FACULTY OF ENGINEERING

B.E. 4/4 (Civil) I-Semester (Main & Backlog) Examination, Nov./Dec. 2018

Subject : Concrete Technology

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	Explain hydration of cement.	2
2	What are the various stages of manufacture of concrete?	2
3	Draw stress strain curve for high strength and low strength concrete.	3
4	Why is compressive strength is usually considered being most important in concrete design.	3
5	Calculate the target mean strength of M40 grade concrete according top IS code method.	2
6	What are the basic parameter of statical quality control of concrete?	2
7	Under what circumstances the accelerators and retarders are used in concrete.	3
8	List out the advantages ready mix concrete.	2
9	Explain fibre shotcrete and fibre aspect ratio.	3
10	Explain need for fibre reinforced concrete.	3

PART – B (50 Marks)

11 a) What is workability of concrete and how it is measured? Explain any one method.   5

    b) Explain various types of vibrators used in compaction and concrete.   5

12 Design M30 concrete using IS10262 – 2009   10
With following data :
Degree of quality control = Good
Max. size of aggregate = 20mm
Type of exposure = Moderate
Specific gravity of cement = 3.14
Specific gravity of F.A. = 2.63
Specific gravity of C.A. = 2.61
Compaction factor = 0.80
Zone II sand and assume any data if required.

13 a) List out some commonly used mineral admixtures and explain any one.   5

    b) Calculate the gel/space ratio and strength of concrete made with 600gms of cement with 0.6 w/c ratio for full hydration and 60% hydration.   5

14 a) Discuss the properties of structural light weight concrete and its applications.   5

    b) Differentiate between high strength and high performance concrete.   5

15 a) Explain properties and applications of self compacting concrete.   5

    b) Discuss the mechanism of fibre reinforced concrete with various applications.   5

..2

16 a) Discuss in detail short term and long term properties of concrete.   5
    b) What is durability of concrete and explain factors effecting durability of concrete?   5

17 Write short notes on :
    a) GGBS   3
    b) Curing of concrete   3
    c) Mixing and Batching   4

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FACULTY OF ENGINEERING

B.E. 4/4 (EEE) I - Semester (Main & Backlog) Examination,
November / December 2018

Subject : Electrical Machine Design

Time : 3 Hours   Max. Marks: 75

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

PART – A (25 Marks)

1   What is the difference in permeability of magnetic and non-magnetic materials? [3]
2   What are the electrical properties of insulating materials?   [3]
3   What is Carter's gap co-efficient?   [3]
4   Mention the problems encountered while calculating the mmf for teeth.   [3]
5   Write the output equation of a D.C. machine.   [3]
6   How is specific magnetic loading determined?   [3]
7   What is the range of flux densities used in the design of a transformer?   [2]
8   State three important features of turbo-alternator rotors.   [3]
9   What is the general design procedure?   [2]

PART-B (50 Marks)

10 (a) Discuss the requirements of high conductivity materials.   [6]
      (b) Write notes on classification of insulating materials.   [4]

11 Discuss in detail about the cooling methods adopted in transformers?   [10]

12 Design a suitable commutator for a 350 KW, 600 rpm, 440 V, 6-pole D.C. generator
      having an armature diameter of 0.75 m. The number of coils is 288, Assume suitable
      values wherever necessary.   [10]

13 Compute main dimensions D and L of a 3.7 KW, 400V, 3-phase, 4-pole, 50 Hz
      Squirrel cage induction motor.
      Bav = 0.45 Wb/m2
      Electrical loading = 23000 Amp-conductors/metre
      Efficiency = 85%
      Power factor = 0.84
      Winding factor = 0.955
      Stacking factor = 0.9.   [10]

14 Discuss in detail different approach methods of computer aided design.   [10]

15 (a) What are the limitations in the design of electrical apparatus?   [4]
      (b) Write a note on temperature gradients in conductors placed in slots with the
           help of equations.   [6]

