

FACULTY OF ENGINEERING**B. E.(Comm.to All) (CBCS) VII – Semester (Main) Examination, December 2019****Subject: Road Safety Engineering (Elective – III)****Time: 3 hours ss****Max. Marks: 70****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****Missing data, if any, may suitably be assumed.****PART – A (20 Marks)**

1. Write the formula of empirical Bayes method.
2. List out various computer applications for analyzing of accident data.
3. What do you mean by vehicle design factor?
4. Discuss various safety counter measures in design of road.
5. What are the various factors affecting signal design.
6. Bring out the points of difference between fixed and vehicle actuated signal.
7. Write short notes on traffic calming schemes.
8. Explain briefly Legislation & Enforcement in Traffic management.
9. List out various characteristics of traffic incidents.
10. Explain briefly the various applications of ITS in Incident management.

PART – B (50 Marks)

11. (a) Explain about the classification of traffic signs with net sketch.
(b) Discuss travel demand management.
12. (a) Enumerate various statistical methods of analysis of accident data. Explain any two methods.
(b) Discuss the parking enforcement and its influence on accidents.
13. Explain the Relevance of systems of Intelligent Transportation System (ITS) in the present scenario.
14. (a) Draw the typical illusion diagram of road accident. Specify all the relevant details to analyze it.
(b) Discuss the various probable causes of road accidents.
15. (a) Explain national importance of survival of transportation systems during and after all natural disasters.
(b) What are the needs of traffic signal? Discuss various factors affecting signal design.
16. (a) Discuss latest tools and various techniques used for road safety and traffic management.
(b) Explain parking enforcement and its influence on accidents.
17. Write short notes on
 - (a) Traffic impact attenuators.
 - (b) Planning effective incident management program.
 - (c) Road Safety Audit.

FACULTY OF ENGINEERING

B.E. VII – Semester(Comm.to All) (CBCS) (Main) Examination, December 2019

Subject: Software Engineering (E – III)

Time: 3 Hours

Max.Marks: 70

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

PART – A (10x2 = 20 Marks)

- 1 List and explain Software quality attributes.
- 2 Define Prototyping. List its advantages.
- 3 What should be the contents of SRS?
- 4 List the roles of architect in design.
- 5 Define a) Risk Impact b) Risk Probability
- 6 Differentiate between Object-Oriented and Function Oriented design.
- 7 Elaborate the term “Information Hiding”.
- 8 Explain Test Design and Test Cases briefly.
- 9 Differentiate Forward Engineering and Reverse Engineering.
- 10 Describe SPI ROI briefly.

PART – B (5x10 = 50 Marks)

- 11 a) Explain RUP in detail. (6)
b) Discuss the Project Management process. (4)
- 12 Discuss in detail about various architectural styles for C & C view. (10)
- 13 Describe about COCOMO model in detail. (10)
- 14 Explain about White Box testing. Illustrate with example. (10)
- 15 Discuss about CMMI in detail. (10)
- 16 a) Write about Use Cases with an example. (5)
b) List and explain various activities of project planning. (5)
- 17 Write short notes on the following:
 - a) Risk Assessment (3)
 - b) Unit Testing (3)
 - c) Boundary Value Analysis. (4)

FACULTY OF ENGINEERING**B.E. VII – Semester(Comm.to All) (CBCS) (Main) Examination, December 2019****Subject: Principle of Electronic Communication (Elective – III)****Time: 3 Hours****Max.Marks: 70****Note: Answer all questions from Part-A and any five questions from Part-B****PART – A (10x2 = 20 Marks)**

- 1 Describe the need for modulation
- 2 Define low level and high level modulation
- 3 Describe Antenna parameters
- 4 Define transmitted power, channel bandwidth and noise
- 5 Compare AM Vs FM
- 6 Define and draw digital modulation schemes
- 7 Compare the merits and demerits of TCP & IP and Ethernet protocols
- 8 What are the advantages of wavelength division multiplexing?
- 9 Compare CDMA Versus WCDMA and OFDM technics.
- 10 Describe Bluetooth, PAN and Zig Bee.

