:

(3+4+3=10)

- i) Testing and validation
- ii) Black box testing and white box testing
- iii) Automated testing and manual testing

Unit-II

a) What is defect bush? List the practices that defect bush brings and are popular in testing industry. (4+4=8)

b) What is performance testing? Write the tool and process for performance testing. (3+5=8)

OR

- a) What is system testing? Explain how functional testing is different from non-functional testing. (3+5=8)
 - b) Explain acceptance testing and acceptance criterias.

Unit-III

3. What do you understand by the terms internationalization, localization, globalization concept of testing? Also explain the phases of Internationalization testing. (8+8=16)

OR

3. Explain following testing (any two):

- a) Exploratory testing
- b) Regression testing
- c) Agile and Extreme testing

Unit-IV

 What is OOP. What are the differences between testing a procedural software and an object oriented software? List the tools used for testing of object oriented testing. (4+6+6=16)

OR

- 4. a) What is usability testing?
 - b) When do we implement usability testing and explain the quality factor for usability?
 (6)
 - c) Discuss the various tools for usability.

Unit-V

5. a) What are test matrices? Explain its types with examples.

(10)

(6)

(8+8=16)

(4+4=8)

(4)

b) Explain test planning and when should you begin it explain.

OR

(6)

5. Describe the test process reporting. What is scope of automation? (16)

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Maximum Marks : 80 Min. Passing Marks : 26

[Contd...

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

1.	a)	examples.	table (8)
	b)	Write the merits of compression Techniques.	(8)
		OR	- 1
1.	a)	Explain the Derivation of average information.	(8)
	b)	Explain Huffman codes for loss-less image compression.	(8)
		Unit-II	
2.	a)	What is JPEG-LS? Write down its algorithm.	(8)
	b)	Explain LZ77 in detail.	(8)
		OR	
2.	a)	What is Burrows-Wheller algorithm?	(8)
	b)	Explain T.4 and T.6 in detail.	(8)
		Unit-III	
3.	a)	Explain LBG algorithm of vector quantization.	(8)
	b)	Explain uniform and non-uniform quantization.	(8)

3.	a)	Explain the Linde-Ruzo-Grey algorithm.	(8)
	b)	What is conditional entropy? Explain probability and linear system n detail.	nodels in (8)
		Unit-IV	(-)
4.	a)	Write short note on DWHT.	(6)
	b)	Explain speech and image coding in detail.	(10)
		OR	
4.	a)	What is differential encoding? Explain adaptive DPCM in detail.	(10)
	b)	Write short note on DST.	(6)
		Unit-V	
5.	a)	Discuss the role of OMF in Sub-Band Coding.	(8)
	b)	Write down the application of G.722	(8)
		OR	
5.	a)	Implement scaling function using filters.	(8)
	b)	Explain about filter Banks.	(8)

OR

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	Roll No [Total No. of Pa	ges : 2
8161	8E8161	
	B.Tech. VIII Semester (Main) Examination, April/May-2017	7
G	Computer Science & Engineering	
8	8CS1A Mobile Computing	
	Common with 8IT4.1	LA.

Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

- 1. a) What is mobile computing? Write down the applications of mobile computing. (8)
 - b) What is adaptation in mobile computing? Explain mechanism of adaptation.

OR

- 1. a) What is mobility management? Explain location management principle and techniques. (10)
 - b) Explain energy efficient indexing on air.

Unit-II

- 2. a) What is Data dissemination? What issues facing in data dissemination? (6)
 - b) Describe caching management in mobile and cache management schemes.

(10)

(10)

(6)

(8)

(6)

OR

- 2. a) What is mobile middleware? How is it being used? What are its benefits?
 - b) Explain bandwidth allocation for publishing.

Unit-III

3. a) What is services discovery and standardization method? Explain in d			in detail.
			(10)
	b)	Briefly explain Eventing.	(6)
		OR	(0)
3.	a)	Explain middle ware for application development. Also explain challenges.	middle ware
	b)	Write a short note on .	(8)
		i) Service catalogg	(2×4=8)
		i) Cred 11	
		II) Garbage collection	
		Unit-IV	
4.	a)	What is mobile environment? Explain database system in mobile environment?	nvironment.
	b)	What is mobile IP? Explain how mobile IP	(0)
	-,	that is moone if . Explain now mobile IP work in detail.	(8)
		OR	
4.	a)	Explain the system architecture of world wide web.	(6)
	b)	What is the difference b/w stateful and state less protocol?	(4)
	c)	Write a short note on mobile TCP.	(4)
		Unit-V	(
5.	a)	What is Ad-Hoc Network? What are the main issues of MAC p adhoc network?	rotocol for
	b)	What is Routing protocol? Explain DSD in data it	(6)
		and a resulting protocol: Explain DSR in detail.	(10)
=		OR .	
5.	a)	demand distance and Re-active routing protocols? Explain	AdHoc on
	1.5	uchand distance vector routing.	(12)
	6)	What are applications of Ad Hoc Network?	(4)
			(-)

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(2)



Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

1.	a)	Define the image. Explain the steps of digital image processing with suitable diagram. (8)
	b)	Explain the applications of digital image processing. (8)
		(OR)
1.	a)	Explain image sensing and acquisition. (8)
	b)	Explain color vision model with example. (8)
		Unit-II
2.	a)	What do you understand by Histograms processing. Explain its specifications.
		(8)
	b)	What is spatial filtering? Define spatial correlation and convolution with an examples. (8)
		(OR)
2.	a)	Explain the properties of Fourier transform in detail. (8)
	b)	Write a short notes on : (8)
		i) Colour transforms
		ii) Wavelet transforms

(1)

		Unit-III	
3.	a)	Explain image degradation and restoration process.	(10)
	b)	Explain noise and inverse filtering.	(10)
		(OR)	(•)
3.	De	sign Homo morphic filtering. How do we get back the modified image?	(16)
		Unit-IV	
4.	a)	Describe Lossy compression techniques.	(10)
	b)	Explain Huffman coding with example.	(6)
		(OR)	(-)
4.	Wr	ite a short notes on (any two) :	(16)
	a)	Interpixel redundancy	()
	b)	Psychovisual redundancy	
	c)	JPEG compression	
	d)	Coding redundancy	
		Unit-V	
5.	a)	Explain edge detection in detail.	(8)
	b)	Explain region based segmentation with suitable example.	(8)
		(OR)	(0)
5.	a)	Explain hough transforms.	(8)

b) Explain about thresholding. (8)

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	Roll No [Total No. of Pages : 2
3	8E8163
816	B.Tech. VIII Semester (Main/Back) Examination, April/May-2017
E	Computer Science & Engineering
∞	8CS3A Distributed Systems

Maximum Marks : 80

Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

1.	a)	State and explain the challenges of distributed system.	(10)
	b)	Explain Architecture models.	(6)
	-	OR	
1.	a)	Define the term distributed system and explain with two examples.	(6)
	b)	What is theoretical issues in distributed system?	(6)
	c)	Explain Distributed Computing Environment (DCE).	(4)
	-,	Unit-II	
2.	Dis	scuss the design and implementation issues in Remote Method Invocation	on. (16)
		OR	
2.	a)	Discuss the detail about communication and invocations	(8)
-	b)	Where do you need RPC? Explain with suitable example.	(8)
	-,	Unit-III	
3.	a)	Classify the type of transparency that a distributed file system should s	upport? (8)
	b)	What is distributed process implementation and also explain static scheduling with communication.	process (8)

 $(2 \times 8 = 16)$

(10)

- Write short note on (any two): 3.
 - General parallel file system and window's file system a)
 - Andrew and coda file systems b)
 - Sun network file system c)

Unit-IV

- Explain how mutual exclusion is handled in distributed system? (8) 4. a) (8)
 - What is the implementation of DSM system? b)