16 A 250 KVA, 6600/400 V, 3-phase core type transformer has a total loss of
      4800W on full load. The transformer tank is 1.25mm in height and 1 X 0.5
      in plan. Design a suitable scheme for cooling tubes if the average temperature
      rise is to be 35 deg. The diameter of the tube is 50 mm and is spaced 75mm from
      each other. The average height of the tube is 1.05m. Specific heat dissipation due to
      radiation and convection is respectively 6 and 6.5 W/m^2 – deg.celcius. Assume that
      convection is improved by 35% due to provision of tubes.   [10]

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FACULTY OF ENGINEERING

B.E. 4/4 (ECE) I-Semester (Old) Examination, November / December 2018

Subject: Mobile Cellular Communications

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

Note: Answer all questions from Part-A & Any five Questions From Part-B.

Part – A (25 Marks)

1. Explain the importance of frequency reuse.   2
2. Distinguish between fixed channel assignment and dynamic channel assignment strategies w.r.t raido resource management   2
3. Calculate the minimum distance to be maintained between the centres of two co-channel hexagonal cells, if the cell radius is 1 Km and frequency reuse distance is 12.   3
4. A DSSS system has a 1.2288 megachips per second (M cps) code clock rate and a 9.6kbps information rate. Calculate the processing gain.   3
5. A hopping bandwidth of 600 MHz and a frequency step size of 400 Hz are used FHMA technique. What is the minimum number of PN chips that are required for each frequency word?   3
6. Compare the important features of TDMA and CDMA multiple access techniques.   3
7. Explain different services offered by GSM system.   2
8. In a first – generation AMP system where there are 395 channels of 30 kHz each in a bandwidth of 12.5 MHz, what is the multiple access spectral efficiency for FDMA?   3
9. Compare important technology features of 3G and 4G mobile cellular systems.   2
10. Write the important applications of Bluetooth.   2

PART–B (5x10 = 50 Marks)

11. a) What is hand off? Discuss hand off techniques used in 1G, 2G and 3G mobile cellular communication systems   5
    b) Assume that the cellular system has a total band width of 20 MHz and uses a full duplex channel bandwidth of 40 kHz for voice communication. The cellular system covers a city with an area of 1000 km^2 using hexagonal cells with radius 2 km and a cluster size of 7 cells. Estimate the following: 5
    i) The total number of cells required to cover the entire city.
    ii) The number of channels per cell.
    iii) The total number of channels in the system.

12. a) What is multipath time delay spread? Discuss the fading effects due to multipath time delay spread   5
    b) Consider a Tx which radiates a sinusoidal carrier frequency of 1850 MHz. for a vehicle moving 60 mph, compute the received carrier frequency if the mobile is moving.
    i) Directly to wards the Tx
    ii) Directly away from the Tx   5

13. a) Distinguish between TDMA and CDMA.   5
    b) AMPS mobile cellular system uses FDMA as multiple access technique. The system bandwidth is 12.5 MHz, the channel spacing is 30 KHz and the guard band spacing is 30 KHz. The number of channels allocated for control signaling is 21. Calculate the number of Channels available for message transmission and the spectral efficiency of FDMA.

14. a) Draw the signal processing block diagram of GSM system and describe the functions performed by each block in the system   5

   b) Draw the block diagram of CDMA forward channel modulation process and explain.   5

15. a) Draw the architecture block diagram of Universal Mobile Telecommunication System (UMTS) and explain the functionality of each element of the system   5

   b) Classify wireless data networks and compare the key characteristics of Wireless Personal Area Network (WPAN) and Wireless Local Area Networks (WLAN).   5

16 a) What is cell sectoring and explain how it improves the system capacity   5

   b) What is adjacent channel interference? How can it be minimized?   5

17. a) Discuss different types of small scale fading   5

   b) We consider a WLAN installation in which the maximum propagation delay is 0.4 sec. The WLAN operates at a data rate of 10 Mbps, and packets have 400 bits. Calculate the normalized throughput with: (i) an un slotted non-persistent, (ii) a slotted persistent, and (iii) a slotted 1- persistent CSMA protocol.   5

