Code No. 744/2306/NC

FACULTY OF ENGINEERING

B.E. 4/4 (EEE/Inst.) II – Semester (Backlog) Examination, September 2020

Subject: Renewable Energy Sources (Elective – III)

Time: 2 hours **Max. Marks: 75**

PART – A

Note: Answer any seven questions. **(7x3 = 21 Marks)**

1. What is solar-thermo dynamic conversion?
2. What is a green-house?
3. Explain about Beam and Diffuse radiation with a neat diagram.
4. List the problems related to biogas plants.
5. Define the terms Lift and Drag with reference to wind energy conversion.
6. What is meant by cut-out speed in wind energy conversion system?
7. Discuss briefly the impact of biogas plants on environment.
8. What do you mean by wet and dry fermentation?
9. List the applications of Geothermal energy.
10. Explain the principle of OTEC plant with a diagram.

PART – B

Note: Answer any three questions. **(3x18 = 54 Marks)**

11. a) Detail the various strategies to encourage the use of renewable energy sources.
    b) List the advantages and dis-advantages of solar wind and biomass energy sources.

12. a) 120 solar modules, each of 250 W_p and area of 1.67 m^2 are connected to form PV system. The efficiency of the system is 0.75, and the average annual solar radiation is 1487 k Wh/m^2. Calculate the expected annual energy production.
    b) List the various applications of solar energy. Explain the solar water heating sysem with a diagram.

13. a) Explain the components and functioning of the solar-wind hybrid system with a diagram.
    b) What are the various types of windmill rotors? List the characteristics and advantages of Darrieus rotor?

14. a) Explain in detail about anaerobic digestion and the different phases involved in this process.
    b) Explain the Pragati Design Biogas Plant with a diagram.

15. a) Explain the site considerations for setting up solar, wind, geothermal and OTEC plants.
    b) What is the need for non-conventional energy sources?

16. a) Explain the double basin arrangement of a tidal power plant with a diagram.
    b) Explain the operation of Anderson OTEC closed cycle system with a diagram.

17. a) Draw the diagram and give functional description of solar pond in detail.
    b) Give one word answer:
    i. Name the part of a biogas plant where reactions take place in the absence of oxygen.
    ii. Name the kind of energy possessed by wing and the device used to harness it.
    iii. A black surface absorbs more heat radiations as compared to a white or a reflecting surface under identical conditions. List two solar devices which make use of this property in their design.
    iv. Name any two elements that are used in fabricating solar cells.
    v. Why a solar cooker painted black from outside?

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Code: 732/2313/NC

FACULTY OF ENGINEERING

B.E. 4/4 (INST) II – Semester (Backlog) Examination, September 2020

Subject: Process Plant Design and Safety Management (Elective-III)

Time: 2 hours **Max. Marks: 75**

PART – A

Note: Answer any seven questions. **(7x3 = 21 Marks)**

1. What is three “C” criteria in I &C documentation?
2. What is meant by Pre-start up inspection (PSI)?
3. What is meant by Zone-O hazardous area classification?
4. Define Entity concept?
5. What are the types of purging systems?
6. What is OSHA and what is its significance?
7. Mention the roles of the team of people who carry out HAZOP?
8. Mention the advantages of HIIPS?
9. What is meant by Cryptography?
10. What are VR (Virtual Reality) tools?

PART – B

Note: Answer any three questions. **(3x18 = 54 Marks)**

11. With neat diagrams explain the Purging and Inerting Systems?

12. Explain clearly the knowledge areas of Project management?

13. (a) What is FISCO?
    (b) Discuss about maintenance management system.

14. What are the components of HIIPS system? Explain with an example?

15. Explain in details the different methods of network security?

16. Write about upgrading the control room and work stations? What is need of up gradation?

17. Write short notes on:
    (a) Document dependency map
    (b) Emergency response plan (ERP)

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Code No: 793/2330/NC

FACULTY OF ENGINEERING

B.E. 4/4 (ECE) II-Semester (Backlog) Examination, September 2020

Subject: Fuzzy Logic and Applications (Elective-IV)

Time: 2 hours **Max. Marks: 75**

PART – A

Note: Answer any seven questions. **(7x3 = 21 Marks)**

1 Contrast between Crisp sets & Fuzzy sets.
2 State the DeMorgan's laws & Excluded middle laws for Fuzzy sets.
3 Define Fuzzy relation? Give an example.
4 What is a Fuzzy Cartesian product?
5 Define membership function with an example.
6 Define Fuzzification. List the different Fuzzification methods.
7 Define DeFuzzification. Name the different DeFuzzification methods.
8 Give the geometry of Fuzzy sets.
9 Justify FAMs as mapping.
10 What is an Adaptive FAM system?