OR

- Describe mechanism for deadlock detection in distributed system. (6) a) 4.
 - What is Dynamic distributed manager algorithm and also explain Thrashing? b)

Unit-V

a)	Define Byzantine agreement problem with its solution. What do ye	ou mean by
	agreement protocol?	(8)
b)°	Discriminate passive replication and active replication.	(8)
	OR	
Wri	ite short notes on (any two).	(2×8=16)

- 5. Write short notes on (any two):
 - Atomic Multicast a)
 - CORBA RMI b)

5

- Failure and Recovery in DS c)
- **Byzantine faults** d)

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Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable by assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

1.	a)	What is the history of VHDL?	(8)
	b)	What are the five design constructs of VHDL? Explain briefly.	(8)
		OR	
1.	a)	Explain briefly various types of data-types in VHDL?	(8)
	b)	Explain briefly various types of operators in VHDL.	(8)
		Unit-II	
2.	a)	Write a program of 4:1 multiplexer in VHDL?	(8)
	b)	Write VHDL program of binary to grey convertor with diagram.	(8)
		OR	
2.	a)	Draw and explain BCD to 7-segment display decoder with diagram.	(8)
	b)	Write VHDL program of 2 to 4 decoder with diagram.	(8)
		Unit-III	
3.	a)	Write VHDL program of JK flip flop with diagram.	(8)
	b)	Write VHDL program of D flip flop with diagram.	(8)

OR

3.	a)	Write VHDL program of 4-bit shift register with diagram.	(8)
	b)	Draw and explain sequential circuit with diagram.	(8)
		Unit-IV	
4.	a)	What Finite State Machine (FSM)? Explain mealy and moore type FSM (44)	∕I. ⊦4=8)
	b)	Design a synchronous sequential circuit using D flip flop for sequence det that detect the occurence of particular pattern on its input and that fo below condition :	tector, ollows (8)
		- One input w, one output z, circuit and positive edge triggered,	
		- The output $z = 1$, if during two immediate preceding clock cycles the 'w' was equal to 1, otherwise $z = 0$?	input
		OR	
4.	a)	Write VHDL code of serial adder.	(8)
	b)	Explain vending machine using state diagram and block diagram.	(8)
		Unit-V	
5.	a)	Draw and explain CPU organization and its design concepts.	(8)
	b)	Draw and explain clock synchronization.	(8)
		OR	
5.	a)	Draw the schematic diagram for the data path circuit for the sort operat	tion.
			(8)

b) What is memory organization? Draw a diagram of a single SRAM cell. (4+4=8)

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	[Total No. of Pages :]
88	8E4088
40	B. Tech. VIII Semester (Back) Examination, April/May - 2017
8E	Electronics & Communication Engg.
~	8EC1 Computer Network

: 5 Hours

Maximum Marks : 80

Min. Passing Marks : 26

Instructions to candidates :

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit - I

- 1. State and explain little's theorem for Queuing system in detail. a) (10)
 - A rural telephone exchange usually experiences four calls originates per minutes b) evaluate the probability that exactly 8 calls occur in 30 sec. interval. (6)

OR

1.	a)	Explain pure birth and pure death process.	(10)

Explain the Mathematical Model for M/M/I/K Queues. b) (6)

Unit - II

2. Explain the stop and wait protocol and also discuss the piggy backing method. a) (8)

Explain in brief the concept of framing. What are the different framing methods? b)

(8)

(8)

OR

- 2. What is HDLC and also explain frame structure and frame types in HDLC. a)
 - Draw the following reference Models used in computer communication. (8) b)
 - OSI Model i) TCP/IP Model ii)

Unit - III

3.	a)	Measurement of slotted ALOHA channel with an infinite number of users show that 20% slots are idle. $(3 \times 4=12)$
		i) What is the channel load?
		ii) What is the through put?
		iii) Is the channel under load or overload? Show with graph.
	b)	Define Fiber Distributed Data Interface (FDDI). (4)
		OR .
3.	a)	Consider Building a CSMA/CD network running at 1 Gbps over a 1km cable with no repeaters. The signal speed in the cable is 2,00,000 km/sec. What is the minimum frame size. (12)
	b)	Explain the different types of channel allocation problem. (4)
		Unit - IV
4.	a)	Write short note on Adaptive and non-adaptive routing algorithm. (8)
	b)	An address in a block is given as 73.22.17.25. (8)
		i) Find the total number of address in the block.
	inna:	ii) First and last address.
		OR
4.	a)	Write short note on : $(2 \times 4 = 8)$
		i) OSPF ii) BGP
	b)	A company is granted a site address 201.70.64.0 the company needs six subnets. Design the subnets. (8)
		Unit - V
5.	a)	What is the difference between open-loop congestion control and closed loop congestion control? (8)
	b)	What is ATM architecture? Where it is used? Describe various switching fabrics used to the route the cell from a source end point to the destination end point. (8)
		OR
5.	a)	Explain clearly the AAL protocol AAL- Type 1. (8)
	b)	Write short note on (8)
		i) B- ISDN ii) Frame Relay

8E4088

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		[Total No. of Pages :] 3
89	8E4089	
40	B. Tech. VIII Semester (Old Back) Examina	ation, April/May - 2017
8H	Electronics & Communication	Engg.
	8EC2 Radar & TV Engineer	ing

Maximum Marks : 80

Min. Passing Marks : 26

Instructions to Candidates :

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

- 1. a) Sketch the block diagram of MTI RADAR with power amplifier transmitter and explain the function of each block.
 - b) Briefly describe the method of lobe switching. How is conical scanning improved over lobe switching?

OR

- a) What are pulse compression techniques? Explain them with their merits and demerits.
 - b) What is meant by blind speed in a MTI RADAR? What is the effect of blind phase on i) I-channel ii) Q-channel in MTI RADAR?

Unit - II

2. a) Explain:

1.

- i) Principle of operation of RADAR direction finder.
- ii) Block diagram of DME.
- b) Give the applications of LORAN system also explain how the range is increased.

8E4089 /2017

- 2. Write short note on :
 - a) Air craft tracking systems.
 - b) TACAN System.

Unit - III

- 3. a) Justify the need for pre and post equalizing pulses? Why is it necessary to keep their duration equal to the half line period.
 - b) Sketch composite video signal wave forms for at least three successive lines and indicate :
 - i) Extreme white level
 - ii) Blanking level
 - iii) Pedestal hight
 - iv) Sync pulse level

Also justify the choice of p/s ratio = $\frac{10}{4}$ in the composite signal.

OR

- **3.** a) What are the main features of PAL system? How does cancellation of phase error occur in the above system? Explain.
 - b) Explain with the help of suitable sketches, how video signal is developed in a vidicon camera tube? How is the vidicon different from an image orthicon and what are its special applications.

Unit - IV

- **4.** a) What is VSB transmission and why is it used for transmission of TV picture signal? Write demerits of VSB transmission.
 - b) Draw block diagram of TV transmitter and label its various sections, and explain the function of each block.

4. a) Explain following :

1

- i) Compatibility of colour and monochrome TV system.
- ii) Chrominance modulation.
- b) Explain the functions of :
 - i) Colour killer.
 - ii) Colour matrix.

Unit - V

- 5. a) Sketch the circuit diagram of vertical sync separator and explain its working.
 - b) Draw complete block diagram of a monochrome TV receiver and discuss briefly each section of the receiver indicating the various waveshapes at the input and output of each block of the receiver.

OR

- 5. a) Briefly discuss basic idea of HDTV.
 - b) Write short notes on :
 - i) Common faults and their diagnosis in TV receiver.
 - ii) DBS TV.

8E4089

	Roll No [Total No. of Pages : 2
6	8E4090
0	B.Tech. VIII Semester (Old/Back) Examination, April/May - 2017
E E	Electronics & Communication Engg.
81	8EC3 (O) Optical Communication

Maximum Marks : 80 Min. Passing Marks : 26

Instructions to the Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities, used/calculated must be stated clearly.

