JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
E-COMMERCE
(Information Technology)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a)   What is E-Commerce?   [2]
  b)   Discuss Consumer Oriented E-Commerce.   [3]
  c)   What is Smart Card? Give its benefits?   [2]
  d)   What are the challenges associated with Credit Card payment?   [3]
  e)   Give the advantages of Intra and Inter Organizational Commerce.   [2]
  f)   What is Customization?   [3]
  g)   What is Document Library?   [2]
  h)   Give the advantages of Advertising on Internet.   [3]
  i)   The role of Digital Video in E- Commerce.   [2]
  j)   Explain key multimedia concepts.   [3]

PART - B
(50 Marks)

2.a)   Explain the anatomy of E-Commerce applications.
  b)   Give important E-Commerce organization applications.   [5+5]
OR
3.a)   Discuss in detail about Mercantile Process models.
  b)   Give important E-Commerce Consumer applications.   [5+5]

4.a)   Write a short note on Risks in Electronic Payment systems.
  b)   Discuss in detail about Value added networks.   [5+5]
OR
5.a)   What is EDI? How to implement EDI?
  b)   Discuss Digital Token-Based Electronic payment system.   [5+5]

6.a)   Give the workflow of Intra Organizational Commerce.
  b)   What is Supply chain Management? Discuss its advantages and challenges.   [5+5]
OR
7.a)   What is Internal Commerce? How it is differ from Intra Commerce?
  b)   Write a short note on Automation.   [5+5]

8.a) What are various corporate Data Warehouses? Discuss in detail with suitable diagrams.
  b) Discuss in detail about Information based marketing. [5+5]

OR

9.a) Write a short note on on-line marketing process.
  b) What is market research? Discuss its importance in E-Commerce. [5+5]

10.a) Explain the importance of Information search and Retrieval.
  b) Write a short note on Commerce Catalogues. [5+5]

OR

11.a) How to process Desktop video? Discuss Desktop video conferencing.
  b) Write a short note on Information Filtering. [5+5]

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Code No: 118DV

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
PRESTRESSED CONCRETE STRUCTURES
(Civil Engineering)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Assume any Data suitably if found necessary. Use of relevant IS Codes is permitted.

PART - A

(25 Marks)

1.a) Distinguish between Pre-tensioning and Post-tensioning. [2]
   b) Explain the principle of prestressing. [3]
   c) What is curvature effect? [2]
   d) Explain the total amount of losses allowed in the design of pre-tensioning members. [3]
   e) State the assumptions made in the analysis of prestressed concrete flexural members. [2]
   f) Explain the concept of load balancing. [3]
   g) What are the characteristics of an end block? [2]
   h) Explain the salient features of Rowe's method of analysis of an end block. [3]
   i) What is the influence of differential shrinkage on composite prestressed concrete members? [2]
   j) Explain the importance of control of deflections of flexural members. [3]

PART - B

(50 Marks)

2.a) Explain the advantages of prestressed concrete.
   b) Explain the Gifford- Udall system of prestressing. [5+5]

OR

3.a) Explain the limitations of prestressed concrete.
   b) Explain the Lee McCall system of prestressing. [5+5]

4.a) Explain the different types of losses of prestress in pre-tensioned members.
   b) A simply supported post-tensioned concrete beam of span 10 m has section 200 mm × 450 mm is subjected to an initial prestressing force of 300 kN applied at a constant eccentricity of 75 mm by tendons of 250 mm^2. Find the total loss of prestress in the tendons using the following data: $E_S = 2 \times 10^5$ N/mm^2, $E_C = 35$ kN/mm^2, anchorage slip = 3 mm, creep coefficient of concrete = 1.5, shrinkage of concrete = 0.0002 and relaxation of steel = 2%. [4+6]

OR

5.a) Explain the various losses of prestress in post-tensioned members.
   b) Determine the total loss of prestress in a simply supported pre-tensioned concrete beam of span 12 m and cross-section 250 mm × 500 mm. The beam is pre-stressed with 900 kN at transfer. The steel cable has a cross-sectional area of 750 mm^2 and has a straight profile with an eccentricity of 150 mm. Use M40 grade of concrete and $E_S = 2 \times 10^5$ N/mm^2. [4+6]

6. Design an I-section for a simply supported post-tensioned concrete beam of span 12 m subjected to an imposed load of 15 kN/m. Adopt the compressive stresses in concrete at transfer as 18 N/mm^2 and 15 N/mm^2 at working load. Assume 20 % losses in prestress and tensile stresses are not allowed in concrete. [10]

OR

7. Design an I-section for a simply supported post-tensioned concrete beam of span 18 m subjected to an imposed load of 25 kN/m over its entire span. The permissible tensile stress in steel is 1250 N/mm^2 and the permissible stresses in concrete are:

At transfer : 20 N/mm^2 (Compression) and 2.5 N/mm^2 (Tensile)
At working load : 15 N/mm^2 (Compression) and 1.5 N/mm^2 (Tensile) [10]

8. A prestressing force of 400 kN is to be transmitted through a distribution plate 200 mm × 150 mm, the centre of which is located at 150 mm from the bottom of an end block of section 200 mm × 400 mm. Determine the position and magnitude of maximum tensile stress on a horizontal section passing through the centre of the distribution plate. [10]

OR

9. Design an end block of a prestressed concrete beam of section 200 mm × 400 mm to transmit the prestressing force of 400 kN by a distribution plate 200 mm× 200 mm concentrically located at the ends. Also determine the maximum bursting force and the maximum tensile stresses. [10]

10. A simply supported pre-tensioned concrete beam of cross-section 200 mm× 350 mm has an effective span of 8 m, is prestressed by tendons with their centroid is 150 mm from the bottom of the beam. The initial prestressing force in tendons is 400 kN. The beam is incorporated in a composite T-beam by casting a top flange of width 450 mm and thickness 60 mm. If the composite beam is subjected to a live load of 15 kN/m^2, determine the resultant stresses developed in the precast and cast-in-situ concrete assuming the pre-tensioned beam is propped. Adopt the loss of prestress as 20% and the modulus of elasticity of concrete in precast and cast-in-situ is the same. [10]

OR

11. Determine the maximum short-term and the long term deflections of a pre-tensioned concrete beam of section 250 mm×500 mm has an effective span of 15 m. The beam is prestressed by a parabolic cable carrying initial force of 600 kN at transfer. The cable is concentric at the supports and has an eccentricity of 150 mm at its mid-span. The beam is subjected to uniformly distributed live load of 15 kN/m in addition to two concentrated loads of 50 kN each at quarter span points respectively. Adopt M40 grade of concrete, loss of prestress as 20%, creep coefficient is 2 and the permanent load of the transverse load is 25%. [10]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
WEB SERVICES
(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	What are the reasons for choosing Web services over Web applications?	[2]
b)	Give the advantages of distributed computing compared to a traditional standalone application?	[3]
c)	Give the SOAP 1.1 specifications?	[2]
d)	Write a SOAP request message to get book price information for the book "Introduction to Web services".	[3]
e)	What are the two important namespaces of <definitions> element	[2]
f)	What are the four pieces of information of a WSDL definition?	[3]
g)	What are the two ways of interacting with a UDDI Registry Service.	[2]
h)	Compare Public and Private UDDI Registries?	[3]
i)	Define Digital certificate? What is the role of Certification Authority in it?	[2]
j)	Define the goals of cryptography?	[3]