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FACULTY OF ENGINEERING

B.E. 4/4 (M/P/AE) I - Semester (Main & Backlog) Examination,

November / December 2018

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 Define operations research.
2 Differentiate between Primal LPP and Dual LPP.
3 Show with a neat sketch bounded solution space and Unbounded solution space.
4 Differentiae between graphical method and simplex method of an LPP solution.
5 What is an Unbalanced transportation problem?
6 Differentiate between feasible solution and optimal solution (in general).
7 Why is replacement of an equipment is necessary?
8 Define Two person zero sum game (TPZSG).
9 State Johnson's rules in sequencing.
10 Define (i) Reneging   (ii) Balking

PART – B (50 Marks)

11 Solve the following LPP
   Maximize $Z = 180x_1 + 24x_2$
   Subject to $7x_1 + 7x_2 \leq 49$
                   $100x_1 + 50x_2 \leq 500$
                   $x_1, x_2 \geq 0$

12 Solve the following transportation problem

	TO				
	D_1	D_2	D_3	Supply	
F_1	3	5	7	150	
F_2	6	4	10	200	From
F_3	8	10	3	100	
Demand	100	300	150		

13 Solve the following Assignment problem.

	Machine					
	1	2	3	4	5	
a	10	12	16	18	10	
b	20	18	12	10	16	Men
c	14	10	12	18	20	
d	16	10	12	12	18	

..2

14 Solve the following game

Players B's strategies

	b_1	b_2	b_3	b_4	b_5
a_1	8	2	6	10	12
a_2	16	10	2	14	8
a_3	12	10	8	16	14
a_4	8	6	6	10	14
a_5	10	2	4	12	10

Player A' Strategies

15 Customers arrive at a service window as per Poisson distribution at an average of 6 per hour. Service goes as per exponential distribution and it takes 6 minutes to clear one customer.
   Determine :
   (i) Probability that the service is IDLE
   (ii) Average no of customers waiting
   (iii) Average waiting time of a customer

16 (a) List out assumptions in sequencing.
   (b) Determine total elapsed time for the following:

	J_1	J_2	J_3	J_4	J_5	J_6
M/c – I	8	12	7	14	16	10
M/c - II	6	10	9	12	14	12

17 Write short notes on the following:
   (a) Degeneracy is simplex
   (b) Dominance rules in game theory
   (c) Multi objective optimization

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BE 4/4 (ECE) I - Semester (Main & Backlog) Examination,

November / December 2018

Subject : Embedded Systems (Elective-II)

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

Note: Answer all questions from Part-A & Any questions From Part-B.

Part - A (25 Marks)

1. Define Embedded System?   (2)
2. What is the need for Watchdog Timer in embedded systems?   (2)
3. What is the significance of Barrel Shifter in ARM.? Explain with an example   (3)
4. Differentiate between ARM mode and Thumb mode.   (2)
5. What do you mean by hot attachment and detachment? What are bus protocols of buses UART, RS232C, USB, CAN, Bluetooth and PCI that support hot attachment and detachment?   (3)
6. What is FireWire? What is the main purpose of FireWire?   (3)
7. Describe the performance accelerating methods in the embedded system design. (2)
8. Explain the software- hardware trade off? What are the advantages and Disadvantages of software implementation instead of hardware implementation?   (3)
9. What is the function of Cross Compiler and Cross-Assembler?   (3)
10. What is the use of Bit Rate Meter?   (2)

PART – B (50 Marks)

11. Define Design Metrics in Embedded Systems. What are the different competing design metrics? What are the constraints of Embedded System design?   (10)

12. Explain data processing, Arithmetic and data transferring instructions of ARM process?   (10)

13. (a) Explain any two of the following protocols   (10)
    i) I2C ii) CAN iii) USB

14. (a) Explain about Design Cycle in the development phase for an Embedded System. (6)
    (b) Explain about any one method of downloading Embedded Software into the Target System.   (4)