Unit - I

l.	a)	Explain the difference between single and multi mode fibers in detail?	(8)
	/		

b) What is difference between Intra model dispersion and Inter model dispersion?

(8)

 $(4 \times 2 = 8)$

[Contd....

OR

- a) Explain Plasma Activated chemical Vapor deposition (PEVD) process for optical fiber manufacturing and what are the merits of PEVD? (8)
 - b) Define :

i)

- Snell's law ii) Acceptance angle
- iii) Numerical aperture iv) acceptance cone.

Unit - II

- a) Compare the properties of LASER diode and Light emitting diode (LED) used for optical communication?
 (8)
 - b) Explain the population inversion and single mode process in LASER? (8)

OR

- a) Explain necessary requirements of an optical sources used for the purpose of optical communication? (8)
 - b) What is the difference between a surface emitting LED and an edge emitting LED? (8)

8E4090 /2017

Unit - III

3. a) Explain the quantum efficiency and responsivity of a photodiode. Dete the wavelength at which quantum efficiency and responsivity are equal			
	b)	Write applications of Avalanche photo diode (APD)? (6)	
		OR	
3.	a)	Define the following : $(4 \times 2 = 8)$	
2		i) Dark-current noise	
		ii) Thermal noise	
		iii) Signal to Noise ratio (SNR) in APD (Avalanche photodiode)	
		iv) Noise equivalent power (NEP)	
	b)	Write advantages and disadvantages of Avalanche photodiode? (8)	
		Unit - IV	
4.	a)	Explain various types of splices with neat diagram in fiber communication? (8)	
	b)	Explain various types of optical couplers? (8)	
		OR	
4.	a)	Explain Losses in couplers? (8)	
	b)	Explain four basic components used in optical connectors? (8)	
		Unit - V	
5.	a)	What are the methods of refractive index measurement explain one of them? (8)	-
	b)	Explain the method (any one) of Numerical Aperture (NA) measurement? (8)	
		OR	
5.	Wr	ite short note on (any two): (8+8=16)	
	i)	Fiber attenuation.	
	ii)	Fiber dispersion.	
	iii)	Frequency domain measurement in optical fiber.	
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8E4090

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Unit-III

3.	a)	Explain the physical significance of chemical equilibrium and the law of mass action. Discuss the phenomena by taking an example. (12)
	b)	What are the possible defects that could occur in an epitaxial growth. (4)
		OR
3.	a)	Explain the process of Molecular Beam epitaxy in detail. Discuss the utility of khudcell with diagram. (10)
	b)	Draw the hot wall reactor and cold wall reactor of LPCVD. (6)
		Unit-IV
4.	a)	Define the term lithography and optical lithography. Explain the process of projection printing. (8)
	b)	What are the types of photoresist and their chemical composition? Describe the growth system for DQ photo resist and ketone formation. (8)
		OR
4.	a)	Explain the process of reaction Ion etching with suitable diagram. (10)
	b)	Draw the flow chart of Mask generation. (6)
	•	Unit-V
5.	a)	What are the fundamental consideration for IC processing? (8)
	b)	Draw the processing steps of NMOS IC technology. (8)
		OR
5.	Wri	te short note on : (2×8)

- a) LOCOS method
- b) Metallization and planarization

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Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable by assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

1.	a)	List out the steps of EGS preparation with suitable diagrams. How	will you
		recover mel and unemorosnane.	(12)
	b)	Discuss about getting treatments.	(4)
	X	OR	
1.	a)	Explain silicon shaping and wafer preparation.	(8)
	b)	Draw the czochralski growth reactor.	(4)
	c)	Discuss 4 point probe technique for resistivity measurement.	·(4)
		Unit-II	
2.	a)	State and explain pick's first law and second law.	(8)
	b)	Draw and explain linear and parabolic rate co-efficient.	(8)
		OR	
2.	a)	Define the term diffusion.Explain Ion implantation system with diagrams.	suitable
	1.	11/1	(12)
	D)	what are oxide properties?	(4)

(1)

8E8021/2017

 Total No. of Pages : 3

 Total No. of Pages : 3

 8E8022

 B. Tech. VIII Semester (Main/Back) Examination, April/May - 2017

 Electronics and Communication Engg.

 8EC2A Radar and TV Engineering

Time : 3 Hours

1.

2)

Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

What is Radar? Draw the next and aloon black it

4)	what is Radar. Draw the near and clean block diagram of Radar.	(4)	
b)	Write Radar frequency bands and application of Radar. Explain with examp	le.	
		(4)	
c)	Explain the working of LORAN system.	(6)	
d)	When a CW transmitter has 10 GHz frequency, calculate the Doppl frequency, seen by the stationary Radar. Target radial velocity is 250 km/h	ler ?	
		(2)	

(**OR**)

- a) A radar operating at 12GHz, has a maximum range of 45km with an antenna gain of 5dB. If the transmitter has a power of 300kw and minimum detectable signal is 2×10⁻¹³ watt. Calculate Radar cross section of target. (4)
 - b) Explain microwave landing system using neat and clean diagram. (8)
 - c) Write short note on Radar display.

Unit-II

- a) Draw the block diagram of Monochrom TV transmitter and explain each block.
 (8)
 - b) What is the limitation of NTSC system and how it is overcomes in PAL system? Explain the PAL system. (8)

8E8022/2017

[Contd....

(4)

		(OR)	
2.	a)	Explain plumbicon camera tube with its constructional diagram.	(6)
	b)	Draw the waveform of composite video signal and write the significance	of (6)
¥2		i) Pedestal height	
		ii) Horizontal sync. pulse	
	c)	What is Flicker problem and how is it overcome?	(4)
		Unit-III	
3.	a)	What is vestigial sideband transmission and why it is used for transmission TV picture signals?	1 of (8)
	b)	What do you understand by compatibility in TV transmission?	(5)
	c)	Define Luminance, Hue and saturation.	(3)
		(OR)	
3.	a)	Explain how the 'y' and colour difference signals are developed from cam outputs? Why is the 'y' signal set (5+3=	era =8)
		" $y = 0.3 R + 0.59G + 0.11B$ "?	
	b)	Describe briefly the different type of TV transmission and reception antenn with constructional diagram.	as, (8)
		Unit-IV	
1.	a)	Draw the circuit diagram of direct coupled video amplifier and explain main features. (4+4=	its =8)
	b)	What are the advantages of using AGC in television receivers?	(8)
		(OR)	
۱.	a)	Explain the use of (3×4=1	2)
<u>8</u> 8		i) R.F Tuner,	

ii) Video detector,

iii) Deflection oscillator and

- EHT generation in TV receiver. iv)
- Compare HDTV with normal TV receiver in terms of complexity and picture b) quality. (4)

8E8022

3.

3.

4.

4.

(2)

Unit-V

5.	a)	Compare the analog TV and digital TV.	(8)
	97		

b) Explain the transmission of TV signal through satellite and transponders. (8)

(8+8=16)

(OR)

- 5. Write short note on :
 - a) DTH and cable TV
 - b) IPTV and DBS-TV



Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit-I

1.	Explain Methods of Synthesis of Nano particles in details. (16)
	OR
1.	a) Discuss Various Wall Structure of Carbon nano tube with suitable diagram.
	b) Explain Single Fl. (8)
	b) Explain Single Electron tunneling and its Current voltage Characteristics. (8)
	Unit-II
2.	Explain following Si processing methods (any two): (16)
	a) Etching
	b) Gettering
4	c) CVD
	OR
2.	Write a note on Lithography. (16)
	Unit-III
3.	a) Explain SEM and TEM with functional and Schematic diagram (16)
	OR
3.	Explain NMR Spectroscopy and ESR Spectroscopy in details. (16)

[Contd....

