Code No.2657/CBCS/M

FACULTY OF ENGINEERING

B. E. (Civil) VI – Semester (CBCS) (Main) Examination, November 2020

Subject: Structural Engineering Design and Detailing – I (Concrete)

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

Note: Answer any seven questions from Part-A and any two questions from each unit. Assume suitable data if required.

PART – A (7x4=28 Marks)

1. Explain the principle of design of combined footing.
2. Explain one way shear and two way shear ion combined footing.
3. List the situations in which counterfort retaining wall is used.
4. Explain different earth pressure conditions on retaining wall.
5. Discuss why elastic design is used for R.C. water tanks.
6. What is the minimum reinforcement required in design of water tank.
7. State the necessity of bracing in overhead water tanks.
8. List out any four important codes for design of bridges.
9. What are the different methods available for design of slab bridges?
10. What is dispersion length? Explain.

PART – B (2x21=42 Marks)

11. Design a trapezoidal footing for two columns of A and B, both of 400mm x 400mm in size, spaced at 4m c/c and carrying loads 900, 1200 kN respectively. The maximum over hang allowed from the face of either of the column is 0.45 m. Assume SBC of soil is 200 kN/m^3. Use M_{20} concrete and Fe 415 steel. Sketch the reinforcement details.

12. Design a reinforced concrete cantilever type retaining wall having a 5m tall stem. The wall retains soil level with its top. The soil weighs 18 KN/m^3 and has an angle of repose is 300. The SBC of soil is 200 KN/m^2. Use M20 concrete and Fe 500 steel. Sketch the reinforcement details.

13. Design a rectangular water tank resting on the ground of size 6m x 5m x 4m, resting on the ground. Use M_{25} concrete and Fe 415 steel. Sketch the reinforcement details.

14. A reinforced concrete imtz type of water tank of capacity 225000 liters symmetrically placed on 6 columns. Design top dome, top ring beam and side wall of tank. Use M_{25} concrete and Fe 415 steel. Sketch the reinforcement details.

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15. Design a deck slab bridge for the following data.

(a) Carriage way = 7.5 m
(b) Clear span = 8 m
(c) Wearing coat = 80mm
(d) Live load = IRC class 'A' loading
(e) Width of footpath = 600mm on either side

Use M_{25} concrete and Fe 415 steel. Sketch the reinforcement details in L/S and C/S

16. Design the reinforced concrete slab of a reinforced concrete T- beam bridge to suit the following data.

(a) Span of T- beams = 14m
(b) Spacing of main T- beams =3 m
(c) Spacing of cross girders= 4m
(d) Live load = IRC class 'AA' tracked vehicle
(e) Material = M_{30} concrete and Fe 500 steel.

Sketch a neat diagram of slab along with reinforcement details.

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Code No. 2677/ CBCS/M

FACULTYOF ENGINEERING

B.E. VI Semester (CBCS) (EEE/Inst.)(Main) Examination, November 2020

Subject: Microprocessors and Microcontrollers

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

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

PART–A (5 x 2 = 10 Marks)

1 Indicate the addressing modes of the following instructions

i) MOV AX, 35H+[BP]

ii) MOV DX, 46H+[DI]

2 What is the need of memory segmentation in 8086?

3 Write assembly language programming to add two 16-bit numbers using indirect addressing mode.

4 Explain the operation of PUSH and POP instruction in 8086.

5 Write the important features of 8253 interval timer.

6 Give a control of 8255 for configuring port A as input and other ports as outputs.

7 Mention the six interrupts in 8051.

8 Give alternate functions of port 3 in 8051.

9 Explain the following pin functions.

i) ALE ii) $\overline{EA}$

10 Mention the various applications of 8051.

PART – B (4 x 15 = 60 Marks)

11 (a) Draw the pin diagram of 8086 and maximum mode pins.
(b) Explain the interrupts of 8086 processor.

12 Explain with an example the following 8086 instructions.

(a) AAA
(b) NEG
(c) CMP
(d) JBE
(e) IDIV

13 Write an ALP to find the maximum number in an array of 10 8-bit numbers.

14 (a) Explain the architecture of 8255 PPI.
(b) Mention the operating modes of 8255.

15 Explain how seven-segment display unit is interfaced to 8051 microcontroller showing the interface connections and develop a program to display 8 on the display unit.

16 (a) What is a procedure? Explain the re-entrant and recursive procedures with examples.
(b) Explain with examples the jump and call instructions of 8051 microcontrollers.

17 (a) With a neat schematic, explain the keyboard interfacing with 8051 microcontroller.
(b) Write an ALP for addition of two 8-bit signed numbers.