15. (a) Draw various level of design process in embedded system.   (4)
    (b) A Digital Camera is to be designed in a project. What will be skills needed in terms of hardware and software engineers.   (6)

16. (a) Explain about Testing methods and debugging techniques for an embedded Hardware.   (4)
    (b) Explain any two target hardware debugging tools.   (6)

17. Answer any two   (10)
    i) TCP/IP   ii) ARM Processors Families   iii) RTOS Characteristics

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FACULTY OF ENGINEERING

B.E. 4/4 (ECE) I–Semester (Main & Backlog) Examination, Nov./Dec. 2018

Subject: Enterpreneurship (Elective - II)

Time: 3 hours   Max. Marks: 75

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

PART–A (25 Marks)

1. Who is an entrepreneur? How is an intrapreneur different form an entrepreneur?   3
2. Write the differences between Entrepreneur Entrepreneurship   3
3. List the areas which promotes Women Entrepreneurship?   2
4. Examine the role of Technology in Entrepreneurship   2
5. What is the necessity for incorporating profitability analysis in project formulation?   2
6. List out various sources of ideas to formulate the project   3
7. What are the differences between PERT and CPM   3
8. What is Time Management Matrix?   2
9. What is meant by Personality? Identify some core characteristics of personality   2
10. What is behavior? Explain the role of motivation in behavior of an entrepreneur?   3

PART–B (50 Marks)

11. a) Define Economy of a Nation and list out various parameters which influence growth of economy.   5
    b) Discuss about the areas where linkage is required between small and large scale industries   5

12. a) Explain various opportunities and challenges for women entrepreneurs in India.   5
    b) What is an idea? Also list out various sources of ideas for business initiatives   5

13. Explain the importance of market projections and how to analyze the market demand?   10

14. Define the Project and give the procedure of Project management. Also explain how CPM and PERT techniques help an entrepreneur in successful planning and execution of project.   10

15. The various time estimates of activities involved in a project are given in table   10

Activities	1-2	1-3	2-4	2-3	3-4	3-5	4-6	5-6
T_o	2	4	2	2	0	3	6	1
T_m	6	8	3	4	0	6	10	3
T_p	10	12	4	6	0	9	14	5

(i) Determine the expected completion time of the project
(ii) Determine the variance and standard deviation of the project
(iii) Determine the probability of completing project with in 23 days

16. a) "Behavior and motivation goes together" – Explain with entrepreneurial perspective   5
    b) Explain about time management matrix with a neat sketch and its satrent features.   5

17. Write short notes on any three of the following
    a) Human aspects of project Management   b) Partnership enterprise
    c) Assessment of tax burden   d) Urgency addiction

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FACULTY OF ENGINEERING

B.E. 4/4(CSE) I – Semester (Main &Backlog) Examination, Nov./Dec. 2018
Subject: Principles and Applications of Embedded Systems

Time: 3 Hours   Max. Marks: 75

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

PART – A (25 Marks)

1.	Differentiate between Von Neumann and Hard ward Architecture	2M
2.	Explain the different types of caches in embedded system.	3M
3.	Differentiate between RISC and CISC instruction set	2M
4.	What is the need of coprocessor?	2M
5.	What are various state diagrams of Task state?	2M
6.	What are the elements of CPU bus?	3M
7.	Write three Rules of a Re-entrant function?	3M
8.	Explain about logic analyzer?	3M
9.	Draw the timing diagram for burst read transaction with brief explanation.	2M
10.	List the basic techniques for testing and debugging of embedded software?	3M

PART – B (50 Marks)

11.	a) Explain about the formalisms for system design.	6M
	b) Illustrate the basic ARM programming model	4M
12.	Explain about Interrupt priorities and Interrupt vectors.	10M
13.	a) Demonstrate how semaphore is used to solve shared data problems, Give an example?	6M
	b) Explain message queues and pipes?	4M
14.	Explain about the priority based scheduling in detail with suitable examples?	10M
15.	a) Explain shared memory multi processors with a design example.	6M
	b) Explain about ROM emulator with example.	4M
16.	a) Explain the methods followed for testing embedded software on host machine	6M
	b) Discuss the rules to be followed by the interrupt in RTOS environment with example.	4M
17.	Write short note on:	
	a) Addressing modes of ARM processors	3
	b) Timer functions	4
	c) Linker/Locators for Embedded software	3

