Code No. 5211

FACULTY OF ENGINEERING

B.E. 4/4 (Civil) I - Semester (Main) Examination, December 2015

Subject : Water Resources Engineering - II

Time : 3 Hours   **Max. Marks: 75**

Note: Answer all questions from Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1	Define Flood routing.	(2)
2	Write a note on economical height of a dam.	(2)
3	Define Phreatic line.	(2)
4	How hydraulic Jump is used as a means of dissipating energy.	(2)
5	How flow duration curve is useful.	(2)
6	Define mass inflow and demand curve.	(3)
7	Define trap efficiency.	(3)
8	State the salient features of syphon spillway.	(3)
9	Define spillway and write its uses in dams.	(3)
10	What is a pumped storage plant?	(3)

PART – B (50 Marks)

11 (a) Explain how sedimentation of reservoir affects its useful life. Suggest suitable
   remedial measures.   (5)
   (b) Explain the various investigations required for reservoir planning.   (5)

12 (a) Explain the classification of dams.   (5)
   (b) Derive the equation for base width elementary profile under no tension.   (5)

13   Explain the seepage control measures through embankment and foundations.   (10)

14 (a) List the functions of stilling basin appurtenances.   (5)
   (b) Discuss solid roller bucket type energy dissipator with a sketch.   (5)

15 (a) Explain the salient features of a penstock.   (5)
   (b) The load on a hydel plant varies from 45,000 kW to 80,000 kW. Eight generators
   each of 9000 kW have been installed. Calculate (i) Plant factor (ii) Load factor
   (iii) Maximum demand   (5)

16 (a) Discuss in brief the causes of failures of Earth dams.   (5)
   (b) Explain the various forces acting on a Gravity dam.   (5)

17   Write short notes on any **two** of the following: (2x5)
   (a) Low and high gravity dams
   (b) Surge tanks
   (c) Gross head, net head and operating head

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FACULTY OF ENGINEERING

B.E. 4/4 (EEE) I – Semester (Main) Examination, December 2015

Subject: Electrical Machine Design

Time: 3 Hours   **Max.Marks: 75**

Note: i) Answer all questions from Part A. Answer any five questions from Part B.
ii) Answer to the questions of part-A must be at one place and in the same order as they appear in the question paper.
iii) Missing data, if any, may suitably be assumed.

PART – A (25 Marks)

1	What is the impact of superconductivity on the size of the machine?	2
2	What is the gap contraction factor in case of ducts?	3
3	Why the leakage coefficient in a loaded machine has a larger value than unloaded machine?	2
4	Define cooling time constant.	3
5	List the types of enclosures used for the protection of motors in industrial sector.	2
6	Explain each term in the output equation of the 3-phase synchronous generator.	3
7	On what factors does magnetic loading of a machine depend?	2
8	Give the various approaches available in CAD electrical machines.	3
9	Highlight the salient features of digital computers.	2
10	List the insulating materials used for the electrical machines.	3

PART – B (5x10 = 50 Marks)

11 a) Classify the insulating materials based on temperatures by providing examples for each.   5
   b) Distinguish between solid core and powder core materials.   5

12 a) Give the significance of carter's coefficient.   5
   b) Determine the apparent flux density in the teeth of a dc machine when the real flux density is 2.15 wb/m^2; slot pitch: 28mm; slot width 10mm and the gross core length 0.35m. The number of ventilating ducts are 2, each 10mm wide. The magnetizing force for a flux density of 2.13 Wb/m^2 is 5000 A/m. The iron stacking factor is 0.9.   5

13 a) On what factors does rating of electrical machine depend?   5
   b) An induction motor has a final steady temperature rise of 40°C when running at its rated output. Calculate its half hour rating for the same temperature rise if the copper loss at rated output is 1.2 times constant losses. The heating time constant is 110 min.   5

14 a) Give the procedural steps to obtain main dimensions of 3-phase core type transformer.   5
   b) A 100 kW, 230 V, 5000 rpm, universal motor has a full load efficiency of 75% calculate the power developed by the armature of motor if the sum of iron, friction and windage losses is approximately 2/3 of total losses.   5