Unit-IV

4. Explain the concept of quantum mechanics in quantum dots and explain nano sensors. (16)

OR

4. Explain one dimensional and two dimensional system in Quantum Mechanism.

(16)

(8)

(16)

Unit-V

5. a) Write short note on MEMS.

t

b) What do you mean by MEMS Packaging? Explain shortly (8)

OR

5. Write an essay on Application of MEMS in various fields.

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Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

 In M/M/1 queuing system calculate average waiting time of packet in the queue (Time until the start of service to the packet).
 (4)

- Draw state transition diagram for M/M/m/m queuing system. Write flow balance equation for the given queue.
 (6)
- ii) What is the queuing model? How you characterize queuing model? (6)

(OR)

1. Explain little's law with an example.

i) Describe pure birth and birth-death processes with the help of suitable example.

ii) Explain Kendalls Notation in detail.

Unit-II

What is TCP/IP model? Explain the functions, and protocols and Services of each layer? Compare it with OSI model. (16)

(4)

(8)

(4)

- a) Discuss the principal of stop and wait flow control algorithm. Draw time line diagram and explain how loss of a frame and loss of an ACK are handled. What is the effect of delay-bandwidth product on link utilization. Differentiate it with sliding window protocol.
 - b) What are the disadvantages of circuit switching? Compare it with packet switching in detail. Also write, which of these switching you prefer for telephone networks and why?
 (8)

Unit-III

- a) What is pure ALOHA and slotted ALOHA? Compare both. Consider the delay of both at low load, which one is less? Explain your answer. (8)
 - b) Explain the token passing technologies used in FDDI. How are new tokens generated on FDDI network? What advantages does this method have when adding and deleting stations to/from the network of when error occurs. (8)

(OR)

- 3. a) Explain in detail CSMA/CD protocol and comment on its performance for medium access. How it detect collision
 - b) How does ATM differ from relay? Explain the ATM layered architecture in detail.

(8)

(8)

(8)

Unit-IV

- 4. a) What is the difference between adaptive and non adaptive algorithm? Explain each algorithm briefly.
 (8)
 - b) Explain OSPF and types of links defined by OSPF.

(OR)

- 4. a) Explain IPV6 fixed header. Also explain the various extension headers used in IPV6.
 (8)
 - b) What are ARP and RARP explain in detail?

Unit-V

- 5. Answer the following questions associate with congestion control. $(4 \times 4 = 16)$
 - i) Differentiate between token bucket and leaky bucket algorithm.
 - ii) Describe all the parameters used in flow specification technique.
 - iii) Rate based congestion algorithm.

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2.

iv) Choke packets and jitter control.

(OR)

- a) Discuss the need of name resolution. Illustrate the domain name hierarchy and the steps in resolution. (8)
 - b) Describe the message format and the message transfer and the underlying protocol involved in the working of the electronic mail. (4)
 - c) Let the value of the RTT (Round Trip Time) is to be measured. The value of previous RTT be 350 μ sec. Let the value of L be 90% calculate the new RTT. Hence calculate the transmission time. Assume it takes segment at this moment to be acknowledgment in 90 μ s. (4)



	Roll No [Total No. of Pa	iges : 3
44	8E8044	
80	B.Tech. VIII Semester (Main/Back) Examination, April/May - 2	2017
E	Electrical & Electronics Engineering	No. N.
00	8EX4.1A Utilization of Electrical Power	

Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

- a) Explain the principle of "Dielectric heating". Derive the mathematical expression of power consumed in such process. State important applications of dielectric heating.
 (8)
 - b) Discuss advantages and disadvantages of electric heating over conventional methods. Briefly describe different methods of electric heating. (8)

(OR)

- 1. a) Describe with neat sketches the various methods of electric resistance welding. Give its merits or demerits with respect to arc welding. (8)
 - b) Write short note on following :

 $(2 \times 4 = 8)$

- i) Electric supply for arc welding
- ii) Welding Transformer

Unit-II

- a) Discuss the laws of illumination. Also explain the construction and working of high pressure mercury vapour discharge lamp. (8)
 - b) Two lamp posts are 16m apart and fitted with a 100cp lamp each at a height of 6m above ground. Calculate the illumination on ground (a) Under each lamp (b) Midway between the lamps.
 (8)

- a) Explain the working of fluorescent tube with the help of the circuit diagram giving the function of various parts. How stroboscopic effect is eliminated in florescent tube lighting?
 - b) The front of a building 50m × 16m is Illuminated by sixteen 1000W lamps arranged so that uniform illumination on the surface is obtained. Assuming a luminous efficiency of 17.4 Lomens/watt and a coefficient of utilization of 0.4, determine the illumination on the surface.

Unit-III

- a) Explain the term "polarization"; "throwing power", and "electro-deposition". How are zinc and copper refind from their base metals electrically? (8)
 - b) Discuss the objectives of electroplating and describe any one process for electroplating.
 (8)

(OR)

- a) List the major applications of electrolysis. Explain the basic principle of electro deposition. Discuss in detail the power supply requirements for different electrolytic processes.
 - b) What is meant by anodizing? Explain the process of anodizing and describe the equipments used for it.
 (8)

Unit-IV

- 4. a) Discuss the locations and layout of substations with regard to ac and dc systems of electric traction. (8)
 - b) Enlist the main components of electric locomotive and state their functions.

(8)

(**OR**)

- a) Discuss the suitability of DC series motor for its application in electric locomotives for traction duty. (8)
 - b) With the help of neat diagrams. Briefly explain any two of following :

 $(2 \times 4 = 8)$

- i) Pantograph
- ii) Negative booster
- iii) Interface effect of railway electrification on communication circuits

(2)

Unit-V

5. a) Draw and explain a typical speed-time curve for an electric train and explain what do you understand by crest speed, average speed, and schedule speed.

(8)

- b) An electric train has quadrilateral speed-time curve as follows : (6)
 - i) Uniform acceleration from rest at 2kmphps for 30 seconds.
 - ii) Coasting for 50 seconds
 - Braking period of 20 seconds The train is moving a uniform down gradient of 1%, tractive resistance 40 newtons per tonne, rotational inertia effect 10% of dead weight, duration of stop 15 seconds and overall efficiency of transmission gear and motor as 75%. Calculate its schedule speed and specific energy consumption of run. (8)

(**OR**)

- a) Discuss methods of electric braking in traction motors? Explain how regenerative braking can be obtained in dc locomotive. (8)
 - b) Write short note on any two of following :

 $(2 \times 4 = 8)$

- i) Mechanics of train movement
- ii) Tractive effort for propulsion of train
- iii) Dead weight, accelerating weight and adhesive weight of train.

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(3)

5.



Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

- 1. a) Give a classification of various types of amplitude and phase comparators.
 - b) Describe the construction and working of circulating current type and phasesplitting type amplitude comparator. (10)

OR

- a) Draw the neat figure of coincidence type phase comparator and describe its working.
 (6)
 - b) Draw the block diagram and explain working of static directional over current relays. (10)

Unit-II

2. Describe how a two-input phase comparator relay depending on inputs can function as a static distance relay and draw the relevant figures in realizing this relay and to represent the various parameters waveforms for this relay. (16)

OR

2. Describe how rectifier bridge amplitude comparator depending on inputs can function as a static differential relay and draw the relevant diagrams. Also mention the advantages and application of static differential relay. (16)

(6)

Unit-III

- 3. a) Describe the basic scheme of power line carrier scheme. (6)
 - b) Explain the principle of operation of carrier assisted distance protection. Draw relevant diagrams for this. (10)

OR

3. a) Explain how the performance of distance relay is affected by power swings.