PART - B

(50 Marks)

2.a)	Discuss about Java RMI architectural model. Give its advantages and disadvantages.	
b)	Describe the role of xml and ebxml in web services.	[5+5]

OR

3.a)	Explain the basic operational model of Web Services.	
b)	Discuss about CORBA architectural model? Give its advantages and disadvantages.	[5+5]

4.a)	Describe the SOAP Envelope and Header elements of a SOAP message with pseudo code listings.	
b)	Write notes on Java and Axis.	[5+5]

OR

5.	Explain the two types of communication models supported by SOAP.	[10]

6.a)	Describe the seven key structural elements of a WSDL definition document.	
b)	What are the functionalities provided by WSDL tools? List the famous WSDL tools in the Java Web services space.	[5+5]

OR

7.	Discuss in detail Web service life cycle and WSDL bindings.	[10]

8. Describe the Primary UDDI data structures. [10]

OR

9.a) Explain the two XML-based programming APIs used for communicating with the UDDI registry node.
   b) Write the programming steps for publishing. [5+5]

10.a) Discuss the basic concept of .NET framework.
   b) Explain the various available implementations of XML Encryption. [5+5]

OR

11. Describe XML encryption by example. [10]

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R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
FUNDAMENTALS OF HVDC AND FACTS DEVICES
(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	What are the demerits of HVDC transmission system?	[2]
b)	What are the applications of DC transmission system?	[3]
c)	Draw the converters control characteristics.	[2]
d)	What is meant by firing angle control?	[3]
e)	What is the need of filters?	[2]
f)	Write the Controller Equations.	[3]
g)	What are the basic types of FACTS controller?	[2]
h)	What are the objectives of Shunt Compensation?	[3]
i)	What is the concept of series capacitive compensation?	[2]
j)	Draw the schematic diagram for Unified Power Flow Controller.	[3]

PART - B

(50 Marks)

2.a) Compare A.C. and D.C. transmission system based on economic aspects and technical performance and reliability.

b) With neat sketches explain the different kinds of D.C. links available and list out its merits and demerits.

[5+5]

OR

3.a) Describe modern trends in DC transmission.

b) Draw the circuit diagram voltage and current waveform of a three-phase, 6-pulse uncontrolled bridge rectifier and derive the expression for (i) Average DC voltage and (ii) total VA rating of valves and transformer.

[5+5]

4.a) Discuss equidistant pulse firing angle control scheme with its relative merits and demerits

b) A 6-pulse bridge connected inverter is fed from 238/110 kV transformer which is connected with 3-ϕ, 238 kV, 50Hz supply. Calculate the direct voltage output when the commutation angle is 20^0 and delay angle α is i) 30^0, ii) 90^0 and iii) 150^0. Comment on the results.

[5+5]

OR

5.a) Explain the starting and stopping of DC link

b) The AC side line voltage of a 3-ϕ bridge type inverter is 160kV with an extinction angle of 20^0 and an overlap angle of 20^0. Calculate the DC voltage. What should be the new extinction angle if the DC voltage at inverter and drop to 175 kV with the overlap angle and the AC line voltage remaining unaltered?

[5+5]

6.a) Classify the solution methodology for AC-DC load flows and explain.
  b) Discuss in detail, the concept of reactive power requirement in HVDC converters.[5+5]

OR

7.a) Explain the static VAR systems with neat diagrams.
  b) Briefly discuss what the different harmonic instability problems are   [5+5]

8. Explain the power flow control in an AC transmission system with necessary diagrams.
[10]

OR

9.a) Define the various types of FACTS controllers.
  b) Describe how to prevent voltage instability using static shunt compensation.   [5+5]

10. Describe how do you improvement of transient stability and power oscillation damping using static series compensation.   [10]

OR

11. Discuss the independent real and reactive power flow control of UPFC with necessary diagrams.   [10]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
MAINTENANCE AND SAFETY ENGINEERING
(Common to ME, AME, MSNT)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	The definition of Reliability has four key elements – What are they?	[2]
b)	List the functions of effective maintenance management.	[3]
c)	What are the two types of maintenance generally in use? Explain briefly.	[2]
d)	What is ABC Inventory Control? What are its objectives?	[3]
e)	List the different types of hazards for the safety of industrial workers.	[2]
f)	What is 'Maintenance Budgeting'? Explain the need for Maintenance Budget Preparation.	[3]
g)	List the RCM Program Components.	[2]
h)	What is 'Fault Tree Analysis'? Explain briefly.	[3]
i)	What is the difference between Maintenance and Maintainability?	[2]
j)	What are the two kinds of maintenance activity can be identified for any product? Explain.	[3]

PART - B

(50 Marks)

2. Describe the various methods *of* Maintenance Project Control. Supplement your answer with relevant examples. [10]

OR

3. Describe the following Maintenance Strategies and their applications : Run – to – failure, Time – based Maintenance, and Condition – based Maintenance. [10]

4. Define 'Preventive Maintenance'. What is its primary goal? How do you evaluate a Preventive Maintenance Program? Explain. [10]

OR

5. What are the different Inventory Control Models? Explain the Economic Lot Size Model with Uniform Rate of Demand, Finite Rate of Replenishment – and – having NO Shortages. [10]

6. Explain the methods of estimating the Maintenance Labor Cost and Material Cost. [10]

OR

7. Describe the role of Safety Officer in maintenance work. Explain the guidelines to improve safety in maintenance work. [10]

8. Explain the Functional Failures, Failure Modes, Failure Effects, and Failure Consequences of Reliability Centered Maintenance. [10]

OR

9.a) Explain the Reliability Measures and Formulas.

b) Describe the RCM Benefits and Reasons for Its Failures. [5+5]

10.a) Discuss the general rules of Design for Maintainability.

b) 'The measures of Maintainability often include a combination of certain factors' – what are they? Explain. [5+5]

OR

11. 'The system life cycle may be divided into four phases' – what are they? Explain in detail. [10]

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R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
ADVANCED CONTROL SYSTEMS
(Electrical and Electronics Engineering)
Time: 3 Hours   Max. Marks: 75
Answer any Five Questions
All Questions Carry Equal Marks
- - -

1. A linear time invariant system is described by the following state model

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -6 & -11 & -6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u$$

   Transform this state model into a canonical state model and there from obtain the explicit solution for the state vector and output when the control force 'u' is a unit step function and initial state vector is $x_0^T = \begin{bmatrix} 1 & 0 & 1 \end{bmatrix}$. [15]

2.a) What can we say about controllability and observability without making any further calculations?

