FACULTY OF ENGINEERING

B.E. VII-Semester (CBCS) (Suppl.) Examination, October 2020

Subject : Road Safety Engineering (Elective–III)

Time : 2 hours   **Max. Marks : 70**

PART – A

Note: Answer any five questions.   **(5x2 = 10 Marks)**

1 What are the 5 E to prevent accidents?
2 Distinguish between fatal crash and property damage crash
3 State the importance of driver characteristics in road safety
4 Why is it important to collect accident data
5 Briefly explain traffic calming schemes
6 What is a traffic delineator?
7 List out various pedestrian safety issues
8 What are the various types of traffic incidents?
9 State the significance of speed and load limit in traffic management techniques
10 What are the various computer applications for analyzing of accident data

PART – B

Note: Answer any four questions.   **(4x15 = 60 Marks)**

11 State the importance of road safety audit. Explain various stages of road safety audit.

12 a) Briefly explain various tools and techniques used for road safety and traffic management
   b) How do you conduct an accident investigation? Explain the required data for analyzing the accident.

13 a) Draw the typical illusion diagram of road accident with all the required details.
   b) Explain parking enforcement and its influence on accidents

14 a) What are the types of traffic signs? Discuss sign regulation.
   b) Briefly explain travel demand management.

15 a) Discuss the need & factors affecting design of traffic signal
   b) Enumerate various statistical methods of analysis of accident data. Explain any two methods.

16 Explain the various applications of Intelligent Transportation System (ITS) in the present scenario

17 Write short notes on
   a) Tidal flow operation methods
   b) Cost of road accidents
   c) Road markings

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FACULTY OF ENGINEERING

B.E. VII – Semester (CBCS) (Suppl.) Examination, October 2020

Subject: Software Engineering (E – III)

Time: 2 Hours   **Max.Marks: 70**

PART – A

Note: Answer any five questions.   **(5x2 = 10 Marks)**

1 Write short note on Software Maintenance.

2 Process or Product – Which is more important? Why?

3 Explain Use Cases briefly.

4 Suggest how you will evaluate a proposed architecture from a modifiability perspective.

5 List various activities in COMO model.

6 Elaborate the term "Functional Modeling".

7 Does LOC measure make any sense when 4GT are used? Explain.

8 Define the terms   a) Error   b) Fault   c) Failure

9 Differentiate Forward Engineering and Reverse Engineering.

10 What is BPR? Explain briefly.

PART – B

Note: Answer any four questions.   **(4x15 = 60 Marks)**

11 a) Discuss the prototyping model. What are its advantages and disadvantages?

    b) Describe XP in detail.

12 Explain functional specification with Use cases with an appropriate example.

13 Discuss the process of Risk Management in detail.

14. Explain about Black Box testing.

15. Discuss about CMMI in detail.

16. a) List and explain various Design Concepts.

b) Write a detailed note on SRS.

17. Write short notes on the following:

    a) Component and Connector View
    b) System Testing
    c) Basis Path Testing.

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FACULTY OF ENGINEERING

B.E. VII Semester (CBCS) (Suppl.) Examination, October 2020
Subject: PRINCIPLES OF ELECTRONIC COMMUNICATIONS (E-III)

Time: 2 Hours   **Max Marks: 70**

PART – A

Note: Answer any five questions.   **(5x2 = 10 Marks)**

1. Distinguish between Continuous time versus Discrete time signals ?
2. Describe various Frequency bands allocated in communication engineering with applications?
3. Define Radiation, Bandwidth of an antenna?
4. Distinguish between Amplitude modulation, frequency and Phase modulation schemes?
5. What are the advantages of Network protocols?
6. Compare with illustrations TCP & UDP Protocols?
7. What are the merits of Internet Telephony over Conventional?
8. Explain evolution of Wireless Systems?
9. Compare Zigbee vs RFID?
10. Write short notes on Vehicular Adhoc networks?

PART – B

Note: Answer any four questions.   **(4x15 = 60 Marks)**

11. (a) State and prove modulation and time shifting property of 'Fourier transform?
    (b) Find the Fourier Transform of $x(t) = A \, Sin(wt) \, U(t)$?

12. (a) With neat Diagram explain the principle of generation of Amplitude Modulation?
    (b) A Collector modulated Class C Power Amplifier is giving on amplitude modulated signal of 100W average power at the output; while operating with Collector Circuit of efficiency 80%. Assuming the modulation index is 0.8 find the power to be supplied by the modulating amplifier and dissipation in the transistor?

13. (a) Describe the merits and demerits of ASK, FSK &PSK Digital modulation Schemes?
    (b) Describe in detail Low level and High level Modulation?

14. (a) Differentiate between OSI model and Data Link layer?
    (b) What are the various Network Protocols used in Data Communication? Explain?

