Code No: 14744/CBCS

FACULTY OF ENGINEERING

BE VII - Semester (CBCS) (Main & Backlog) Examination, March / April 2021

Subject: Road Safety Engineering (Elective-III)

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

Note: Missing data, if any, may be suitably assumed

PART – A

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

1 What are the causes of road accidents?
2 What the different statistical methods used for analysis of accidents.
3 Write the phenomenon involved in road network operation for safety.
4 What are traffic impact attenuators and delineators?
5 What are the uses of road markings?
6 Write the importance of one-way streets?
7 How ITS can be implemented in traffic incident management.
8 Draw neat sketches of informatory and prohibitory signs.
9 List different types of signals used in road safety.
10 Write about manmade disasters.

PART – B

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

11 What is road safety audit? Explain the process of conducting road safety audit.

12 (a) What are the methods involved for identification of hazardous road location? Explain
(b) It has been found that on an average 1 in 100 drivers in a bus company are involved in accident every year. If there are 500 drivers in the company, what is the probability that there are exactly 4 drivers who are involved in an accident during.

13 (a) Discuss the various objectives of road markings in detail.
(b) Discuss in detail about the accident data collection process with flowchart.

14 List out the various methods of signal design and discuss in detail about the factors affecting signal design. Also write about safety barriers and traffic and posts.

15 (a) What are the various methods of travel demand management? Explain them.
(b) What is legislation, enforcement, education and propaganda measures in traffic management?

16 (a) What is the best practice in incident management program?
(b) What is incident traffic management? Explain the characteristics of traffic incidents.

17 Write short notes on any two of the following:
(a) Safety performance function (SPF)
(b) Traffic signals
(c) Traffic incidents
(d) Tidal flow operation

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Code No. 14745/CBCS

FACULTY OF ENGINEERING

B.E. VII-Semester (CBCS) (Main & Backlog) Examination, March/April 2021

Subject : Software Engineering (Elective-III)

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

Note: Missing data, if any may be suitably assumed.

PART – A

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

1 What is cost schedule?
2 Why the software needs maintenance?
3 Name the commonly used architectural styles.
4 Define architectural design and data design.
5 What are the external dependencies in project planning?
6 What are the basic design principles of class-based components?
7 What are the common activities in design process?
8 What is quality control?
9 What are the different types of software maintenance?
10 Define software re-engineering.

PART – B

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

11 Explain Iterative waterfall model and spiral model for software life cycle and discuss various activities in each phase.

12 (a) Describe how software requirements are documented?
(b) Explain about the software requirements analysis and modelling.

13 (a) What are various software architectures available and compare them?
(b) Write short notes on features of state transition diagram and its applications.

14 (a) Differentiate between Component and artifact.
(b) Explain designing class based components.
(c) Explain difference between cohesion and coupling.

15 Differentiate between Black-Box testing and White-Box testing with examples.

16 (a) What is static and dynamic testing?
(b) Describe verification and validation criteria for a software.

17 Explain various cost estimation models and compare.

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Code No: 14746/CBCS

FACULTY OF ENGINEERING

B.E. VII-Semester (CBCS) (Main & Backlog) Examination, March /April 2021

Subject : Principle of Electronic Comm. (Elective-III)

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

Note: Missing data, if any may be suitably assumed.

PART – A

Note: Answer any Five Questions **(5x2= 10Marks)**

1. Define Signal to Noise Ratio.
2. Define baseband and broadband transmission.
3. Sketch the different types of modulation schemes.
4. What are the advantages of QPSK over PSK?
5 What is UDP?
6 What is TCP protocol?
7 Mention the advantages of Optical fibre Communication.
8 What is paging system?
9 What is Zig Bee technology?
10 What is Wireless Mesh Network?

PART – B

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

11 a) Explain electromagnetic spectrum in brief with neat diagram.
b) What is Multiplexing? Mention its types.

12 Explain with the neat block diagram modulation and demodulation of ASK.

13 a) Explain Internet protocol in detail.
b) Differentiate IPv4 and IPv6.