(6)

b) Describe and explain "out of step tripping" and "blocking relays" purpose and working. (10)

Unit-IV

4. Explaining electric arc characteristics, describe the principle and details of "recovery rate" and "energy balance" arc interruption theories. (4+6+6)

OR

Define restriking voltage and recovery voltage. Explain the phenomenon when circuit breaker tries to switch out an unloaded transformer. Also describe the principle of working of minimum and air circuit breakers. (4+6+6)

Unit-V

Explain various ratings of circuit breakers and criteria for selection of type of various circuit breakers for various purposes and voltage ranges. Describe the principle and working of vaccum circuit breakers. (5+5+6)

OR

Explain how the digital protection is realized in transformer differential and transmission line distance protection. Draw the typical block diagrams for these and explain main blocks. (5+5+6)

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Maximum Marks : 80 Min. Passing Marks : 26

(8)

Instructions to Candidates: '

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

- 1. a) What is role of renewable energy sources in present time for our country? (8)
 - b) What are the advantages and limitations of "tidal power generation"? (8)

OR

- a) Mention the various conventional energy sources. Also write a short note on each source. (2+6=8)
 - b) Discuss the prospects of tidal energy in India.

Unit-II

- a) Explain the construction and working of a flat plate collector. Discuss the material used for different parts of flat plate collector. (6+2=8)
 - b) Discuss different components of a basic solar power plant. What are its advantages over conventional power generation. (5+3=8)

OR

- 2. a) Enumerate the different types of concentrating type collectors. Describe a collector used in power plant for generation of electrical energy. (2+6=8)
 - b) Explain the following terms related to solar radiation geometry :

Declination, Hour angle, Attitude angle, Zenith angle, Surface Azimuth angle, Solar Azimuth angle, day length, Local Appearent time. (1×8=8)

Unit-III

- Describe with neat sketch working of a geothermal power plant. (8) a) What is the maximum efficiency of conversion of wind machine? Discuss its b) (3+5=8)principle of conversion. OR Describe basic components of a wind energy conversion system. Write their a) (4+4=8)functions. How geothermal energy is useful for application point of view. (4) b) i) (4) Write the advantages of geothermal energy. ii) Unit-IV What is fusion reaction? What are the main fusion reactions? Which one is a) (2+2+4=8)the most favourable reaction for power generation and why? What are the advantages and disadvantages of using nuclear fusion for power b) (8) generation? OR Describe various methods of Plasma confinement. a) (8) Describe with neat sketch the working of laser fusion reactor. (8) b) Unit-V
- a) Explain the construction details and working of floating gas holder type bio gas plant. (4+4=8)
 - b) What is biomass? Explain the thermo-chemical conversion technologies of biomass. (2+6=8)

OR

- 5. a) Explain the construction and operation of Dean Bandhu biogas plant.
 - (4+4=8)
 - (4+4=8)

i) Pyrolysis scheme

Write short note on :

ii) Ethanol production

7. 7. 7. 7

b)

3.

3.

4.

4.

(2)



Maximum Marks : 80

Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable by assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

- a) Estimate the corona loss for a 3\$\overline\$, 110kV, 50Hz, 150km long transmission line consisting of three conductors each of 10mm diameter and spaced 2.5m apart in an equilateral triangle formation. The temperature of air is 30°C and the atmospheric pressure is 750mm of mercury. Take the irregularity factor as 0.85. Ionization of air may be assumed to take place at a maximum voltage gradient of 30kv/cm.
 - b) Explain how the power handling capacity of EHV lines (AC) can be calculate? (8)

OR

- a) What is the need of EHV transmission and what are the problems associated with it? (8)
 - b) Describe in brief the surge impedance loading of a transmission line. (8)

1.

- a) Two generators are rated at 200MW and 400MW are operating in parallel. The drop characteristics of their governor are 4% and 5% respectively from no load to full load. The speed changer are so set that the generator operates at 50Hz sharing the full load of 600MW in the ratio of their rating. If the power reduce to 400MW how it will be shared among the generator and what will be the system frequency? Assume free governor operation.
 - b) Draw schematic diagram of a speed governing system to control the real power flow in the power system and briefly explain it. (8)

OR

- a) Explain flat tie line load control and the line load bias control method of load frequency control for the interconnected power system.
 (8)
 - b) Explain the two-area load frequency control with the help of block diagrams. (8)

Unit-III

- 3. a) What is shunt compensation? What is the role of shunt compensation in power system? How it is different from series compensation? (8)
 - b) Explain the various conventional methods of voltage control along with advantages and disadvantages. (8)

OR

- 3. a) Briefly explain the various types of shunt reactors used to limit voltage rise. (8)
 - b) What is the role of reactive power on voltage and voltage regulation? What are the components which are responsible for generation and absorption of reactive power in the system.
 (8)

Unit-IV

- 4. a) What are the benefits of using FACTS devices? Give the types of FACTS controllers and quantities/parameters being controlled by these. (8)
 - b) Explain static VAR compensator with the help of schematic diagram. (8)

OR

- 4. a) Draw and explain the V-I characteristics of the STATCOM. (8)
 - b) With the help of characteristics curves explain the operation of TCSC. (8)

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Unit-V

- a) What is ground return? What are the problems associated with the use of ground as the return conductor? (8)
 - b) An existing Sφ, double circuit AC lines is to be converted to three-circuit DC line. Assuming the same insulation level and unity power factor in the AC systems. Show that : (8)
 - i) the ratio of power transmitted by DC to that by AC is equal to $\sqrt{2}$ and

(8)

(8)

ii) the ratio of % loss by DC to that by AC is equal to $\frac{1}{\sqrt{2}}$.

OR

- 5. a) Explain briefly the various types of DC link used for HVDC transmission.
 - b) Draw and explain converter control characteristics.

1.1.1.1

5.



Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

- 1. a) What are the advantages and disadvantages of electric drives. (4)
 - b) Explain the operation of a closed-loop speed control scheme with inner current control loop. What are various functions of inner current control loop? (12)

(OR)

- 1. a) Explain the four quadrant operations in motor.
 - b) Derive the mathematical expression for steady state stability of equilibrium point. (8)

Unit-II

- 2. a) Explain electric braking for D.C. separately excited motor, with suitable connection diagrams and speed torque curves. (12)
 - b) Explain the dynamic braking for D.C. series motor. (4)

(8)

(OR)

- a) Discuss operation of a dual converter in different modes, feeding a separately excited dc motor drive.
 (8)
 - b) Explain working of current control loop and speed control loop for close loop control of separately excited D.C. motor drive.
 (8)

Unit-I∏

- 3. a) Explain the stator voltage control for speed control of induction motor. Why this method suitable for fan and pump drives. (10)
 - b) What are the advantages and disadvantages of electrical braking? Explain plugging braking.
 (6)

(OR)

3. Explain the following braking in induction motor drives : $(2 \times 8 = 16)$

- a) Dynamic braking
- b) Regenerative braking

Unit-IV

- 4. a) Explain using a power circuit how the speed of an induction motor drive can be controlled by using current source inverter. (10)
 - b) Compare CSI fed induction motor drive with VSI fed drive. (6)

(OR)

- 4. a) Explain static rotor resistance control in closed loop speed control. (8)
 - b) Draw and explain a closed-loop operation for a static Kramer controlled drive. (8)

Unit-V

- 5. a) Explain the power factor control of synchronous motor drive. (6)
 - b) Explain the braking of synchronous motor with VSI. Draw the speed torque characteristic for regenerative braking. (10)

(OR)

- 5. a) Explain the control of synchronous motor using current source inverter. (8)
 - b) Explain the control characteristics of an open loop V/f controlled synchronous motor.
 (8)



(2)

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Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. Scientific Calculator

Unit-1

- 1. a) What do you understand by zone of protection? What are different characteristics of a relay? (4+4=8)
 - b) A potential transformer ratio 100/10 volt has the following constants : primary resistance = 94.5 Ω , secondary resistance = 0.86 Ω , primary reactance = 66 Ω , total equivalent reactance = 100 Ω , No load current = 0.02 at 0.4 power factor. Calculate : (8)
 - i) Phase angle error at no load,
 - ii) Burden in VA at unit power factor at which the phase angle will be zero.