15 a) Describe briefly about the various leakage fluxes that will occur in electrical machines.   5
   b) Derive an expression for the calculation of specific permeance of circular slot.   5

16 a) What is the effect of armature relation in case of design of dc and ac machines?   5
   b) Discuss the effect of leakage flux in the various sections of dc machine.   5

17 Give a brief treatise on the following:
   a) Hybrid method of CAD   5
   b) Synthesis method of CAD.   5

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B.E. 4/4 (ECE) I - Semester (Main) Examination, December 2015

Subject : Industrial Administration and Financial Management

Time : 3 Hours   Max. Marks: 75

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1   Differentiate between private limited company and public limited company.
2   Draw fixed position layout and state its demerits.
3   Define the term work study.
4   List various wage incentive plans and explain Merick plan.
5   State the objectives of S.Q.C.
6   Compare inspection and acceptance sampling.
7   What are the duties of a purchase manager?
8   State the standard form of linear programming and its assumptions.
9   Explain Diminishing balance method of depreciation.
10 What is time value of money?

PART –B (5 X 10 = 50 Marks)

11 a) Compare line layout and process layout.
   b) Explain line and staff organization structure and state its merits and demerits.

12 a) Explain any two methods of job evaluation.
   b) Explain principle of motion economy related to work place layout.

13 a) Explain procedure of method study and highlight its importance.
   b) Compare partnership and Joint Stock Company.

14 a) Draw O.C. curve and mark salient points on it and explain each point in detail.
   b) The current capacity in Ampere of 5 random samples from each batch is recorded.
       There are 10 sub batches. Construct $\overline{X}$ and R chart and comment

Sl. No.	X_1	X_2	X_3	X_4	X_5
1	43	61	64	69	72
2	46	54	67	71	79
3	18	23	74	76	81
4	37	49	56	67	70
5	41	44	64	70	74
6	21	24	23	45	51
7	56	61	61	62	84
8	25	38	40	46	71
9	24	34	46	51	66
10	33	38	40	49	58

15 a) Solve the following L.P.P. by graphical method.

$Maximize\ Z = 6x_1 + 8x_2$

subjected to conditions

$2x_1 + 4x_2 \leq 60$

$4x_1 + 2x_2 \leq 48$

$x_1, x_2, \geq 0$

b) Construct network diagram and identify the critical path for the following project. If the activity 5-6 is delayed by 2 days what is the affect on project completion.?

Activity	1-2	1-3	2-3	2-5	3-4	3-6	4-5	4-6	5-6	6-7
Duration (weeks)	15	25	3	5	8	12	1	14	3	14

16 a) Explain the importance of break even analysis for an organization and mention its Assumptions.

b) Estimate selling price per unit of electronic component. Following information is for 250 items: Direct material cost is Rs 75000, Direct labor cost is Rs 45000, direct expense are Rs 15000, factory on cost is 15%, selling distribution expense are 10%, assume profit is 22%.

17 Write short notes on the following
   (a) Nature of financial management
   (b) materials planning
   (c) Process capability

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FACULTY OF ENGINEERING

B.E. 4/4 (M/P/AE) I – Semester (Main) Examination, December 2015

Subject: Operations Research

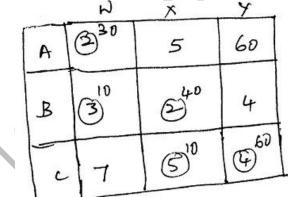**Time: 3 Hours**   **Max.Marks: 75**

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1. Note about the types of solutions in LPP graphical routine.   2
2. What do you mean by degeneracy in simplex? How it is overcome?   3
3. Write the dual of:
   Min $z = 8x_1 + 12x_2 + 3x_3$
   subjected to conditions
   $7x_1 + 4x_2 \quad 55$
   $3x_1 + x_2 + 2x_3 \quad 74$
   $x_1, x_2, x_3 \quad 0$ 3
4. State the conditions of a simplex to be solved by dual simplex.   2
5. How do you proceed to solve an assignment problem if its profit matrix and unbalanced in nature.   2
6. Apply u_i and v_j for the following IBFS of a transportation problem and find the transportation schedule

   given supply from A, B, C is 30, 50, 70 and demand from W, X, Y is 40, 50, 60.   4