   b) Consider the system given by $\dfrac{Y(s)}{U(s)} = \dfrac{s+2}{s^2 + 3s + 1}$

   Obtain state space representations in the controllable canonical form, observable canonical form and diagonal canonical form. Comment the controllability and observability. [5+10]

3.a) Discuss the basic concept of describing function methods.

   b) The response of a system is $y = ax + b\dfrac{dx}{dt}$. finding whether the system is linear or non-linear. [8+7]

4.a) Describe the construction of phase trajectory by Isocline method.
   b) Discuss the need of phase – plane analysis. [8+7]

5. For the system
   $$\dot{x} = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} x$$. Determine a suitable Lyapunov's function V(x). Find an upper bound on time that it takes the system to get from the initial condition $x(0) = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$ to within the area defend by $x_1^2 + x_2^2 = 0.1$. [15]

6. Consider the state equation of the system is given by
$\dot{x} = Ax + Bu$

where $A = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & -5 & -6 \end{bmatrix}, B = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$

The system uses the state feedback control $u = -kx$. The desired closed loop poles at $-2 \pm j3, -5$. Find the state feedback gain matrix 'K'. [15]

7. Determine the points in the three-dimensional Euclidean space that extremize the function $f(x_1, x_2, x_3) = x_1^2 + x_2^2 + x_3^2$ and lie on the intersection of the surfaces
$x_3 = x_1 x_2 + 5$
$x_1 + x_2 + x_3 = 1$
[15]

8.a) Describe the tracking problem. Define its performance measure
  b) The system
$\dot{x} = -x + u$
Is to the transferred from $x(0) = 5$ to $x(1) = 0$ such that
$J = \int_0^1 (\dot{u})^2 \, dt$ is minimized. Find the optimal control. [6+9]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
STORAGE AREA NETWORKS
(Common to CSE, IT)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1.a) Define Data storage. What are the Solutions available for data storage?
 b) Define Data management. What are the challenges in data management? [8+7]

2.a) Explain in brief about the Hardware and software components of the host environment.
 b) What are the logical constructs of a physical disk? [8+7]

3.a) Differentiate between Integrated and modular storage systems.
 b) Describe in brief about RAID 0 level. [8+7]

4.a) What are the benefits of the different networked storage options?
 b) Discuss in brief about the topology of IP-SAN. [7+8]

5.a) List out the reasons for planned/unplanned outages and the impact of downtime.
 b) Differentiate between RTO and RPO. [8+7]

6. Explain in brief about the Architecture of backup/recovery and the different backup or recovery topologies. [15]

7.a) List out the Industry standards for data center monitoring and management.
 b) What are Key metrics to monitor for different components in a storage infrastructure? [8+7]

8. What is Virtualization? Explain in brief about Virtualization technology. [15]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
REHABILITATION AND RETROFITTING OF STRUCTURES
(Civil Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1. What are the causes of distress in different members of RC structures and discuss about the methods to prevent them. [15]

2.a) Discuss about the damage of structures due to structural and non structural mechanisms.
  b) Discuss about the damage due to earthquakes and landslides. [8+7]

3.a) What are the effects of reinforcement corrosion on functional and structural properties of structures.
  b) Discuss about any one method in detail to assess the reinforcement corrosion in concrete structures. [8+7]

4.a) Explain in detail about damage due to elevated temperatures.
  b) Discuss how the damaged structure due to elevated temperature is repaired. [7+8]

5.a) Explain any three NDT methods for condition assessment of structures.
  b) Discuss about any three semi destructive techniques to assess the strength of RC structures. [7+8]

6.a) Slurry infiltrated fibre Concrete (SIFCON), what are the materials required to make this, mention its applications in the repair.
  b) Discus about how the underwater structures repaired and discuss about the materials required to repair the same. [7+8]

7. How can we evaluate the strength of existing RC structure by load technique? and suggest appropriate technique to retrofit the various structural members. [15]

8.a) Discuss about Fiber Bragg Grating sensors for strain measurements.
  b) Discuss about electric strain gauges for measuring strains. [8+7]

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R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
STORAGE AREA NETWORKS
(Common to CSE, IT)

Time: 3 Hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	What are the major physical components of a disk drive?	[2]
b)	What are the solutions available for data storage?	[3]
c)	Explain RAID 0?	[2]
d)	What are the components of FC-SAN?	[3]
e)	Write a short note on RPO?	[2]
f)	Explain about RTO?	[3]
g)	Explain the concept of replication technologies?	[2]
h)	Write a short note on Business continuity?	[3]
i)	Explain the concept of Virtualization?	[2]
j)	What are the security attributes for information systems?	[3]

PART - B

(50 Marks)

2. Explain about Hardware and software components of the host environment. [10]

OR

3.a) What are the challenges in data storage and data management?
 b) Write a short note on Disk drive. [5+5]

4.a) Explain the concept of RAID.
 b) Compare and contrast the Integrated and Modular Storage Systems. [5+5]

OR

5.a) Write a short note IP-SAN.
 b) What are the benefits of different networked storage options? [5+5]

6.a) List the reasons for unplanned outages.
 b) Differentiate between business continuity and disaster recovery. [5+5]

OR

7. Describe single points of failure in a storage infrastructure and list solutions to mitigate these failures. [10]

8. Briefly explain about the replication technologies and their role in ensuring information availability and business continuity. [10]

OR

9. Explain the different backup topologies. [10]

10. Describe the File-level virtualization technologies and their processes. [10]

OR

11. What is Storage Security Domain? List and analyzes the common threats in each domain. [10]

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R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
RENEWABLE ENERGY SOURCES
(Common to ME, AME)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a)	Define altitude angle, zenith angle and Azimuth angle.	[2]
b)	Why do use pyranometer and its uses?	[3]
c)	Explain electro magnetic energy storage method.	[2]
d)	What is meant by solar green house?	[3]
e)	What the significance of strip chart and magnetic tap.	[2]
f)	Explain what is meant by tip speed ratio.	[3]
g)	Draw the hydrothermal convective region.	[2]
h)	What is meant by Bio fouling.	[3]
i)	What are the Limitations of Carnot cycle in DEC?	[2]
j)	Explain the concept of see beck effect.	[3]

PART - B
(50 Marks)

2.a) What are the reasons for variation in solar radiation reaching the earth than received at the onside of the atmosphere?

b) Calculate the angle made by the beam radiation with normal to a flat plate collector, pointing due south located New Delhi (28^0 38'N, 77^0 17'E) at 9:00 hr, solar time on December 1. The collector is tilted at an angle of 36^0 with the horizontal. [5+5]

OR

3.a) How do you calculate solar radiation on tilted surfaces?

b) List out the steps involved in the calculation of local solar time and day length and give needed formulae. [5+5]

4.a) Derive the equation for solar energy balance equation and collector efficiency their advantages and limitations.

b) Enumerate different types of concentrating collectors and also list out advantages and limitations. [5+5]

OR

5.a) Describe the layout and working of a continuous solar cooling system.

b) Explain the principle of solar photovoltaic power generation. [5+5]