PART – B (5x10 = 50 Marks)

- 11 a) Explain in detail non-resonant antennas with applications. 5
b) An Half wave dipole antenna is capable of radiating 1 KW and has 2.15 dB gain over an isotropic antenna. How much power must be delivered to the isotropic antenna to match the field strength directional antenna? 5
- 12 a) What is pre-emphasis? Why it is used? Sketch a typical pre-emphasis circuit and explain why de-emphasis must also be used. 7
b) An FM signal with single tone modulation has a frequency deviation of 15 KHz and a BW of 50 KHz. Find the frequency of modulating signal. 3
- 13 a) Define ASK, FSK and PSK modulation schemes and draw them. 5
b) Draw the block diagrams of ASK & FSK and explain with wave forms. 5
- 14 a) Describe in detail Media Access Control with applications. 5
b) Explain OSI model and Network model with neat sketches. 5
- 15 a) What are the different characteristics of an optical fiber? Explain classification of fibers. 5
b) What are the advantages of optical fibers? 5
- 16 a) Distinguish between Wireless mesh networking Versus Vehicular adhoc network? 5
b) Compare merits and demerits of RFID and UWB. 5
- 17 Write short notes on the following: 10
a) Base band and Broad band transmission
b) Internet protocol IPV4 and IPV6
c) Telephone Vs Paging system.

FACULTY OF ENGINEERING

B. E. (Comm.to All) (CBCS) VII – Semester (Main) Examination, December 2019

Subject: Illumination & Electric Traction Systems (E – III)**Time: 3 hours****Max. Marks: 70****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (10 x 2 = 20 Marks)**

1. What are the advantages of electric heating over the other methods of heating?
2. Write the equation of Stefans law of heat radiation.
3. What are the functions of limit switch?
4. Label the difference between fuse and circuit, breaker.
5. Define MSCP and MHCP.
6. Why choke is connected in the circuit of fluorescent lamp?
7. What are the factors which govern the total weight of an electric Locomotive?
8. What is tractive effort?
9. What are the different systems of track electrification?
10. List the principal equipments of double battery system.

PART – B (5 x 10 = 50 Marks)

- 11.(a) Explain in brief, how heating is done in the following cases (i) Resistance heating (ii) Induction heating (iii) Dielectric heating.
(b) What are the types of electrodes used for welding operation? Give the advantages of coated electrodes.
- 12.(a) List out and explain various speed control methods of 3-phase induction motor.
(b) What is the advantage of constant current supply system?
- 13.(a) Describe Two ways of how glare is produced and suggest how it can be avoided?
(b) A lamp of 500 CP is placed at the centre of a room, 20m x 10m x 5m. Calculate the illumination in each corner of the floor and a point in the middle of a 10m wall at a height of 2m from floor.
- 14.(a) From the simplified speed time curve, determine the max. sped, when the actual time of run, values of acceleration, retardation and the distance between stops are given.
(b) An electric train is to have acceleration and breaking retardation of 0.8 kmphps and 3.2 kmphps respectively. If the ratio of max. to average speed is 1.3 and time for stops 26 seconds, find schedule speed for a run of 1.5 km. Assume simplified trapezoidal speed-time curve.

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15. (a) Describe the special requirements of train lighting.
(b) What are the methods of obtaining the constant output? Explain.
16. (a) Derive the expression for the tractive effort for the train on a level track.
(b) Define (i) Dead weight (ii) accelerating weight (iii) adhesive weight.
17. (a) Explain, what you mean by "individual drive and group drive". Discuss their relative merits and demerits.
(b) A 500V d.c.series motor runs at 500 rpm and takes 60A. The resistances of the field and armature are 0.3 and 0.2 ohm, respectively. Calculate the value of the resistance to be shunted with series field winding in order that the speed may be increased 600 rpm if the torque were to remain constant saturation may be neglected.

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B. E. (Comm.to All) (CBCS) VII – Semester (Main) Examination, December 2019

Subject: Mechatronics (E – III)

Time: 3 hours

Max. Marks: 70

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

PART – A (20 Marks)

1. What is mechatronics system?
2. List the functions of actuators.
3. Define the terms feeding and indexing.
4. Define step angle in stepper motor.
5. What are the merits of fluid power?
6. List various control valves used in fluid power.
7. What is the difference between microprocessor and microcontroller?
8. Differentiate between Analog and digital signal.
9. Differentiate between flexible automation and rigid automation.
10. What is adaptive control system?

PART – B (50 Marks)

11. (a) What are the emerging areas of mechatronics?
(b) Describe the various drive mechanisms used in mechatronics.
12. (a) What is a stepper motor? State the application of stepper motor in mechatronic systems.
(b) Describe the working and performance of D.C. Servomotors.
13. (a) What are the applications of pneumatics and hydraulics?
(b) Explain the hydro pneumatic control system.
14. (a) Explain the working of gear pump with neat sketch.
(b) Describe the principle, construction and working of LVDT with a neat diagram.
15. (a) Describe the role of sensors in data acquisition system.
(b) Explain the need of operational amplifiers in signal processing.
16. (a) Elaborate the role of programmable logic control in automation.
(b) Explain the factors to be considered for selection of PLC.
17. Write short notes on:
 - (a) Flow chart of mechatronics system. 3
 - (b) Hydraulic control valves. 4
 - (c) Adaptive control systems. 3