(OR)

- a) Explain trip circuit of circuit breaker. What are the different types of circuit breaker used for protection of power system. (4+4=8)
 - b) A 200/5A, 50Hz current transformer has a secondary comparising a noninductive impedance of 1.6Ω . The primary winding has one turn. Calculate the flux in the core and ratio error of full load. Neglecting leakage reactance and assume the iron loss in the core to be 3.5w at full load. The magnetizing mmf. is 100AT. (8)

Unit-II

- 2. a) What do you mean by over current relay? Also explain the different types of over current relay.
 (8)
 - b) How the different directional over current relay connection are obtained? Neatly draw & explain the diagram for 30°, 60° and 90° connections.
 (8)

(OR)

- a) Explain construction, working and characteristics of HRC fuse. Also write an application advantages and disadvantages of HRC fuse.
 (8)
 - b) Explain earth fault relay. Explain time setting, plug setting and current setting of over current relay.
 (8)

Unit-III

- 3. a) A Generator is provided with restricted earth fault protection. The rating are 11kV,5000 kVA. The percentage of winding protected against phase to ground fault is 80%. The relay setting such that it trip for 25% out of balance. Calculate the resistance to be added in neutral to ground connection.
 - b) What is differential protection? What is percentage differential protection? Why it is superior to simple differential protection.
 (8)

(OR)

- a) The neutral point of a 10000V alternator is earthed through a resistance of 10Ω, the relay is set to operate when there is an out of balance current of 1A. The CT's have a ratio of 1000/5. What percentage of the winding is protected against fault to earth and what must be minimum value of earthing resistance to give 90% protection to each phase winding? (8)
 - b) Why restricted earth fault protection is provided to alternators through it leaves a portion of winding unprotected against earth fault. Can it be justified. (8)

Unit-IV

- 4. a) A 3 phase 200kVA, 10000/500V transformer is connected in delta-star. The CT's on low voltage side have turn ratio of 500/s. Determine the CT ratio on high voltage side. Also obtain the insulating current when the fault of 700A of following types occur on the low voltage side :
 - i) Earth fault within the protective zone
 - ii) Earth fault outside the protective zone. Assume balanced voltage.

(10)

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b) Draw and explain the construction and working of gas actuated relay. (6)

(2)

- a) What are the problem associated with transformer protection due to magnetizing inrush current? Describe the percentage biased differential relay protection scheme with harmonic restraints for transformer. (8)
 - b) What is the frame leakage protection of busbars? Discuss its principle and field of applications.
 (8)

Unit-V

- a) What are the different types of protection of transmission line? Explain three step distance time characteristics. (10)
 - b) Explain protection against single phasing failure in induction motor. (6)

(OR)

a) Explain the principle of operation of distance relay. Discuss the working, torque equation, operating characteristics of the following distance relay : impedance relay, Mho relay and reactance relay. (10)

(6)

b) Write a short note on :

i) Earth fault protection

ii) Negative sequence relay

5.



1

a)

Maximum Marks : 80 Min. Passing Marks : 26

Instructions to the Candidates:

What is now product and

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

		what is new product and explain the process of development of a new pro	duct?
	b)	Explain any two ·	(8)
		i) Market pull product	(8)
		ii) Technology push product	
		iii) Platform based product	
		(OR)	
1.	a) b)	What is the importance of new product for growth of the enterprise? What are the demands of product development team?	(8)
		Unit-II	(8)
2.	a)	What is need analysis? How it is completed.	(8)
	b)	Briefly explain the engineering statement of problem.	(8)
		(OR)	
2.	a)	Explain the economic existence of need.	(8)
	b)	Point out the location of target specification in concept development pro and explain the process of target specification.	cess (8)

Unit-III

- 3. a) Explain fear of criticism and psychological set in case of a new product. (8)
 - b) Explain Brain storming process of idea generation. What is inversion process.

(8)

(8)

(8)

(8)

(OR)

- 3. a) Discuss in detail concept generation.
 - b) How we establish engineering specification of a new product. Explain requirements and specification's role in system design. (8)

Unit-IV

- 4. a) What is design for manufacturing? Explain preparation of assembly drawing.
 - b) If you are a design engineer then specify the role of ergonomics and aesthetics while developing a new product. (8)

(OR)

+ .	a)	How can we identify subsystem? Explain subsystem specification.	(8)
	b)	Discuss any two :	(8)
		i) Simplification in design	

- ii) Standardization in design
- iii) Modular design

Unit-V

- What are the challenges faced in managing the development and launching of 5. a) a new product? Give example. (8) Discuss new product launch strategy. b) (8) (OR)5. Explain the following : a) (8) i) Project scheduling ii) Project task matrix
 - b) Briefly explain the organization of design team.

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	Roll No [Total No. of Pages : 2
64	8E4049
0́	B.Tech. VIII Semester (Back) Examination, April/May - 2017
E	Mechanical Engineering
20	8ME1 Renewable Energy Technology

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Maximum Marks : 80 Min. Passing Marks : 26

Instructions to the Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

- 1. a) Explain the principle of conversion of solar energy into heat. (4)
 - b) What is the basic theory of flat plate collector? What is the main component of flat plate collectors? Explain function of each with suitable diagram. (12)

(OR)

- 1. Write short note on :
 - a) Solar heating of buildings
 - b) Type of solar cells and fabrication
 - c) Photovoltaic applications

Unit-II

2. Write about :

- i) Factor influencing wind
- ii) Wind shear and turbulence
- iii) Wind spear monitoring and Blitz limits

(OR)

2. Explain basic components of WECS. Give its classification and characteristics. (16)

[Contd....

(16)

(16)

Unit-III

3.	a)	What is the principle of ocean thermal energy conversions system.	(4)
	b)	Write about the ocean thermal power plants. Describe one of them.	(12)
		(OR)	
3.	Wri	te short notes on :	(16)
	i)	Ocean energy routes	
	ii)	Principles of Ocean wave energy conversion	
	iii)	Principle and component of tidal energy conversion.	
		Unit-IV	
4.	a)	What are the geothermal energy resources? What are the advantage disadvantages of geothermal energy forms?	es and (8)
	b)	Discuss principle of MHD and classify MHD system. Describe one of in brief.	of them (8)
		(OR)	
4	2)	Write short notes on :	(8)
	""	i) Biomass resource and their classification	
		ii) Photosynthesis	10-1.1
		iii) Nuclear fission and fusion	
	b)	Explain biomass conversion process in short.	(8)
	0)	Unit-V	
		Will the the second electrochemical principles of fuel cell.	(6)
5.	a)	what is thermodynamic and electrochemical principles of fuel cell	(10)
	b)	What is basic design, type and application of fuer cent.	(10)
		(OR)	
5.	a)	Write note on hydrogen energy and its economies.	(8)
	b)	Describe briefly production methods of hydrogen energy.	. (8)

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Time : 3 Hours

Maximum Marks : 80 Min. Passing Marks : 26

Instructions to the Candidates:

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

- 1. a) Define productivity. Explain the various factors affecting productivity. (8)
 - b) Discuss the scope of operation management. What are the duties of operation manager in manufacturing industries? (8)

OR

- 1. a) What is demand forecasting? Explain the various methods of forecasting. (8)
 - b) Calculate forecast for 2016 by weight moving average (WMA) and simple moving average (SMA) using following data, (8)

2015	2014	2013
1050	1150	1250
1 2	2	3
	1050 1	2013 2014 1050 1150 1 2

- 2. a) Explain the various types of production system with suitable examples. (8)
 - b) What is process planning? Explain various steps followed in process planning.