6.a) Explain the advantages and limitations of wind energy conversion systems.

b) Derive the expression for power developed due to wind. [5+5]

OR

7.a) Compare and contrast the biomass and biogass.

b) What is a community biogas plant? Explain the problems encountered in it.[5+5]

8.a) With line diagram, explain the heat extraction from hot dry rocks.
b) What are the possible sources of geothermal pollution? How to avoid them? [5+5]

OR

9.a) Draw the line diagram and explain the working of hybrid OTEC cycle.
b) Explain the working of single basin tidal power plant. [5+5]

10.a) Explain the concept of joule Thompson effect and its applications.
b) Explain the working details of MHD accelerator. [5+5]

OR

11.a) Draw the line diagram and explain the working of hydrogen fuel cell.
b) What is meant by Electron gas dynamic conversion and where do you use this principle. [5+5]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
ADVANCED CONTROL SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries 10
marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a) What is meant by compensation? [2]
  b) Define the Nyquist stability criterion. [3]
  c) States the Lyapunov's instability theorem. [2]
  d) What are the conditions for asymptotically stable at the origin? [3]
  e) What is meant by singular points? [2]
  f) What is stable node. Draw the phase portrait of a stable node? [3]
  g) What is the behavior of non linear system? [2]
  h) What is meant by sub harmonic oscillations in non linear system? [3]
  i) Define the Controllability. [2]
  j) Define the Concepts of state and state variables. [3]

PART - B
(50 Marks)

2. The open loop transfer function of unity feedback system is $G(s) = \dfrac{1}{s(s+1)(s+2)}$. Draw
the Nyquist plot test the stability. Also find gain margin and phase margin. [10]

OR

3. Design a phase lag network for a plant with the open loop transfer function
$G(s) = \dfrac{120}{s(1+0.2s)^2}$ to have a phase margin of 35^0. Verify the performance of the
compensated system with the specification. [10]

4.a) Explain the sufficient conditions of stability of non-linear autonomous system
  b) Observe whether the following quadratic form is positive definite
$Q = x_1^2 + 2x_2^2 + x_3^2 + 4x_1 x_2 - 8x_2 x_3 - 2x_1 x_3$ [5+5]

OR

5. The non-linear system described by the following equations
$\dot{x}_1 = -2x_1 + 4x_2$
$\dot{x}_2 = x_1 - 3x_2 - x_2^3$
Observe the stability of equilibrium state. [10]

6. A position control system comprises of a dc servomotor, potentiometer, error detector a relay amplifier and tachogenerator coupled to the motor shaft. The differential equation governing this system is

a) Reaction torque $= \ddot{\theta} + 0.5\dot{\theta}$

b) Drive torque $= 3 \, sign(e + 0.5\dot{e}); e = \theta_R - \theta$

c) Draw the block diagram of the system.

d) Construct a phase trajectory on $(e, \dot{e})$ plane with e(0)=3 and $\dot{e}(0) = 1$ and comment upon the system stability. [10]

OR

7. A simple servo is described by the following equations

Reaction torque $= \ddot{\theta}_c + 0.5\dot{\theta}_c$

Drive torque $= 2 \, sign(e + 0.5\dot{e})$

$e = \theta_R - \theta_c$

$e(0) = 2 \, and \, \dot{e}(0) = 0$

Construct the phase trajectory using the delta method. [10]

8. Explain the describing function for saturation of non-linearity. [10]

OR

9.a) Discuss the basic concept of describing function methods.

b) Derive the necessary expression for describing functions. [5+5]

10. A feedback system has the following closed loop transfer function $\dfrac{C_{(s)}}{U_{(s)}} = \dfrac{4(s+1)}{s(s+2)(s+4)}$

Construct three different state models for this system and draw the block diagram representation for each state model. [10]

OR

11.a) States and prove the properties of state transaction matrix

b) Determine the state model of the system for the following transfer function

$$\frac{Y_{(s)}}{U_{(s)}} = \frac{2s^2 + s + 5}{s^3 + 6s^2 + 11s + 4}$$ [10]

---ooOoo---

Code No: 118EB

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
REHABILITATION AND RETROFITTING OF STRUCTURES
(Civil Engineering)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions

PART - A

(25 Marks)

1.a)	What is the effect of deterioration of structures.	[2]
b)	Write down the classification of distress in structures.	[3]
c)	List out the various causes for the corrosion of steel reinforcement.	[2]
d)	Explain the phenomena of desiccation.	[3]
e)	What is the necessity of damage assessment of any structure?	[2]
f)	What are the various symptoms of distress in structures?	[3]
g)	What is autogenous healing?	[2]
h)	What are the various crack repair methods?	[3]
i)	List out the various sensors used for the health monitoring of a structure.	[2]
j)	What are the objectives of monitoring the health of a structure?	[3]

PART - B

(50 Marks)

2.a) Explain the various causes of distress in reinforced concrete structures.
 b) Explain the various types of damages of structures. [5+5]

OR

3.a) Explain the mechanism of damage to the structures.
 b) Explain the various steps to be adopted to prevent distress in structures. [5+5]

4.a) Explain the mechanism of corrosion of steel reinforcement.
 b) Describe the fire rating of the components of an RCC building. [5+5]

OR

5.a) Describe the various methods of prevention of corrosion of steel reinforcement.
 b) Explain the various parameters influencing the damage of structures due to fire. [5+5]

6.a) Explain the various methods of diagnosis of distress in structures.
 b) Explain the procedure for the damage assessment of structures. [5+5]

OR

7. Explain the application of Rebound Hammer test and Ultrasonic Pulse Velocity test for the damage assessment of structures. [10]

8. Explain the various methods of repair of underwater structures. [10]

OR

9. Explain the different methods of strengthening of reinforced concrete beams. [10]

10. Explain the role of different types of sensors in health monitoring of structures [10]

OR

11. Explain the instrumentation of a building in connection with monitoring the health of structures. [10]

---ooOoo---

Code No: 58003

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year II Semester Examinations, May - 2017

AIRPORT PLANNING AND DESIGN

(Civil Engineering)

Time: 3 Hours   Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1. Write about the various aviation organizations like ICAO, FAA, EPA, TSA and their functioning. [15]

2. Write in detail about the atmospheric conditions affecting the aircraft performance. [15]

3. Explain about various forecasting methods or techniques available to airport planners with suitable examples. [15]

4.a) Illustrate the procedure for estimating the runway length.
  b) What is wind rose and explain its importance in finding the orientation of runway. [7+8]

5. Discuss briefly about the classification of airports and their factors. [15]

6. Explain how apron provides the connection between the terminal buildings and the airfield. [15]

7. Write a short note on Airspace classification and Airways. [15]

8. Write about satellite based Navigation aids and its impact on air traffic management system. [15]

--ooOoo--

Code No: 58009

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
NEURAL NETWORKS AND FUZZY LOGIC
(Electrical and Electronics Engineering)
Time: 3 Hours   Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1.a) Compare and contrast biological neuron and artificial neuron.
 b) Explain i) Integrate and Fire neuron model ii) Spiking Neuron model. [7+8]