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FACULTY OF ENGINEERING

B.E. 4/4 (ECE) I-Semester (Main & Backlog) Examination
November / December 2018

Subject: Digital Signal Processor & Archit. (Elective – II)

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

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

PART – A (25 Marks)

1   Draw the butterfly diagram for 4-points DITFFT.   2M
2   Prove that the dynamic range of a signal increases by 6dB for each additional
    bit used to represent its value.   3M
3   List the features of programmable DSP processors.   2M
4   Describe the bus structure of C54x processor.   3M
5   How interrupts are handled by the C 54 xx DSP processors.   3M
6   Write any three special instruction of TMS320C54x processor.   2M
7   List the various register available in ALU unit of ADSP218x processor.   2M
8   What are the features of ADSP218 processor?   3M
9   Briefly explain memory space organization.   3M
10 How many address lines are required to access all locations of a 16K x 16
    SRAM?   2M

PART – B (50 Marks)

11 (a) What is meant by decimation in frequency FFT algorithm?   5M
   (b) Explain the DSP computational errors.   5M

12 (a) With a neat block diagram explain the functions of address generation unit
       of DSP architecture.   5M
   (b) What are the computational building blocks for DSP computation.   5M

13 (a) Describe the operation of the following instruction of TMS 320 C 54 xx processor,
       with an example. 1) MAC;   2) RPT ;   3) MPY   6M
   (b) Explain the Interrupts of TMS320C54x processors.   4M

14 (a) Explain MAC unit of ADSP218x processor with block diagram.   5M
   (b) Draw and discuss the working of DIVS Instruction in ADSP218x processor. 5M

15 (a) Explain a data memory system with address range 000800h-000FFFh for a
       C5416 processor using 2Kx8 SRAM memory chips.   6M
   (b) Briefly explain parallel I/O interface.   4M

16 (a) Why decimation and interpolation is necessary in digital signal processing?
       What is its effect in frequency domain?   5M
   (b) Briefly explain the major features of programmable DSPs.   5M

17 (a) Explain the concept of pipelining and how pipeline depth is measured?   5M
   (b) Draw the I/O interface timing diagram for read-write-read sequence of
       operation.   5M

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FACULTY OF ENGINEERING

B.E. 4/4 (ECE) I-Semester (Main & Backlog) Examination,
November/December 2018

Subject : Optimization Techniques (Elective I)

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   Find the minimum of the function
$$f(x_1, x_2, x_3) = f(X) = 2x_1^2 + 2x_2^2 - 8x_1 - 16x_2 - 24x_3 + 180$$ 3

2   Classify the objective functions.   2

3   List out the difference between Fibonacci and golden section methods?   3

4   Brief about exhaustive search method.   2

5   Define each term: 2
    (1) Pattern directions
    (2) Conjugate directions

6   Why is a conjugate directions method preferred in solving a general nonlinear problem?   2

7   Classify Simulation Models.   3

8   Using Monte Carlo method. Calculate the value of .   2

9   Draw the binary GA flow chart.   3

10 What do you understand about Evolutionary Computation? When to Use Evolutionary Computing Strategies?   3

PART – B (50 Marks)

11 A manufacturer produces three machine parts, A, B, and C. The raw material costs of parts A, B, and C are Rs. 5, Rs. 10, and Rs. 15 per unit, and the corresponding prices of the finished parts are Rs.50, Rs.75, and Rs. 100 per unit. Part A requires turning and drilling operations, while part B needs milling and drilling operations. Part C requires turning and milling operations. The number of parts that can be produced on various machines per day and the daily costs of running the machines are given below:

Machine part	Number of parts that can be produced on		
	Turning lathes	Drilling machines	Milling machines
A	15	15	
B		20	30
C	25		10
Cost of running the machines per day	Rs 250	Rs 200	Rs 300

Formulate and solvethe problem for maximizing the profit.   10 M

12 Minimize

$$f(x_1, x_2) = 2x_1 - 2x_2 + 4x_1^2 + 4x_1x_2 + 2x_2^2 \quad \text{from the starting point} \begin{Bmatrix} 0 \\ 0 \end{Bmatrix},$$

using Univariate method for three iterarions.