OR

- a) Define capacity planning. Explain various steps followed in capacity planning process. (10)
 - b) Explain cost volume analysis in detail.

[Contd....

(8)

(6)

Unit - III

3.	a)	What are the objectives and functions of production planning? (6)
	b)	What is aggregate planning? Explain aggregate planning strategies. (10)
		OR
3.	a)	Explain the master production schedule with neat sketch. (8)
	b)	Explain MRP (Material requirement planning) and MRP-II (Manufacturing resources planning). (8)
	2	Unit - IV
4.	Exp	lain the followings in detail:
	a)	Routing. (4)
	b)	Scheduling. (4)
	c)	Expediting. (4)
	d)	Follow up. (4)
		OR
4.	a)	Explain the technique of production control in batch production and mass production. (10)
	b)	What are objectives and functions of production control system. (6)
		Unit - V
5.	a)	What is procurement of material? Explain various steps followed in procurement of material. (8)
	b)	Explain the objectives and functions of material management. (8)
		OR
5.	a)	What is inventory control system? Explain various inventory control system. (8)
	b)	A company buys it's annual requirement of 40000 units in 8 installments. Each unit cost is Rs. 2 and ordering cost is Rs. 30. The inventory carrying cost is estimated as 30% of unit value. Find the total annual cost of the existing inventory policy. How much money can be saved by the economic order quantity? (8)



Time : 3 Hours

Maximum Marks : 80 Min. Passing Marks : 26

Instructions to the Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

- a) What is the purpose of adding heat exchanger? Draw the schematic diagram of a simple cycle with heat exchanger & Explain briefly with P-V & T-S diagram.
 (8)
 - b) In an Ideal gas Turbine with reheat, air at state (P_1, T_1) is compressed to pressure rp_1 & heated to T_3 . The air is then expanded in two stages, each turbins having same pr. ratio, with reheat to T_3 between the stages. Assume working fluid to be perfect gas with constant specific heat & compression. Expansion are isentropic, then show that specific work output will be maximum. (8)

If
$$r = (t)^{2/3a}$$
 where $t = \frac{T_3}{T_1} \& a = \frac{\gamma - 1}{\gamma}$.

OR

- a) Derive the expression for specific work out put and efficiency of a simple cycle with Intercooler, heat exhange & reheat. Draw their trends as a function of pressure ratio.
 (8)
- b) In a gas Turbine the pressure ratio to which air at 15°C is compressed to 6. The same air is then heated to maximum temp. 750°C, First in a heat exchanger & then combustion chamber. It is then expanded in two stages such the expansion work is maximum. The air is reheated to 750°C after the first stage.

Determine the cycle thermal efficiency, work ratio $\left(\frac{W_N}{W_T}\right)$ & network per kg of air. (8)

2.

(1)

Unit - II

a) Define polytropic efficiency. Derive suitable expression for polytropic Efficiency & bring out the relation between the polytropic efficiency & Isentropic efficiency.
 (8)

- b) In a gas turbine plant air enters the compressor at 1 bar & 7°C it is compressed to 4 bar with an Isentropic efficiency of 82%. The maximum temperature at the inlet to the turbine is 800°C. The isentropic efficiency of the turbine is 85%. The calorific value of fuel used is 43.1 kj/kg. The heat losses are 15% of C.V. Calculate following.
 - i) Compressor work ii) Heat supplied
 - iii) Turbine work iv) Net work
 - v) Thermal efficiency vi) Air/Fuel ratio
 - vii) Specific fuel consumption viii) W_c/W_T

Assume $C_{pa} = 1.005 \text{ KJ/kg k}, \gamma_a = 1.4, C_{pg} = 1.147 \text{ kJ/kg k}, \gamma_g = 1.33.$

OR

(10)

4. a) Explain briefly :

3.

- i) Pressure & flow losses.
- ii) Effect of Variable Sp. heat.
- iii) Mechanical losses
- iv) Loss due to Incomplete combustion
- b) The efficiencies of compressor & Turbine of gas turbine are 70.42% & 71% respectively. The heat added in the combustion chamber per kg of air is 476 kJ/kg. Find suitable pressure ratio such that the work ratio is 0.055, also find the corresponding temp. ratio. The inlet total temperature of air is 300 k.(6)

Unit - III

- a) How the gas turbine engine is classified. Discuss Ramjet engine with neat diagram. Draw FS diagram, also draw performance Curves.
 (8)
 - b) Air enters a turbojet engine at a rate of 12×10⁴ kg/h at 15°C and 1.03 bar and is compressed adiabatically to 182°C & four times the pressure. Products of combustion enter the Turbine at 815°C and leave it at 650°C to enter the nozzle. Calculate isentropic efficiency of compressor, the power required to drive compressor, the exit speed of gases & Thurst developed when flying at 800 km/h. Assume Isentropic efficiency of turbine is same as compressor & nozzle efficiency is 90%.

5.

- 6. a) With a neat sketch & T-S diagram, explain working of turbojet engine. Also derive expression for thurst developed. (8)
 - b) Explain various efficiencies associated with a propoision device.

Unit - IV

- a) What are the factors which affecting the Combustion Chamber Design & (8)
 Performance.
 - b) With a neat sketch explain the combustion chamber geometry bringing out the various zones that play a part in the process of combustion. (8)

OR

- 8. a) Gas at 7 bar & 300°C. Expands to 3 bar in an impulse turbine stage, The nozzle angle is 70° with reference to exit direction. The rotor blades have equal Inlet and outlet angles, and the state operates with the optimum blade speed ratio. Assume that Isentropic Efficiency of the nozzles is 0.9. and velocity at Entry to the stage is negligible, deduce the blade angle used and mass flow required for this stage to produce 75kw, $C_p = 1.15 \text{ kJ/kg k.}$ (8)
 - b) How do you differentiate between Impulse & reaction turbine? With neat sketch Explain the working of impulse & reaction stage. (4)
 - c) Define degree of reaction & Derive an expression for the same. (4)

Unit - V

 $(4 \times 4 = 16)$

(8)

(8)

(8)

- 9. Write short note on :
 - a) Free piston engine plant.
 - b) Gas Turbine materials.
 - c) Gas Turbine blading & fuels.
 - d) Advantages of gas Turbine power plant.

OR

- 10. a) What are the methods for improving part load performance of gas turbine.
 - b) Describe following terms.
 - i) Part load efficiency.
 - ii) Air flow rate
 - iii) Thermal efficiency of gas turbine power plant.

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(3)

	Roll No [Total No. of Pages : 3
52	8E4052
240	B.Tech. VIII Sem. (Back) Examination, April/May - 2017
81	Mechanical Engineering
	8ME4.1 (O) Reliability and Maintenance Engg.

Maximum Marks : 80

Min. Passing Marks : 26

Instructions to the Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

- i) What do you mean by maintenance Engg. Explain its significance in 21st century. (10)
 - ii) What are corrective & preventive Maintenance? Explain it with a suitable example.
 (6)

OR

- 1. Write short notes on :
 - i) Breakdown.
 - ii) Time Based Maintenance.
 - iii) Scheduled Maintenance.
 - iv) Inspection Internals.
 - v) Inspection Reports.