2.a) What is the necessity of activation function? List the commonly used activation functions.
 b) What are the basic models of artificial neural networks? [8+7]

3.a) State the activation functions used in perceptron network.
 b) With a neat flowchart explain the training process of perceptron model. [7+8]

4.a) State the importance of back-propagation algorithm.
 b) Draw the architecture of back-propagation algorithm and explain the training. [7+8]

5.a) State the advantages of associative memory. Discuss the limitations of associative memory network.
 b) Explain the testing algorithm adopted to test an auto associative network. [8+7]

6.a) What is a bidirectional associative memory network? List the activation functions used in BAM net.
 b) Explain the architecture of Hop field network. State the testing algorithm used in discrete Hop field network. [7+8]

7.a) What is the cardinality of a fuzzy set? Whether a power set can be formed for a fuzzy set.
 b) Explain the features of membership functions. [8+7]

8.a) Write short notes on fuzzification and explain in detail the inference method adopted for assigning membership values.
 b) Differentiate between Centre of sums and weighted average methods. [8+7]

--ooOoo--

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
MULTIMEDIA AND RICH INTERNET APPLICATIONS
(Computer Science and Engineering)

Time: 3 Hours   Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1.a) What is World Wide Web? Discuss in detail about various file formats?
 b) Discuss in detail about color science and color models in videos?   [8+7]

2.a) Explain various types of video signals?
 b) Write a short note on quantization and transmission of audio?   [8+7]

3.a) Explain lossy compression algorithms with suitable examples?
 b) Discuss about various image compression standards?   [8+7]

4.a) Write a short note on MPEG Video Coding I?
 b) What is MPEG audio compression? Discuss its advantages?   [7+8]

5.   Discuss the following
     a) Tagging and Blogging
     b) RSS
     c) JSON and VoIP.   [5+5+5]

6.a) Discuss about Flash Movie Development.
 b) How to Create special effects with Flash?   [8+7]

7.   Discuss in detail about development of Rich Inter Application using Flex 3.   [15]

8.a) Give the comparisons between Traditional Web applications and Ajax applications?
 b) Write a short note on Dojo Tool Kit.   [8+7]

--ooOoo--

Code No: 58020

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
RENEWABLE ENERGY SOURCES
(Common to ME, AME)

Time: 3 Hours   Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1.a) Explain and derive expression for beam and diffusion radiation.
  b) What is meant by solar radiation data? Explain its information contained in it.   [8+7]

2.a) Explain the advantages of concentrating collectors over flat plate collectors.
  b) Explain the performance analysis of Cylindrical Parabolic Collector.   [8+7]

3.   With the help of a neat sketch describe a solar heating system using water heating solar collectors. What are the advantages and disadvantages of this method?[15]

4.a) Explain Betz criterion and derive an expression for the same.
  b) What is meant by pitch control and Yaw control? Explain in detail.   [8+7]

5.a) Explain about dry and wet fermentation process.
  b) What is the difference between biomass and bio gas?
  c) Explain the classification of biogas plants.   [5+5+5]

6.a) With the help of neat diagram, explain the working of liquid dominated single flash steam system.
  b) Explain in brief the different types of prime movers for Geo thermal energy conversion.   [8+7]

7.a) Explain in brief about wave energy conversion devices.
  b) What are the advantages and limitations of wave energy?   [8+7]

8.a) Write a short note on principle of DEC and need for DEC.
  b) Explain direct energy conversion with any three examples.   [7+8]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
WEB SERVICES
(Common to CSE, IT)

Time: 3 Hours   Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1.a) Describe the two-tier architecture model. What are its limitations?
  b) Explain about the role of J2EE and XML in distributed computing.   [8+7]

2.   List and explain the web services standards and technologies. Write an example SOAP
      message and WSDL document.   [15]

3.a) Give an overview of web services architecture.
  b) Describe the roles and relationships of Web services operations.   [8+7]

4.   Explain how to represent arrays, multiple references in arrays, partially transmitted arrays
      and sparse arrays in XML instance.   [15]

5.a) Explain about SOAP security.
  b) Give the advantages and limitations of SOAP.   [8+7]

6.a) Describe the various WSDL operation types. Explain WSDL binding support for
      operations.
  b) Discuss the use of WSDL in the World of Web Services.   [8+7]

7.a) Explain the two XML-based programming APIs used for communicating with the UDDI
      registry node.
  b) Explain the two types of categorization systems supported by UDDI.   [10+5]

8.   Explain XML digital signature with an example.   [15]

--ooOoo--

R13

Code No: 118AA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
ADHOC AND SENSOR NETWORKS
(Common to CSE, IT)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a)	What are factors that influence the routing in a MANET?	[2]
b)	Explain the location based scheme.	[3]
c)	What are the challenges of TCP over adhoc networks?	[2]
d)	Explain the classification of nodes in the network by using CAMP.	[3]
e)	Distinguish between static channel and dynamic channel allocations.	[2]
f)	Explain about the Mica mote.	[3]
g)	Explain the steps involved in the Burmester and Desmedt protocol.	[2]
h)	What are the drawbacks of CLIQUES protocol?	[3]
i)	Explain the features of Tiny GALS.	[2]
j)	What are the components of TinyOS?	[3]

PART - B
(50 Marks)

2. Explain how to find the route from source to destination by using DSR protocol. [10]

OR

3. Explain three phases of ABR protocol. [10]

4.a) Explain the drawback of the TCP exponential backoff algorithm in MANETS.
   b) Distinguish between LBM scheme 1 and LBM scheme 2. [5+5]

OR

5. Explain about the multicast zone routing protocol. [10]

6. Explain the design of routing protocol for WSNs which influence fault tolerance, security, connectivity, Adhoc deployment and QoS. [10]

OR

7. Explain about the Multipath based routing in WSNs. [10]

8.a) Explain the components of sensor nodes.
   b) Explain about the GDH.3 protocol. [5+5]

OR

9.a) Explain about the N – Party Diffie Hellman Key Agreement protocol.
   b) What are the challenges of sensor network programming? [5+5]

10. Explain the architecture of TOSSIM. [10]

OR

11. Explain about the ns-2 and its sensor network extension. [10]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
PLANT LAYOUT AND MATERIAL HANDLING
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a) Distinguish between 'Product layout' and 'process layout' and give any four features.
[2]
  b) Explain Apple's plant layout procedure. [3]
  c) Explain briefly placement and contiguity rules [2]
  d) State the heuristic of ALDEP. [3]
  e) How are the belt conveyors classified? [2]
  f) State any four material handling principles. [3]
  g) How are the cranes classified? [2]
  h) Draw a neat sketch of jib crane. [3]
  i) State the various cost factors involved in material handling [2]
  j) State the various aspects of maintenance of Hoists. [3]

PART - B
(50 Marks)

2.a) State the objectives of a good plant layout.
  b) State and explain systematic layout planning approach briefly with a flowchart.[5+5]
OR
3. What is process layout? Explain its salient features and state its advantages and
Disadvantages. [10]