15. (a) Describe in detail various features and applications of WCDMA; CDMA; AND GSM?
    (b) Compare LAN and PAN?

16. (a) Define Numerical Aperture & Optical Band width?
    (b) What are the different types of Optical Fibers available? Explain in detail working principle Step and Graded index fibers?

17. Write short notes on
    (a) Antenna parameters &Propagation mechanism
    (b) QPSK Modulation and Demodulation process?
    (c) Ethernet Vs Internal Protocols.

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FACULTY OF ENGINEERING
BE VII – Semester (CBCS) (Suppl.) Examination, October 2020

Subject: Illumination & Electric Traction Systems (E-III)

Time: 2 Hours   **Max. Marks: 70**

PART – A

Note: Answer any five questions.   **(5x2 = 10 Marks)**

1. Give the classification of various electric heating.
2. Enumerate the advantages of high frequency eddy current heating.
3. List out the interlocking methods for reverse control
4. Describe about the limiting switches.
5. What are the factors affecting the design of indoor lighting system?
6. What is the effect of voltage variation on the life span of the lamp?
7. Explain in brief the mechanics of train movement.
8. Describe the specific energy consumption
9. What are the advantages of series- parallel starting?
10. What are the dielectric characteristics of traction motors?

PART – B

Note: Answer any four questions.   **(4x15 = 60 Marks)**

11. (a) With a neat diagram explain in detail, the Ajax-Wyatt furnace and explain pinch effect.
    (b) A 4KW, 400 V, 3-phase resistance furnace oven is to have 3-star connected nichrome strip of 0.25 mm thick heating element. If the wire temperature is 1400^0C and that of the charge 1000^0C, estimate the suitable width of the strip. The resistivity of nichrome alloy is $1.016 \times 10^{-6.}$ Assume the radiating efficiency and emissivity of the element as 0.5 and 0.9 respectively.

12. (a) Discuss the effect of power injection into the rotor circuit of an induction motor on the speed and power factor of the motor.
    (b) Explain the two supply sources for 3-Phase Induction Motor.

13. (a) Discuss about Mercury vapor lamp with neat diagram.
    (b) The illumination at a point on a working plane directly below the lamp to be 60 lumens/m^2. Thelamp gives 130 CP uniformly below the horizontal plane. Determine (i) the height at which the lamp is suspended. (ii) The illumination at a point on the working plane 2.8 meter away from the vertical axis of the lamp.

14. (a) Discuss the systems of track electrification.
    (b) The distance between two stations is 1.2 km. A schedule speed of 40 kmph is required to cover that distance. The stop is of 18 seconds duration. The values of the acceleration and retardation are 2 kmphps and 3 kmphps, respectively. Then, determine the maximum speed over the run. Assume a simplified trapezoidal speed – time curve.

15. (a) What are the various parts of lead acid batteries? Explain in brief.
    (b) Explain construction and maintenance of SMF batteries

16. (a) Explain the high frequency method of electric heating and state its operation.
    (b) Describe the operation and performance of eddy current heating.

17. Write short note on any two:
    (a) Co-efficient of adhesion
    (b) Street lighting and flood lighting
    (c) Push buttons

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FACULTY OF ENGINEERING

B. E. (CBCS) VII – Semester (Suppl.) Examination, October 2020

Subject: Mechatronics (E-III)

Time: 2 hours   **Max. Marks: 70**

PART – A

Note: Answer any five questions.   **(5x2 = 10 Marks)**

1. Compare mechanization and automation.

2. List the elements of mechatronic system.

3. Differentiate between feeding and indexing.

4. Define step angle in stepper motor.

5. Elaborate the merits of fluid power.

6. List various control values used in fluid power.

7. Differentiate between microprocessor and microcontroller.

8. Differentiate between Analog and digital signal.

9. What is tool monitoring system?

10. List the elements of flexible manufacturing system.

PART – B

Note: Answer any four questions.   **(4x15 = 60 Marks)**

11. (a) Explain the concept of mechatronics with help of flow chart.

    (b) Describe the various drive mechanisms used in mechatronics.

12. (a) Detail the escapement and sorting devices.

    (b) Describe the working and performance of A.C. Servomotors.

13. (a) Differentiate between pneumatics and hydraulics.

    (b) Explain the mechanical servo control system.

14. (a) Explain the working of fear pump with neat sketch.

    (b) Describe hydro pneumatic system.

15. (a) Describe the role of sensors in data acquisition system.

    (b) Explain the need of operational amplifiers in signal processing.

16. (a) Explain the process of analog to digital conversion.

    (b) Explain the role of diode in switching.

17. (a) Elaborate the role of programmable logic control in automation.

    (b) What are guide ways in machine tools?

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