7. What is game theory? State its application.   2
8. Classify the replacement model problems.   2
9. What do you mean by Jockeying waiting line costs, pre-emptive priority rule in queuing theory?   3
10. What are optimization techniques?   2

PART – B (5x10 = 50 Marks)

11. Solve the LPP by simplex method.
    Minimize $z = x_1 - 3x_2 + 2x_3$
    subjected to conditions
    $3x_1 - x_2 + 2x_3 \quad 7$
    $2x_1 + 4x_2 \quad 12$
    $-4x_1 + 3x_2 + 8x_3 \quad 10$
    $x_1, x_2, x_3 \quad 0$

…2.

12 Find optimum solution for the following transportation problem.

		Destinations						
		D_1	D_2	D_3	D_4	D_5	D_6	Supply
Plants	P_1	1	2	1	4	5	2	30
	P_2	3	3	2	1	4	3	50
	P_3	4	2	5	9	6	2	75
	P_4	3	1	7	3	4	6	20
	Requirement	20	40	30	10	50	25	

13 Solve the following LPP by dual simplex method

$$\text{Min } z = 3_1 + x_2$$
$$\text{STC: } x_1 + x_2 \quad 1$$
$$2x_1 + 3x_2 \quad 2$$
$$x_1, x_2 \quad 0$$

14 Solve the following assignment problem. What is the special feature of this problem? Given the sales matrix (lakhs of Rs.).

		Salesman			
		A	B	C	D
Territory	W	42	35	28	21
	X	30	25	20	15
	Y	30	25	20	15
	Z	24	20	16	12

15 A machine cost Rs. 6000. Given the maintenance cost and resale value (Rs). Find the best period of replacement

Year	1	2	3	4	5	6	7	8
Main. cost	1000	1200	1400	1800	2300	2800	3400	4000
Resale value	3000	1500	750	375	200	200	200	200

16 a) Explain Jhonson's algorithm. Classify the sequencing problems.
  b) Find the sequence of the jobs and idle time given the following

Job 1	Sequence	A	B	C	D	E
	Time	2	3	4	6	2
Job 2	Sequence	C	A	D	E	B
	Time	4	5	3	2	6

17 a) Define: Rate of service, arrival pattern, Kendall-Lee notation.
  b) The mean arrival rate to a service centre is 3/hr and the service time is 10 min. Assume M/M/1 model and find the following:
    i)   Probability of two units in the system
    ii) Expected length of non empty event
    iii) Expected numbers of units in system
    iv) Expected time a customer has to wait in system in minutes.

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B.E. 4/4 (CSE) I - Semester (Main) Examination, December 2015

Subject : Principles and Applications of Embedded Systems

Time : 3 hours   **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1 What is CPSR in ARM processor?	2
2 What is difference between VON Neumann and Harvard architecture?	3
3 What is trap and the common use of trap?	2
4 What is supervisor mode?	3
5 What is branch penalty?	2
6 Draw a bus with a DMA controller and explain briefly.	3
7 What is the gray area of reentrancy? Give a suitable example?	3
8 What is MPSOCS?	2
9 Explain the bus bridge operation with a UML state diagram.	3
10 What is priority inversion problem?	2

PART – B (5 x 10 = 50 Marks)