4. Explain the procedure involved in CORELAP for improving the layout.   [10]
OR
5.a) Write about construction of REL chart
  b) State the mathematical formulation for Quadratic Assignment problem.   [5+5]

6.a) State the advantages and disadvantages of material handling.
  b) Explain the terms i) Unit load ii) Packaged material iii) Logistics   [4+6]
OR
7. Classify material handling equipment based on by their design features and working
area and explain   each of them. [10]

8. State and explain factors to be considered for the selection of material handling equipment. [10]

OR

9. What is a crane? Classify cranes and write about at least two types of cranes in detail. [10]

10. State and explain procedure involved in maintenance involved in Lift. [10]

OR

11 State and explain salient features of Escalators with a neat sketch. [10]

---ooOoo---

R09

Time: 3 Hours   Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- - -

1.a) What is plant layout? What are its advantages?
  b) What do you understand by 'facility location' or plant location?
  c) Write a short note on the parameters that affect the location of a plant in a foreign Country. [15]

2.a) List the types of plant layout and with the block diagram explain any Two layouts.
  b) Explain the principles of plant layout. [7+8]

3.a) Explain the following layout procedure
     i) James Apple   (ii) Reed's
  b) Explain the procedure, scope and limitation of the following
     (i) CORLAP   (ii) ALDEP [7+8]

4. Consider an example involving the minimum location of a new machine tool in a maintenance department. Suppose there are 5 existing machines that have material handling relationship with the new machines. The existing machines are located at the points P1(1,1); P2(5,2); P3(2,8); P45(4,5); P5(8,6). The cost per unit distance travelled is the same between the new machine and each existing machine the number of trips per day between the new machines and existing machines are 5,6,2,4 & 8 respectively. Find the optimum cost location of new machine using minimum location model. [15]

5.a) Discuss the relationship between plant layout and material handling equipments.
  b) Explain
     i) Material handling in process layout.   (ii) Material handling in product layout.[7+8]

6.a) Explain the working principle of conveying equipment.
  b) With a neat diagram explain the working of an apron conveyor. [7+8]

7.a) Discuss the application of computer in optimum plant layout.
  b) A machine tool shop has 4 existing machines at points $P_1 = (0, 0)$, P2 = (3, 0), $P_3 = (6,0)$, $P_4 = (12,0)$. Find the optimum location of n facilities by using Location Allocation n facility model. Assume weight of individual existing location would be $w_1 = w_2 = w_3 = 1$, $w_4 = 2$. The cost of setting n facility is g(n) = 5(n). [7+8]

8.a) Name the various hoists. What are their features?
  b) Sketch and explain a derrick crane. [7+8]

--ooOoo--

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
ADHOC AND SENSOR NETWORKS
(Common to CSE, IT)

Time: 3 Hours   Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1.a)   List and explain in detail about various characteristics of MANETS?
 b)   Explain the Differential Networks, wireless network, WSN, wireless Adhoc Networks.
                                                                                                [8+7]

2.   Explain any two positions based routing protocols in detail.   [15]

3.a)   Explain how data transmission is done in MANETS using Geo-casting?
 b)   Write about the Architecture of TCP Protocol.   [8+7]

4.   Explain the concept of Clustering of sensors in wireless sensor networks.   [15]

5.a)   Describe in detail about the Classification of wireless sensor networks?
 b)   How Data Retrieval is carried in sensor networks?   [8+7]

6.   With a neat diagram explain the concept of intrusion detection system.   [15]

7.a)   Illustrate in detail about node level simulation platforms.
 b)   What are the challenges of sensor network programming?   [7+8]

8.   Explain in brief about various concepts of TinyGALS.   [15]

--ooOoo--

R13

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) With what reasons would you defend 'Decentralization' in an Organization?   [2]
  b) What do you understand by 'Unity of Direction'?   [3]
  c) Define the concept 'Work measurement'.   [2]
  d) How is TQM different from traditional management approach?   [3]
  e) What is the rationale of conducting 'Job analysis'?   [2]
  f) Differentiate 'Transfer' from 'promotion'.   [3]
  g) Distinguish between 'Event' and 'Activity'   [2]
  h) How is CPM approach different from PERT in project management?   [3]
  i) Distinguish between 'Vision' and 'Mission'.   [2]
  j) What do you understand by 'Balanced score card'?   [3]

PART - B

(50 Marks)

2. Critically examine Herzberg's two factor theory. Make a comparison between the theories of Herzberg and Maslow. Which of these theories do you prefer in Indian context? Give reasons.   [10]

OR

3. Distinguish between 'Management' and 'Organization'. Briefly explain the principles of Management as enunciated by Fayol.   [10]

4. Define 'Method study' and explain the procedure to be followed for implementing Method study in an Organization.   [10]

OR

5. What are the objectives of Inventory control? Briefly explain how selective Inventory control can be followed in an Organization?   [10]

6. Why do Managements prefer to provide Training to newly recruited employees and as well as existing employees? Explain various methods of Training being commonly followed.   [10]

OR

7. What do you understand by 'Performance Appraisal'? Why is it required? Critically evaluate different methods of performance Appraisal.   [10]

8. The details of activities of a project are given below:

Activity	Time (in weeks)
1-2	2
1-3	2
1-4	1
2-5	4
3-6	8
3-7	5
4-6	3
5-8	1
6-9	5
7-8	4
8-9	3

Construct a network diagram and compute the project completion time. [10]

OR

9. The normal cost and duration, crash cost and duration of activities (in days) of a project are given in the table. If the overhead cost is Rs.45 per day, determine the optimal cost schedule for the project by drawing the project schedule vs. total cost. [10]

Activity	Normal cost	Normal duration	Crash cost	Crash duration
1-2	Rs.360	3	Rs.440	1
2-3	240	4	320	2
2-4	100	7	140	3
3-4	80	5	140	2

10. Define 'Environmental scanning'. What is the need for environmental scanning? What are the environmental scanning techniques? [10]

OR

11. What do you mean by 'strategy'? Describe the basic elements in the process of strategic management. [10]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
PRODUCTION PLANNING AND CONTROL
(Common to ME, MCT)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries 10
marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) Differentiate between the production planning and production control.   [2]
  b) How the "controlling" can be done to regulate the progress of work?   [3]
  c) Give the step by step Forecasting procedure for using time series   [2]
  d) A forecaster is using an exponential smoothing model with a = 0.4 and wishes to convert
     to a moving average. What length of moving average is approximately equivalent?   [3]
  e) What do you understand by the term operating doctrine in the inventory modelling? [2]
  f) Do JIT enhance return on investment (ROI)? Explain.   [3]
  g) What are the assumptions in flow shop scheduling?   [2]
  h) Compare *infinite* loading and *finite* loading.   [3]
  i) What are the methods to take corrective action in follow-up?   [2]
  j) Differentiate between centralized and decentralized dispatching.   [3]

PART - B

(50 Marks)