10

13 Minimize the function

$$f(x_1, x_2) = 8.0x_1 - 8.0x_2 + 16.0x_1^2 + 16.0x_1x_2 + 8.0x_2^2$$

take the points defining the initial simplex as

$$X_1 = \begin{Bmatrix} 4.0 \\ 4.0 \end{Bmatrix}, X_2 = \begin{Bmatrix} 5.0 \\ 4.0 \end{Bmatrix}, \text{and } X_3 = \begin{Bmatrix} 4.0 \\ 5.0 \end{Bmatrix}, \text{ and } r = 1.0, s = 0.5, \text{ and } x = 2.0 \text{ for}$$

convergence take v as 0.2.

10

14 Along with the algorithm and convergence criteria explain in detail about simulated annealing.

10

15 Explain following of GA.
   i) Roulette wheel selection and Tournament selection with algorithm. 5
   iii) Schema theorem 5

16 (a) With suitable examples explain about i) Binary encoding ii) Uniform and Two point crossovers 5
   (b) Discuss in detail about tunnelling algorithm. 5

17 (a) Explain the method of sensitivity analysis procedure to be followed for adding a new Constraint to the existing LPP. 5
   (b) Draw the flow chart to implement Fibonacci search method. 5

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FACULTY OF ENGINEERING
B.E. 4/4 (ECE) I – Semester (CBCS) (Main & Backlog) Examination, November / December 2018

Subject : System Automation & Control (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 Automation?	2
2	Draw the diagram for automation process pyramid.	3
3	List various types of temperature measurement sensors.	2
4	How is temperature controlled in heat exchanger?	3
5	Define hydraulic resistance , capacitance and inertance.	3
6	Why do we need mathematical models?	2
7	List the factors to be considered in selecting a microcontroller.	2
8	Draw the ladder diagram of AND and OR gate.	2
9	Explain the SCARA Robot.	3
10	List few components of a motion control system.	3

PART – B (50 Marks)

11 (a) Explain hierarchical structure of industrial automation systems.   6
   (b) Compare automatic control and supervisory control system.   4

12 (a) Describe factors which determine ADC resolution and linearity.   5
   (b) Explain flow measurement in detail.   5

13 (a) Describe thermal system building block. Give the describing equations & power dinipated / energy stored.   5
   (b) Explain translational and rotational system in detail.   5

14 (a) Draw the general block diagram of a PLC and explain.   6
   (b) Explain selection criteria of a PLC.   4

15 (a) Describe various feedback drives.   5
   (b) Describe real world applications of motion control system.   5

16 (a) Describe various sensor characteristics.   5
   (b) Explain any one ADC architecture in detail.   5

17 Write short note on:
   (a) Measurement of Pressure   6
   (b) Mechanical elements and move types.   4

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FACULTY OF ENGINEERING

B.E. 4/4 (ECE) I-Semester (Main & Backlog) Examination, November/December 2018

Subject: Internet of Things (Elective-II)

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

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

PART – A (25 Marks)

1   What are functional blocks of IoT?   (3)
2   Enlist IoT enabling technologies.   (2)
3   What is MAC address, explain with example.   (3)
4   Give two difference between TCP and UDP.   (2)
5   Define Latency in HTTP.   (3)
6   Compare the read and write time for FLASH memory and RAM.   (2)
7   Compare between Tuples and lists   (2)
8   Write a python code that calculates and displays the current age of a person.   (3)
9   How is Amazon EC2 used as an IAAS Cloud service.   (2)
10 What are the features of a LEAN startup.   (3)