PART – B

Note: Answer any three questions. **(3x18 = 54 Marks)**

11 a) State all the operations & properties of Fuzzy sets.
b) Given A={0.2/1+0.3/2+0.6/4+0.9/5}, B={0.1/1+0.2/2+0.8/3+0.7/4} & C={0.3/1+0.4/3+0.5/4+0.6/5}. Prove all the operations & properties of Fuzzy sets.

12 What are Similarity relations? Consider the Similarity relation

R (X,X)	1	0.7	0.3	0.6	0.7
	0.7	1	0.3	0.6	0.9
	0.3	0.3	1	0.3	0.3
	0.6	0.6	0.3	1	0.6
	0.7	0.9	0.3	0.6	1

Draw the partition tree for the above Similarity relation.

13 What is Fuzzification? Explain in detail any fourFuzzification methods.

14 What is DeFuzzification? Explain in detail any four DeFuzzification methods.

15 Explain in detail FAM system architecture with an example.

16 a) Explain in detail operations on type-2 Fuzzy sets.
b) Consider $\mu_A(x)$={0.3/0.4+0.7/0.8} & $\mu_B(x)$={0.1/0.1+0.5/0.2+1/0.4}. Calculate:
(i) $\mu_{A \cap B}(x)$, (ii) $\mu_{A \cup B}(x)$, (iii) μAB (x), (iv) μA+^B (x) & (v). μĀ (x).

17 Explain in detail Bidirectional FAM theorem for
a) Correlation-Minimum Encoding
b) Correlation-Product Encoding

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Code No. 2331/NC

FACULTY OF ENGINEERING

B.E. 4/4 (ECE) II - Semester (Backlog) Examination, September 2020

Subject : Wireless Sensor Networks (Elective – IV)

Time: 2 hours **Max. Marks: 75**

PART – A

Note: Answer any seven questions. **(7x3 = 21 Marks)**

1 What are different types of sensors used? Illustrate with some examples.
2 What is figure of merit? What is functionality of Gateway node in WSN?
3 Explain about important classes of MAC Protocols.
4 What are different challenges in sensor network programming?
5 What are different security issues in WSN?
6 Write differences between mobile Ad-hoc & Sensor Networks.
7 What is function of controller and power supply section in sensor node architecture?
8 What are design issues of a routing protocol of WSNs?
9 Explain localization of sensor nodes in WSNs.
10 How different layers of WSNs attacked and what are their countermeasures?

PART – B

Note: Answer any three questions. **(3x18 = 54 Marks)**

11 (a) Explain applications of sensor networks in real time scenario.
(b) What are challenges faced to design WSNs?

12 (a) Explain about sensor node architecture.
(b) What are optimization goals in any sensor network?

13 (a) Discuss in detail about IEEE 802.15.14 MAC Layer Requirements.
(b) Explain how MAC Address assignment is done in sensor networks.

14 Explain the following architectures
(a) MICA MOTE
(b) Tiny OS

15 Explain in detail about various security protocols for WSNs and how are they implemented?

16 (a) What do you mean by state centric programming and explain its significance over generic distributed systems.
(b) Discuss range assignment problem in topology control.

17 (a) Explain various routing protocols with respect to energy efficient routing.
(b) What are differences between Zigbee and Bluetooth Technology?

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Code No. 754/2359/NC

FACULTY OF ENGINEERING

B.E. 4 /4 (M/P) II – Semester (Backlog) Examination, September 2020

Subject : Product Design and Process Planning (Elective – III)

Time: 2 hours **Max. Marks: 75**

PART – A

Note: Answer any seven questions. **(7x3 = 21 Marks)**

1 What are the functions of process design?
2 What is the criterion for the selection of a right product?
3 Explain in brief about functional design.
4 What is meant by ergonomics?
5 Explain in brief about patents.
6 Write the various steps to be followed for introducing a new product.
7 Explain the concept of brain storming.
8 Describe the procedure involved in designing a process for a new product.
9 Discuss about the process sheet.
10 Define the term “Group Technology”.

PART – B

Note: Answer any three questions. **(3x18 = 54 Marks)**

11 What are the various factors which can be attributed for the successful technological innovation? Explain in detail.

12 a) Discuss in detail about the various approaches of project selection.
b) Explain in brief about the evaluation techniques for a new product.