2.a) Briefly explain the prerequisites of PPC.
  b) Explain the production lifecycle with the aid of a graph.   [5+5]

OR

3.a) "PPC regulates and controls "how," "where," and "when" work is to be done." What do
     you understand by this statement?
  b) State the principles of good production planning and control.   [5+5]

4.a) What are the levels of aggregation in forecasting for a manufacturing organization? How
     should this hierarchy of forecasts be linked and used?
  b) List out the advantages and disadvantages of short term long term forecasting.   [5+5]

OR

5. A firm uses simple exponential smoothing with α = 0.1 to forecast demand. The forecast
    for the week of February 1 was 500 units, whereas actual demand turned out to be 450
    units.
    a) Forecast the demand for the week of February 8.
    b) Assume that the actual demand during the week of February 8 turned out to be 505
    units. Forecast the demand for the week of February 15, Continue forecasting through
    March 15, assuming that subsequent demands were actually 516, 488, 467, 554 and 510
    units.   [10]

6.a) Explain the concept behind the two-dimensional and music 3-D models of inventory control.
  b) What is MRP and MRP-II? How they are related? Explain. [5+5]

OR

7.a) *Inventory is waste!* Do you agree? Justify your answer.
  b) Find the economic lot size, the associated total cost, and the length of time between two orders, given that the set- up cost is Rs.100, daily holding cost per unit of inventory is Rs. 0.05, and daily demand is approximately 30 units. [5+5]

8.a) Distinguish between the routing functions of continuous and intermittent productions.
  b) Explain the use of Line of Balance (LOB) in Production control. Explain in detail the steps involved in LOB. [5+5]

OR

9.a) Describe the following costs in aggregate planning and explain the difficulties that arise in attempting to measure them in a real operation environment.
  i) Smoothing costs (ii) Holding costs
  b) What do you understand by Compensatory Off Policy? Explain its merits and demerits. [5+5]

10.a) "The PPC function 'dispatching' is often misunderstood." Explain the correct meaning and duties of the dispatching function.
  b) What are the stages of follow up? Explain any two. [5+5]

OR

11.a) What are the functions of dispatching?
  b) When do you prefer decentralized dispatching to centralized dispatching? Explain their features. [5+5]

--ooOoo---

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
RENEWABLE ENERGY SOURCES
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Part- A (25 Marks)

1.a)   What is the need for selecting solar energy as one of the option?   [2]
  b)   Sketch the short (including visible) and long wave (far infrared) spectral distributions at the top of the atmosphere   [3]
  c)   Give the classification of concentrating collectors.   [2]
  d)   What is meant by grid connected solar PV system? How the number of units supplied to grid is measured from PV to grid is measured?   [3]
  e)   Explain the working principle of windmill.   [2]
  f)   Present drawbacks of bioenergy.   [3]
  g)   Discuss the wave energy conversion machines.   [2]
  h)   What are various methods adopted to drill geothermal wells.   [3]
  i)   What are direct and indirect gap materials?   [2]
  j)   State the limitations of Direct Energy Conversion.   [3]

Part-B (50 Marks)

2.a)   Write a technical note on the following
       i) The hour angle
       ii) The Sun's declination
  b)   Discuss briefly about spectral distribution of extraterrestrial solar irradiance.   [5+5]

OR

3.a)   Discuss about effects and interactions occurring as extraterrestrial solar radiation is incident upon the Atmosphere.
  b)   Define daily insolation. Explain its variation of with season and latitude.   [5+5]

4.a)   Differentiate between Flat plate collectors and concentrating collectors?
  b)   List the various applications of solar energy. Also explain anyone application, which is economically viable in the present contest.   [5+5]

OR

5.a)   Enumerate, with suitable schematic, on the construction details of a flat plate collector.
  b)   What are the special arrangements made in solar pond to retain the heat energy content in Solar pond?   [5+5]

6. Derive the expression for power developed due to wind energy. [10]

OR

7. List out different Schemes for wind electric generation and explain about anyone. [10]

8.a) Explain the OTEC scheme and mentions its limitation,
 b) List the various applications of Geothermal energy. Also specify benefits and limitations of geothermal energy storage. [5+5]

OR

9. Enumerate the environmental issues associated with utilization of following renewable energy sources.
 a) Geothermal energy and
 b) Open cycle OTEC system. [10]

10.a) What are the two statements known as the Carnot principles?
 b) Discuss the need and principle for DEC [5+5]

OR

11. How do you plan for adopting renewable energy generation system in your college? What are the factors that influence the selection of renewable source? [10]

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Code No: 118AZ

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
CONSTRUCTION MANAGEMENT
(Common to CE, CEE)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1. a) Define management. [2]
   b) List out the names of organizational structure. [3]
   c) Define preliminary planning. [2]
   d) Name the different construction stages. [3]
   e) Give the names of earth excavation equipment. [2]
   f) Name the various forms of scheduling. [3]
   g) Define specification. [2]
   h) What is the purpose of M-Book? [3]
   i) What is social security? [2]
   j) What is the necessity of safety in construction? [3]

PART - B

(50 Marks)

2.   Explain the various management theories. [10]
     OR
3.   Write a note on "Human Resource Management". [10]

4.   What are the functions of construction management and give its applications? [10]
     OR
5 a) List out the various network techniques in construction management.
  b) Explain the bar chart and give its limitations. [5+5]

6.a) Name the resource allocation methods.
  b) Give the steps involved in any one of the resource allocation methods. [5+5]
     OR
7.   Explain the different costs involved in material management for material, labour and expenses. [10]

8.a) Give the salient features of contract document.
  b) List out the important conditions of contract. [5+5]
     OR
9.a) Explain the various deposits provided by contractor.
  b) Write a note on "Muster Roll". [5+5]

10. Explain the different laws relating to wages. [10]
     OR
11. Explain legal and financial aspects of accidents in construction. [10]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
PRODUCTION PLANNING AND CONTROL
(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- - -

1.a) For producing right quantity, of right quality and at right time, PPC functions are essential. Do you contradict or accept? Justify your view.
  b) Classify the production systems. Mention characteristics of each of these systems. [8+7]

2.a) State and explain the various types of forecasting.
  b) Explain exponential smoothening method. State various factors affecting in the selection of exponential smoothening constant. [7+8]

3. DAT Inc produces a digital audiotapes to be used in the consumer audio division . DAT lacks sufficient personnel in its inventory supply section to closely control each item stoked so assume that it has asked to you to determine an ABC classification. Here is a sample from the from the inventory

Item no	1	2	3	4	5	6	7	8	9	10
Annual use	700	200	2000	1100	4000	100	3000	2500	500	1000
Price	6	4	12	20	21	10	2	1	10	2

Develop an ABC classification for these 10 items. [15]

4.a) Define LOB. State the various elements of it. Explain any two in two in detail
  b) Explain the working principle of JIT kanban control system Write the expression for number of kanbans to be deployed and explain the terms. [7+8]

5.a) Define 'routing'. State the various factors to be considered for finalizing routing.
  b) Define loading. Distinguish between scheduling and loading. [8+7]

6.a) State and explain standard scheduling rules.
  b) i) State the conditions for applying Johnson algorithm for n jobs and 3 machine sequencing problem.
  ii) We have five jobs each of which must go through the machines A, B and C in the order ABC processing times (in hours) is as follows:

Jobs	1	2	3	4	5
Machine A	5	7	6	9	5
Machine B	2	1	4	5	3
Machine C	3	7	5	6	7

Determine the sequence of the jobs that will minimize the total elapsed time. [15]

7.a) Professional Image Briefcases is an exclusive producer of handcrafted, stylish cases. The company assembles each case with care and attention to detail. This work requires the completion of the six primary work elements listed here.