14 With a neat block diagram explain the Optical communication Systems in detail.

15 a) Compare the features of GSM and CDMA.
b) Write a short note on OFDM.

16 a) Explain the Digital Converters Principle in detail.
b) What is Media Access Control? Explain in Detail

17 Write short notes on the following:
a) Di-pole antenna.
b) AMPS.
c) RFID Communication.

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Code No. 14747/CBCS

FACULTY OF ENGINEERING

B.E. VII-Semester (CBCS) (Main & Backlog) Examination, March / April 2021

Subject : Illumination And Electric Traction System (E-III)

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

Note: Missing data, if any may be suitably assumed.

PART – A

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

1 Explain about dielectric heating
2 List out the properties of heating element.
3 List the advantages and disadvantages of electric drive over other drives
4 Define (i) waste light factor (ii) depreciation factor (iii) coefficient of utilization
5 Draw the circuit diagram and control diagram for 2 supply source for induction motor
6 Discuss the function of over load relays.
7 What do you understand by coefficient of adhesion?
8 What are the advantages of electric traction over diesel traction?
9 Why are the batteries rated in ampere hours?
10 What is a Universal voltage controller and how is it used in train lighting system?

PART – B

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

11 a) Describe with neat sketches various methods of electric resistance welding. Give its merits and demerits with respect to arc welding.
b) With a neat sketch explain the working principle of core type and coreless type induction furnace.

12 a) Explain in detail the general consideration in selecting motor power ratings.
b) Sketch the power and control diagrams for reversing the speed usin interlocking methods.

13 a) State and explain laws of illumination.
b) Two similar lamps having uniform intensity of 500 candle power in all directions between the horizontal are mounted at a height of 4 meters. What must be the maximum spacing between the lamps so that the illumination on the ground midway between the lamps shall be at least one half the illuminations directly under the lamps?

14 a) Discuss the main features of various train services. What type of train services corresponds to trapezoidal and quadrilateral speed time curves?
b) An electric train is to have acceleration and breaking retardation of 0.8 Km/h/s and 3.2 Km/h/s respectively. If the ratio of maximum 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.

15 a) List the major equipment in BG coach lighting.
b) Write short notes on battery construction and maintenance.

16 a) Define (i) candle power (ii) luminous intensity (iii) illumination (iv) luminous efficiency
b) List out and explain the principles of energy efficient motors.

17 a) Derives the expression for the tractive effort for train on a level track.
b) 400 tonne goods train is to be hauled by a locomotive up a gradient of 2% with an acceleration of 1 Km/h/s, coefficient of adhesion is 20%, track resistance 40N/tonnes and effective rotating masses 10% of the dead weight. Find the weight of locomotives and the number of axis, is the axle load is not to increase beyond 22 tonnes.

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Code No. 14748/CBCS

FACULTY OF ENGINEERING

B.E. VII-Semester (CBCS) (Main & Backlog) Examination, March/April 2021

Subject : Mechatronics (E-III)

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

Note: Missing data, if any may be suitably assumed.

PART – A

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

1 Define Mechatronics
2 What are the actuators?
3 Compare A.C Servomotor and D.C Servomotor Performaces
4 List the various feeding devices
5 Has a directional control value is specified?
6 State the functions of flow control value in fluid power system
7 Draw a neat sketch of silicon controlled rectifiers (SCR)
8 What is integrated (I.C) Circuit?
9 Differentiate between flexible automation and rigid automation
10 What is adoptive control system?

PART – B

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

11 a) Explain the need of interfacing of electronics with mechanical system
b) Explain the sequential control and programmable control systems

12 a) Explain any two indexing mechanisms
b) Describe the working of stepping motor

13 a) Describe the functions of electrohydraulic system
b) Describe the various accessories used in fluid power system

14 a) Explain the hydraulic circuit for control of double acting cylinder
b) Draw the V-I characteristics of diode

15 a) Describe the data acquisition system
b) Describe the functions of micro controller

16 a) Write a PLC programming for executing a AND and OR logic functions
b) Explain tool monitoring system

17 Write short notes on
a) D.C Servomotors
b) Differential control values
c) Pneumatic circuit

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