(1)

(16)

Unit - II

2	. V n	What is Non Destructive Testing? Explain the types in detail. How it i naintenance Engineering.	s helpful in (16)
		OR	
2.	i)	Why it is necessary to track equipment wear records.	(8)
*	ii)	Explain total productive maintenance in detail.	(8)
		Unit - III	
3.	i)	Define Reliability? Explain with examples.	(8)
	ii)	How do you measure reliability? Also describe bathtub curve.	(8)
		OR	(-)
3.	i)	What is Hazard Rate? Also explain various hazard models.	(10)
	ii)	Explain Weibull probability chart with suitable example.	(10)
		Unit - IV	(0)
4.	Ex	plain pareto Analysis in detail with suitable example.	(16)
		OR	(10)
4.	Wr	ite short notes on :	
	i)	Series configuration.	(10)
	ii)	Parallel configuration.	
,	iii)	Mixed configuration.	
	iv)	Redundancy.	
	v)	Reliability optimization.	- - 10 - 1

8E4052

Unit - V

5.	Explain spare parts management in deta	ail with suitable examples.	(16)
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OR

5. Write short notes on :-

i) ABC Analysis.

ii) XYZ Analysis.

iii) VED Analysis.

iv) FSN Analysis.

8E4052

(16)

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	Roll No.		[Total No. of Page
71	8E8071		and an and and a
) 0	B.Tech. VIII Semester (Main/Back)	 Examinatio	n, April/May - 20
	Mechanical E	Engg.	1

Time : 3 Hours

Maximum Marks : 80 Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

1.	a)	Explain various types of manufacturing systems.	
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b) Explain Product cycle. Briefly outline various achievements in CAD/CAM.

(4+6)

(6)

OR

- a) Briefly explain various basic components of NC system. Explain the NC procedure for milling a part. (5+5)
 - b) Briefly explain economics of NC manufacturing over conventional manufacturing.
 (6)

Unit-II

2.	a)	Differentiate CNC, direct NC and combined CNC/DNC system.	(5)
	b)	Explain the various functions of CNC.	(6)

c) Write various R&D opportunities in the conventional NC system for developing the advance NC system.
 (5)

a) Write the part programme for milling the side surfaces of the part given below. Given data : Tool size = 0.25 inch, Feed rate = 6 inch per minute, Cutting speed = 300 rpm, Tool start position : 2.0, 2.0, Programming in inches. Motion of tool is along the path p0→p1→p2→p3→p4→p5→p1→p0. (8)



b) Explain various types of adaptive control systems. What are the various benefits of adaptive control systems? (4+4)

Unit-III

- 3. a) Explain information flow system in retrieval type CAPP system. Enumerate various benefits of CAPP. (4+4)
 - b) Write short note on computerized machinability data system and time standards. (8)

OR

3. a) Explain various parts classification systems. Explain various parts coding structures. (4+4)

(2)

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b) Explain OPITZ parts classification and coding system.

Unit-IV

- a) Explain the various functions of inventory management module of computer integrated production management system. Explain various configurations for process computer monitoring. (4+6)
 - b) Differentiate between Direct Digital and Supervisory computer process control system. (6)

OR

- 4. a) Explain photogrammetry and machine vision inspection methods. (8)
 - b) Explain various automated parts identification and data collection technologies.

Unit-V

- a) Explain various tests of flexibility in FMS. Also explain various types of flexibility in manufacturing. (4+4)
 - b) Explain various functions of computer control system in FMS. (8)

OR

5. a) Explain extended enterprise and concurrent engineering concepts. Explain the three aspects of autonomation in brief. (2+2+4)

(3)

b) Explain the various building blocks of lean manufacturing system. (8)

(8)

(8)

Roll No.

[Total No. of Pages : 2

ch. VIII

B.Tech. VIII Semester (Main/Back) Examination, April/May-2017

Mechanical Engineering

8E8072

8ME2A Laws for Engineers

Time: 3 Hours

8E8072

Maximum Marks : 80

Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

1. Discuss the Fundamental rights and fundamental duties of Indian constitution. (16)

OR

 Briefly enumerate the general principles of contracts under Indian contracts act 1872. (16)

Unit-II

- 2. Discuss the nature and concept of human rights. (16) OR
- 2. a) Discuss the workmen's compensation Act 1923. (8)
 - b) Write short notes on NHRC.

Unit-III

3. Briefly discuss the evolution and concept of right to Information Act, 2005. (16)

OR

- 3. a) Explain the meaning of intellectual property. Discuss its main forms. (10)
 - b) Write short notes on TRIPS.

8E8072/2017

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(8)

(6)

	Unit-IV	¥2
4.	Discuss the law relating to trade-mark under trademark Act 1999.	(16)
а ж	OR	
4.	What is a patent? Discuss the process of obtaining patent.	(16)
	Unit-V	
5.	Discuss the meaning, characteristics and types of a company.	(16)
	OR	
5.	Write short notes on election provisions under Indian constitution (Art 324	-329).
		(16)

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	Roll No	[Total No. of Pages : 3
73	8E8073	
80	B.Tech. VIII Semester (Main/Back) Examinati	on, April/May - 2017
G	Mechanical Engineering	
8	8ME3A Power Generation	

Maximum Marks : 80 Min. Passing Marks : 26

(6)

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Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

- a) A hydro-electric plant costs Rs 3000 per kW of installed capacity. The total annual charges consist of 5% as interest; depreciation at 2%, operation and maintenance at 2% and insurance, rent etc. 1.5%. Determine a suitable two-part tariff if the losses in transmission and distribution are 12.5% and diversity of load is 1.25. Assume that maximum demand on the station is 80% of the capacity and annual load factor is 40%. What is the overall cost of generation per kWh?
 - b) Prove that the load factor of a power system is improved by an increase in diversity of load.
 (6)

(OR)

- 1. a) What is meant by load curve? Explain its importance in power generation.
 - b) A power station has to meet the following demand : (10)

Group A: 200kW between 8 AM and 6 PM

Group A: 100kW between 6 AM and 10 AM

Group A: 50kW between 6 AM and 10 PM

Group A : 100kW between 10 AM and 6 PM and then between 6 PM and 6 AM Plot the daily load curve and determine :

- i) diversity factor
- ii) load factor

8E8073/2017

Unit-II

2.	a)	Draw and explain a typical layout of Steam Power Plant.	(8)
	b)	Explain the effect of variations of steam condition on thermal efficier steam power plant.	(c) ncy of (8)
		(OR)	
•	a)	Describe the various methods used to control the degree of superheat. I the advantages gained by using super-heat steam.	Name (8)
	b)	State the advantages and disadvantages of a steam power station as comp to hydroelectric power station and nuclear power station.	pared
		Unit-III	(0).
	a)	State the applications of a diesel power plant?	(8)
	b)	Given the advantages and limitations of gas turbine power plant.	(8)
		(OR)	.,
	a)	Explain the typical layout of a hydro electric power plant with a neat ske	tch. (8)
	b)	What are the advantages of Pelton for very high heads? What are disadvantages of low speed reaction turbine for the same conditions?	the (8)
	•	Unit-IV	
	a)	Determine the diameter of the wind mill required to develop 500 kw pow The wind speed available at the site is 10m/s and power coefficient is 0. Find the power produced by the wind mill per year if its effective use is 2.	ver. .45. 500

b) What is aerofoil? Explain its importance in wind power generation. (6)

hrs per year, also find the torque when the motor is rotating at 300 RPM.(10)

(OR)

4. a) Discuss the merits of horizontal-axis wind machines and the vertical-axis wind machines. Under what circumstances vertical-axis wind machines is preferred over horizontal-axis wind machines? (10)

b) Explain the environmental factors associated with wind power generation. (6)

3.

3.

4.

Unit-V

- 5. a) List out the advantages and disadvantages of concentrating collector over flat plate collectors. (8)
 - b) Explain the working of solar photo-voltaic cell. What are the major advantages and disadvantages of solar photo-voltaic system. (8)

(OR)

- 5. a) Define following term and explain their significance :
 - i) Sun's Declination angle
 - ii) Hour angle
 - iii) Sun's altitude angle
 - b) Finding at what time (clock time) is the solar noon in a place whose local meridian is $L_{loc}=110^{\circ}28$ "E, and standard meridian is $L_{st}=120$ E, on July 21?

(8)

(8)

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