13 a) What are patent laws? Explain the procedure of registering a patent in India.
b) Discuss about the inventions / designs that cannot be patented.

14 a) Discuss the principles involved in testing a new product.
b) Explain the procedure involved in selecting materials for different products.

15 a) Explain the role of factors in selection of right manufacturing technique.
b) How do you estimate machining time for drilling a hole?

16 a) Explain in detail the reasons for failure of a product.
b) Describe the principles and laws of appearance.

17 Write short notes on the following:
(a) Delphi technique.
(b) International code for patents.
(c) Estimation of machining cost.

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Code No. 755/2360 /NC

FACULTY OF ENGINEERING

B.E. 4/4 (Mech./Prod.) II-Semester (Backlog) Examination, September 2020

Subject : Modern Machining & Forming Methods (Elective-III)

Time: 2 hours **Max. Marks: 75**

PART – A

Note: Answer any seven questions. **(7x3 = 21 Marks)**

1 What are the characteristics of UCM processes?
2 State the advantages and limitations of AJM.
3 (i) Which of the following is used as dielectric medium in EDM
a) tap water b) kerosene c) NaCL solution d) KOH solution
(ii) MRR in ECM depends on
a) Hardness of work material b) atomic weight of work material
c) thermal conductivity of work material d) ductility of work material.
4 Identify the mechanism of material removal, transfer media and energy source for EDM.
5 List the advantages and limitations of LBM.
6 State four limitations of EBM?
7 How does electro hydraulic forming differ from explosive forming.
8 Briefly explain the principle of explosive forming.
9 Differentiate between shear spinning and tube spinning.
10 State advantages and limitations of stretch forming.

PART – B

Note: Answer any three questions. **(3x18 = 54 Marks)**

11 a) With a neat sketch explain the process of AJM? Explain the process control measures to be taken to control quality and MRR.
b) Explain the different applications and process control features of WJM.

12 a) What are the important process parameters that control the material removal rate in EDM? Explain any four factors.
b) Derive a theoretical relationship for the determination of the metal removal rate in ECM.

13 a) Discuss about the process capabilities of EBM and the process parameters of EBM in improving machining quality.
b) Explain the process capabilities of PAM.

14 what is the fundamental principle of abrasive jet machining? Briefly explain with a neat diagram, the AJM process. In AJM, how is material removal rate increased? Also state how nozzle life is improved in such a machining process.

15 a) Explain about Guerin process with a neat sketch. 5
b) Describe the process of Marforming. State its advantages and applications. 5

16 a) Discuss principle involved in water hammer forming. 5
b) describe rotary stretch forming with neat sketch and state its applications. 5

17 Write short notes on the following
a) Flushing mechanism of metal removal in EDM. 3
b) Electro hydraulic forming. 3
c) Transducers used in USM. 4

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Code No: 2400/NC

FACULTY OF ENGINEERING

B.E. 4/4 (I.T.) II - Semester (Backlog) Examination, September 2020

Subject : Cloud Computing (E – V)

Time: 2 hours **Max. Marks: 75**

PART – A

Note: Answer any seven questions. **(7x3 = 21 Marks)**

1 Describe benefits of using a cloud model, for distributed application development
2 Explain how a common protocol is established for internet.
3 Describe advantages of communication as a service (CasS).
4 Explain basic approach to a data center based service oriented architectures.
5 What exactly happens on virtualization.
6 Describe how encrypted federation differs from trusted federation.
7 Explain standards for messaging.
8 Describe hypertext transfer protocol.
9 What are the mobile operating systems for smartphones?
10 Explain vector processing, useful for enhancing speed of processing

PART – B

Note: Answer any three questions. **(3x18 = 54 Marks)**

11 Explain the evolution of cloud computing. Explain the advantages of cloud.

12 (a) Describe Infrastructure as a service (Iaas).
(b) What are the layered components of Platform as a service (Paas)?

13 (a) Explain the evolution from the MSP model to cloud computing.
(b) What are the considerations to be taken care before moving into virtualization?

14 (a) What is XMPP? Explain its role in fedonation?
(b) What are different levels of virtalization.

15 Describe the interrelation of Identity presence and location in the cloud.

16 Explain server virtualization technologies.

17 Write short notes on the following:
(a) Google (Android)
(b) Black berry
(c) Windows mobile

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