11 a) Explain about Embedded system design process.	6
b) Explain about the characteristics of Embedded computing applications.	4
12 a) Explain about memory management units and address translation.	6
b) Explain about cache and classification of cache misses.	4
13 a) Explain the advantages and disadvantages of having more number of tasks in the system.	5
b) Explain about the rules to be followed by interrupt routines in an RTOS environment.	5
14 a) Explain about evaluating operator system performance.	7
b) Explain about distributed embedded system.	3
15 Explain about the various ways of getting embedded software into the target system.	10
16 a) Explain about the instruction set simulator which is a software tool that runs on host.	6
b) Explain about logic analyzer.	4
17 Write short notes on :	
a) Address resolution	3
b) Hard real time scheduling considerations	4
c) List advantages of interrupt driven I/O programming over busy wait I/O programming.	3

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FACULTY OF INFORMATICS

B.E. 4/4 (IT) I – Semester (Main) Examination, December 2015

Subject : Intellectual Property Rights (Elective – II)

Time : 3 hours   **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1 A) Copyright law applies to forms of expression contained in :
    a) Song lyrics   b) Paintings
    c) Literary works   d) All of the above

   B) Trademark law protects
    a) Words, symbols   b) only brand names
    c) Names of people & places   d) Inventions

   C) Who can challenge the issue of a patent?
    a) Business competitors   b) Inventor's partners
    c) Anyone   d) Federal Government

2 A) Which of the following would not quality as a mark.
    a) Toys 'R' vs   b) Reebok
    c) North   d) The Green family fun experience

   B) Which of the following is not specifically protected by intellectual property legislation?
    a) Copyrights   b) Trade secrets
    c) Trademarks   d) Industrial designs

3 The minimum term of protection for copyright under the Rome convention was _____ years.
4 Like patents _____ exists only in the country where they are granted.
5 Exclusive marketing right is granted for 5 years from the _____ .
6 IB of World Intellectual Property Organization stands for _____.
7 India, became a member of the Paris Convention for the protection of Industrial Property on _____ .
8 Match the following :
    i) Intellectual Property Rights   a) Invention of printing press
    ii) Budapest treaty   b) Year 1999
    iii) Trade Mark Act   c) 15 years from the registration
    iv) Protection of Industrial Designs   d) Micro organisms & biotechnology products
    v) Origin of Copy right   e) Intangible Rights
                                           f) 20 years from the date of filing
                                           g) The statute of Anne 1710

9 State true / false
   i)   Creator of a work is the first copyright owner of the work.   (   )
   ii) Intellectual property is intangible property that is the result of the creative,
       intellectual process.   (   )
   iii) No patent will be granted of the invention that would be obvious to the general
       public.   (   )
   iv) Designs which are disclosed to the public before the application for
       registration is filed, the registration becomes ineffective even if it is, granted.   (   )
   v) Under specified circumstances the licensee can also be an owner of copyright. (   )

10 Problems
   i)   A invents a new method of agriculture to grow sweetlime gardens. He wants
       to apply for a patent. Can he do so? Discuss.
   ii) Can copyright be registered in respect of a Telephone Directory?
   iii) A perfume company would like to register a particular smell as a trademark
  can it succeed?
   iv) Mr. P invents a drug using the turmeric for the cure of Chukungunya. While
       inventing the drug he made use of the traditional knowledge on the medicinal
       values of turmeric. Will his invention be patented in India?
   v) The Police seizes all the CDs in a cybercafé. What are the remedies available to
       the owner of the cafe?

PART – B (5 x 10 = 50 Marks)

11 Effective enforcement of Intellectual property encourages economic development –
Comment.

12 Discuss the law relating to revocation and surrender of patents.

13 What is the Madrid agreement? State the main features of this agreement.

14 What is the object of registration of designs? What are the designs not registrable
under the act?

15 What is the inter-relationship between copyright and designs? Can one have both
copyright and design right at the same time.

16 What constitutes piracy of a registered design? What penalities have been provided
for piracy of a registered design under the Designs Act 2000.