Work Element	Precedence	Time (min)
A	-	30
B	A	15
C	B	10
D	-	5
E	C,D	10
F	E	10

i) Draw precedence diagram for the production process
ii) Determine minimum number of work stations to assembly 50 cases in a 40 hour week
iii) balance efficiency

b) State the objectives of aggregate planning. [15]

8.a) Define dispatching. State the functions of dispatcher
b) Define follow-up. Explain about various types of follow-ups. [7+8]

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Answer any Five Questions
All Questions Carry Equal Marks
- - -

1.a) Explain in detail different HVDC links available.
 b) Give the Economic feasibility of HVDC transmission over HVAC system. [7+8]

2. Explain the working principle and output waveforms of 12 pulse converter. Give the transformer connections and explain the importance of such connection. [15]

3.a) Explain the effect and source inductance on the converter operation.
 b) Explain the DC link, both rectifier and inverter side, control characteristics under various operating conditions. [7+8]

4.a) Show that Cos ϕ =Cos α, Where ϕ is the power factor angle between source voltage and source current and α is the firing angle delay, under no-over lap condition.
 b) Explain in detail, how the reactive power management is carried, under steady state operation of HVDC link. [7+8]

5. Explain in detail the solution of AC-DC power flow using sequential method. Give DC link and converter modeling equations. [15]

6. Explain converter faults which arise due to malfunctioning of values and controllers. Draw supporting waveforms. [15]

7.a) Explain briefly sources of harmonics and their adverse effects on HVDC converter operation.
 b) Briefly discuss about the various methods to mitigate harmonics in HVDC system.[8+7]

8. Explain the principles and design procedures of following:
 a) Single tuned filters
 b) High pass filters. [15]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
MANAGEMENT SCIENCE
(Common to CE, CSE, IT, CEE)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1.   Outline in detail the 14 principles of management postulated by Henry Fayol.   [15]

2.a)   What is authority? What is responsibility? How are they inter related?
  b)   Explain the nature and characteristics of cellular organization.   [7+8]

3.   The operator engaged in an assembly operation performed the following work elements. Given below are the individual elemental times and the average rating.

element	cycle					rating
	1	2	3	4	5	
A	0.22	0.24	0.28	0.26	0.25	80
B	0.14	0.18	0.15	0.13	0.15	100
C	0.37	0.35	0.37	0.33	0.33	120
D	0.10	0.09	0.12	0.10	0.09	90
E	0.12	0.13	0.11	0.11	0.13	100

a) Calculate the normal time of the job.
b) Calculate the standard time of the job assuming allowances at 15% of normal time.

[15]

4.a)   What are the principles of effective stores location?
  b)   What are the elements of marketing? Elaborate.   [7+8]

5.a)   What are the objectives of Job evaluation and what are the steps involved for conducting in job evaluation?
  b)   What is grievance in the context of industrial relations? What is the established mechanism for handling grievances?   [8+7]

6.   The following data pertains to a project network.

Activity	Normal duration (weeks)	Normal cost Rs.	Crash Duration weeks	Crash cost Rs.
1-2	4	8000	3	16,000
1-3	8	5000	5	10,500
2-3	6	7000	4	10,000
2-4	9	9000	7	17,000
3-4	5	6000	3	13,000

The indirect cost of the project is Rs. 3500 per week. Determine the optimum cost and optimum duration of the project. Also draw the least cost network.   [15]

7.a) What are the internal factors that need to be taken into account to assess the strengths and weaknesses of an organization?

b) Which are the three generic strategy alternatives? [9+6]

8.a) What is JIT concept? What are the prerequisites to make JIT successful?

b) Explain the concept of PDCA cycle. [9+6]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
UTILIZATION OF ELECTRICAL ENERGY
(Electrical and Electronics Engineering)
Time: 3 Hours   Max. Marks: 80

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1.a) What is load equalization? Why it is necessary? How it is achieved in industry.
  b) Derive an expression for moment of inertia of a fly wheel employed for load
     equalization.   [8+8]

2.a) What is dielectric heating. Derive an expression for heat produced due to
     dielectric heating.
  b) A tobacco film of 2cm thick and 1.5 sq cm in area with relative permittivity 8 is to
     be heated by 1000V,20MHz supply, at a pf of 0.04 determine power required.
                                                                     [8+8]

3.a) Explain various resistance welding methods with application.
  b) Differentiate between resistance welding and arc welding.   [8+8]

4.a) A lamp having mean spherical candle power of 800 watts is suspended at the
     height of 10 m.
     Calculate:
     i) Total flux of the light.
     ii) The illumination directly below the lamp at the working place.
     iii) Illumination at a point 2.5m on the horizontal plane from vertically below the
     lamp.
  b) Define: utilization factor, depreciation factor, luminous efficiency, reflection
     factor, with respect to illumination.   [8+8]

5.a) Explain about glare, stroboscopic effect and measures to reduce them.
  b) Compare the number of 40W Fluorescent tubes and 100 W Incandescent lamps
     which would be required to illuminate an office space of 60×15 meters.
     Coefficient of utilization 0.4. Lamps are mounted 5 meters above the working
     plane. The average illumination required is about 200lux. Fluorescent tubes:
     Luminous efficiency 55 lumens/watt, Candle power depreciation 0.2,
     Incandescent lamps: Luminous efficiency 12 lumens/watt, depreciation 0.3.
     Assume a space height ratio of unity.   [8+8]

6.a) What are the requirements of a good tractional motor. Explain various motors
     suitable for electric traction.
  b) Explain series parallel control of tractional motors.   [8+8]

7.a) From the mechanics of train movement obtain the relation for tractive effort to be developed on the driving wheels.

b) Derive an expression for distance travelled by a train assuming various factors for suburban/urban service. [8+8]

8.a) An electric train weighing 400 tonnes runs on level track with the following data: i) acceleration of 1.5 kmphps for 25 seconds ii) constant speed for 40 seconds iii) coasting for 30 second iv) braking at 3 kmphps to rest. Determine the specific energy consumption if tractive resistance is 50 N/tonne. Rotational inertia: 10%, overall efficiency of the system 80%. If the track is with an up gradient of 1%, what will be the change in the specific energy consumption?

b) What is specific energy consumption? State various factors effecting specific energy consumption. [8+8]

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