PART – B (50 Marks)

11 (a) Mention the four IoT communication Models.   (5)
   (b) Describe link layer protocols relevant in context of IoT.   (5)

12 (a) Briefly explain additive and subtractive manufacturing with example.   (5)
   (b) What are application layer protocols? Explain request & response process
       in HTTP.   (5)

13 (a) Illustrate HEAP memory allocation with a psuedocode and appropriate
       figures.   (5)
   (b) Elaborate on debugging techniques for network connectivity errors in IoT
       applications.   (5)

14 (a) Enlist the features of Raspberry Pi Model B singe board computer.   (5)
   (b) Write a program in Python for sending an Email using SMTPLib.   (5)

15 (a) Enlist any five Amazon web services for IoT devices and write briefly about
       each one.   (5)
   (b) Mention the various business models that an IoT companies may adopt.   (5)

16 (a) What is stack overflow, how can it be avoided.   (5)
   (b) What are the various techniques in debugging an Arduino.   (5)

17 Write short notes on the following: (4+3+3)
   (a) Basic building blocks of an IoT device
   (b) Serial interfaces in Raspberry
   (c) Cloud Computing models

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FACULTY OF ENGINEERING

B.E. 4/4 (IT) I - Semester (Main & Backlog) Examination,
November / December 2018

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 What is the term of a patent, industrial design and trade mark in the Indian system?   (2)
2 What do you understand by the right of priority and what is its significance? (2)
3 What are the types of inventions which are not patentable in India?   (2)
4 Define passing off.   (2)
5 Differentiate between trade mark and service mark.   (2)
6 Is there any relationship between the Paris Convention and the TRIPS Agreements?   (3)
7 What is patent cooperation treaty (PCT) ? Who coordinate the activities of PCT? (3)
8 What do you mean by patentability?   (3)
9 State whether the following are true or false: (3)
   (a) Copyright rests in the author of the work.
   (b) 'Under specified circumstances, the licensee can also be an owner of copyright.
10 State whether the following are true or false: (3)
   (a) Preventing others from making copies of his / her work is an exclusive right under copyright.
   (b) The right to authorize making of a sound recording belongs to the owner of the copyright in music.

PART – B (50 Marks)

11 TRIPS Agreement obliges member States to exclude from patentability plants and animals other than micro-organism and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. Comment.

12 Effective management of Intellectual Property enables companies to use their intellectual property rights to improve their competitiveness and strategic advantages. Discuss the significance of Intellectual Property Management.

13 Discuss the functions and powers of WIPO. Explain the role of WIPO in protection of IPR.

14 How is infringement of copyright determined. What are the remedies available against infringement of copyright ? Explain briefly Authors Special Rights?

15 (a) Explain the concept of Industrial Designs. What are the Designs prohibited from registration?
   (b) Write about the procedure for Registration of Designs. What are the Rights conferred by Registration?

16 Define 'Patent' and 'Invention'. Explain the various things which are excluded from patentability. How is infringement of patent determined?

17 Write short notes on the following:
   (a) Passing off
   (b) Infringement
   (c) Copy Right Act
   (d) Assignment and transmission of copyright
   (e) WTO

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FACULTY OF ENGINEERING

B.E. 4/4 (IT) I-Semester (Main & Backlog) Examination,

November / December 2018

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 Mention three reasons which effect propagation of radio waves.	3
2 Mention some examples of wireless communication systems.	2
3 What is path loss? Mention some examples leading to path loss.	3
4 What is the relation between frequency of radio waves and signal penetration into buildings?	2
5 Mention the difference between Linear and Constant envelope modulation.	3
6 Explain the term modulation. Mention the different types of modulation.	2
7 What is the advantage of CDMA over FDMA and TDMA?	2
8 Explain black list, grey list and white list of GSM.	3
9 What are the goals of mobile IP?	3
10 What is the difference between snooping and mobile TCP?	2

PART – B (50 Marks)