17 Explain the patentable subject matter in India and its essential characteristics.

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FACULTY OF INFORMATICS

B.E. 4/4 (IT) I - Semester (Main) Examination, December 2015

Subject : Wireless and Mobile Communications

(Elective – II)

Time : 3 hours   **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1	Define Brewster angle.	2
2	Give the features of 2G cellular networks.	3
3	What is general packet radio service?	2
4	List any two advantages of digital modulation.	2
5	Explain constant envelope modulation.	3
6	Write the differences between wireless and fixed telephone networks.	3
7	Define spread spectrum.	2
8	Define Tunneling.	2
9	What are the problems with mobile IP?	3
10	How does a mobile node discover that it has moved?	3

PART – B (50 Marks)

11 a)	Explain the various channel assignment strategies.	5
b)	Describe the capacity improvement techniques in cellular system.	5
12 a)	Explain about the basic propagation mechanism.	5
b)	Explain knife-edge diffraction model.	5
13 a)	How does a spread spectrum become bandwidth efficient? Explain.	5
b)	Discuss about liner modulation techniques.	5
14	Explain the architecture and channel types in GSM.	10
15	Describe dynamic host configuration protocol DHCP and explain typical initialization of DHCP client.	10
16 a)	Describe IP packet delivery.	5
b)	Write the advantages of mobile TCP.	5
17	Write short notes on any **two** :	10

    a) Indoor propagation models
    b) Handoff strategies
    c) MSK

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B.E. 4/4 (IT) I - Semester (Main) Examination, December 2015

Subject : Ad-hoc and Sensor Networks (Elective – II)

Time : 3 hours   **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1	What are the applications of Adhoc Networks?	2
2	Define QoS. Explain importance of QoS.	3
3	List the vulnerabilities of mobile Adhoc networks.	2
4	List the proactive routing protocols for MANETS.	2
5	Define location based routing.	3
6	What are the components of sensor networks?	2
7	List the examples of category 2 WSN applications.	3
8	Define broadcasting.	2
9	Briefly discuss about on demand routing.	3
10	Briefly discuss about sensor taxonomy.	3

PART – B (50 Marks)

11 Give a brief account of available wireless technologies.   10

12 What are Adhoc Networks? Discuss in detail about adhoc network applications and
design challenges.   10

13 a) Discuss briefly about modified TCP.   5
   b) Write a note on adhoc transport protocol.   5

14 a) Discuss about medium access layer.   5
   b) Discuss in detail about QoS routing.   5

15 a) Write a note on basic wireless sensor technology.   4
   b) Discuss about MAC protocols for WSNs.   6

16 Explain in detail about multicasting protocols.   10

17 Discuss the following :
   a) Inter-layer design approaches   5
   b) TCP-aware cross-layered solutions   5

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FACULTY OF INFORMATICS

B.E. 4/4 (IT) I – Semester (Main) Examination, December 2015

Subject : Distributed Systems (Elective – II)

Time : 3 hours   **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1	What is Distributed systems? Give two examples.	2
2	What are various forms of transparency?	3
3	What are distributed objects in RMI?	3
4	Compare static versus dynamic remote method invocation.	3
5	What are advantages of user level threads?	2
6	What is stateful server?	2
7	What is the key difference object references in CORBA and those in Globe?	3
8	How are caching and replication addressed in DCOM?	3
9	List out the characteristics of Multimedia data?	2
10	What is Fair scheduling?	2

PART – B (50 Marks)

11 a) What are various goals of Distributed Systems? Explain?   5
   b) Explain the Client-Server Architecture in detail.   5

12 a) Describe about the basic RPC operations.   5
   b) Distinguish persistent and transient communication.   5

13 a) Explain the role of software agent in Distributed system.   5
   b) Discuss about implementation of Namespaces.   5

14 a) Write about security in DCOM.   5
   b) Illustrate briefly on Fault-tolerant in CORBA.   5

15 Discuss the quality of service management in distributed Multimedia system in
   detail.   10

16 a) Explain the role of middleware in distributed systems.   5
   b) Explain the use of Home-based approach in supporting mobile entities. 5

17 Write short notes on   10
   a) Client-to-server binding in DCE
   b) Use of message broker in message queuing systems

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