11 a) Briefly explain the concept of cellular system and mention its advantages.	6
b) What do you understand by wireless networks? List the differences between 2G and 3G.	4
12 Explain outdoor and indoor propagation models.	10
13 a) Explain spread spectrum with diagrams.	6
b) What is the difference between direct sequence and frequency hopping spread spectrum.	4
14 Draw the architecture of GSM and list the functions of all its components.	10
15 Explain DHCP.	10
16 a) Explain the concept of tunneling and reverse tunneling.	6
b) Explain transmission / timeout freezing with respect to mobile transport layer.	4
17 Short notes :	
a) Optimization	4
b) GPRS	3
c) Frequency Reuse	3

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FACULTY OF ENGINEERING

B.E. (I.T.) 4/4 I - Semester (Main & Backlog) Examination,
November / December 2018

Subject : Ad Hoc and Sensor Networks (Elective – II)

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

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

PART – A (25 Marks)

1 Define Wireless Sensor Network.   (2)
2 Discuss the challenges in performance measurement of MANET routing
   protocol.   (2)
3 Differentiate multicasting and flooding. Under what situations are they useful? (3)
4 Discuss how message repetition is avoided in broadcasting.   (3)
5 Describe what is meant by Location based routing.   (2)
6 Discuss the working of Indirect – TCP.   (3)
7 Describe the process of route maintenance in AODV.   (3)
8 Describe the working of Intrusion Detection System in Ad Hoc network.   (3)
9 List the different types of sensors.   (2)
10 Give an overview of MAC protocolsl in sensor networks.   (2)

PART – B (50 Marks)

11 (a) Explain the characteristics and limitations of MANET.   (5)
   (b) Explain the architecture of Bluetooth wireless protocol with the help of a
       diagram.   (5)

12 Differentiate between proactive, reactive and hybrid routing in Ad Hoc network.(10)

13 (a) Explain in detail the multicasting protocols in Ad Hoc network.   (5)
   (b) Discuss the TCP-aware cross layer solutions in MANET.   (5)

14 (a) Explain the design issues of a MAC protocol for Ad Hoc network.   (5)
   (b) Briefly describe the characteristics of wireless sensor networks.   (5)

15 (a) Describe the QoS based routing approaches in Ad Hoc network.   (5)
   (b) Discuss the steps in establishing Ad Hoc network test bed.   (5)

16 (a) Explain in detail the potential security attacks in Ad Hoc network.   (5)
   (b) Discuss attack prevention strategies in Ad Hoc network.   (5)

17 (a) Explain the architecture of wireless sensor network with the help of a
       diagram.   (5)
   (b) Describe in detail the applications of wireless sensor network.   (5)

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FACULTY OF ENGINEERING

B.E. 4/4 (IT) I-Semester (Main&Backlog) Examination, November / December 2018

Subject: Distributed Systems (Elective – II)

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

Note: Answer All Questions From Part-A & Any five Questions From Part-B.

Part – A (25 Marks)

1. Define Distributed systems. What are its goals   3
2. Explain in detail the different sealing techniques   2
3. What is the role of a multi threaded sever in distributed systems?   3
4. Explain openness in distributed system   2
5. Define message broker and its role   2
6. Briefly explain processes and thread, in distributed system   2
7. What is object server?   2
8. What is distributed objects in RMI?   3
9. Discuss real time scheduling for resource management in distributed systems   3
10. What are the components for multimedia application systems?   3

PART–B (5x10 = 50 Marks)

11. What is the importance of interoperable object reference in CORBA systems   10

12. Explain the role of software agents in distributed systems   10

13. a) What is GLOBE? Explain the steps of binding a process to an object in GLOBE   5
    b) Discuss the security issue in DCom.   5

14. What are the main applications of message passing interface?   10

15. a) Explain transparency. Give examples of different types of transparency   5
    b) Distinguish between NOS and DOS   5

16. Discuss the quality of service manager tasks in distributed system.   10

17. Write short notes on the following: 5x2=10
    a) DCom
    b) Message oriented persistent communication
    c) Replication
    d) CORBA
    e) Stream Synchronization

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