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Code No. 2690/CBCS/M

FACULTY OF ENGINEERING

B.E. (ECE) VI-Semester (CBCS)(Main) Examination, November 2020

Subject : Microprocessors and Microcontrollers

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

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

PART–A (5 x 2 = 10 Marks)

1 Explain the flag register of 8086 microprocessor?
2 What are the advantages of segmentation in 8086?
3 Write the control word Register byte to make all ports of 8255 as input ports.
4 Illustrate with an example how the 20 bit physical address of 'code byte is computed.
5 Explain each bit of the IE register in 8051?
6 Explain the mode and operation of timer 1 if TCON is “11H” in 8051
7 SP=70H after execution of the following instructions what is SP and B

```
MOV 0E0H,#20H
MOV B,#10H
PUSH 0E0H
PUSH B
POP 0E0H
POP B
PUSH 34H
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8 Write a Program to transfer 10 bytes of data from 2000H onwards in ROM to 4000H onwards in RAM.
9 Explain the Interrupt Priority in 8051 & mention the vector address of each interrupt.
10. Calculate the value of TMOD ,TH1and TL1 for a baud rate of 4800 if 8051 is connected with 12MHz crystal .

PART – B (4 x 15 = 60 Marks)

11 (a) Sketch the pin configuration of 8086 and explain.
(b) Explain physical memory organization of 8086.

12 (a) Interface the following memory ICs with 8086:
(i) Two 4 KB EPROMs ending at FFFFFH.
(ii) Two 4KB SRAMs starting from C0000H.
(b) Explain the operational modes of 8255 PPI.

13 Write an assembly language programs of 8086 to
(a) Write a ALP to to Generate 5 numbers in GP. Starting with 5 and ‘r’=2.
(b) Write an ALP using string instructions of 8086 Count the number of times ‘A’ appeared in the string “ INDIA IS MY COUNTRY, JAI BHARAT’.

14 Discuss architecture of 8051 microcontroller & explain the interrupt structure in detail.

15 (a) Describe the interfacing of stepper motor using 8051.
(b) State the 8051 addressing modes give one example for each mode.

16 (a) Program 8051 timer to generate a delay of 5 msec. with a 12 MHz crystal connected.
(b) Write a program to transfer 'A' serially at 4800 baud rate continuously. Assume crystal frequency as 11.0592MHz on 8051

17 Write short notes on any two of the following:
(a) 8086 Interrupts
(b) Stepper motor Interface with 8051
(c) assembler directives of 8086

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Code No. 2698/CBCS/M

FACULTY OF ENGINEERING

B.E. (M/P) VI – Semester (CBCS) (Main) Examination, November 2020

Subject: Refrigeration and Air Conditioning

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

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

PART–A (5 x 2 = 10 Marks)

1. Define COP and Unit of refrigeration.
2. What are the advantages of using air cycles for air craft refrigeration system.
3. Discuss the effect of condenser pressure and evaporator pressure on COP of simple vapor compression system.
4. Define sub cooling in vapour compression refrigeration system.
5. What are the limitations of Electrolux refrigeration system.
6. Explain Peltier Effect.
7. Define (i) Wet bulb temperature (ii) Humidity Ratio.
8. Define effective temperature.
9. Give applications of refrigeration.
10. Define sensible heat and latent heat.

PART – B (4 x 15 = 60 Marks)

11. (a) Explain ozone depletion with respect to refrigerants.

    (b) A 5 ton refrigerating machine operating on Bell Coleman cycle has pressure limits of 10 bar and 1 bar. The temperature of air before compression is 10˚C. The compressed air is cooled to 40˚C before it enters an expander. Assuming both compression and expansion to be adiabatic with $\gamma=1.4$. Determine.

    (i) COP

    (ii) Mass of air circulated per min

    (iii) Power rating of motor assuming 90% mechanical efficiency

    Assume Cp=1.0kJ/kg-K.

12. (a) What is cascading. How does two stage cascade refrigeration system works.

    (b) Explain the working of simple vapour compression system with the help of P-H diagram and derive COP.

13. (a) Explain the working of practical ammonia water absorption system.

    (b) Define cryrogenies. What are applications of cryogenics.

14. (a) Explain human body self defense mechanism.

    (b) Explain any two psychrometric processes.

15. (a) Explain the working of summer air conditioning system.

    (b) Define (i) Grand sensible heat factor (GSHF) (ii) Effective room sensible heat factor (ERSHF).

16. (a) What are the various duct layout systems in air conditioning.

    (b) What are thermodynamics of human body.

17. (a) Give the principle and operation of thermoelectric refrigeration system.

    (b) Explain global warming with respect to refrigerants.

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Code No. 2705/CBCS/M

FACULTY OF ENGINEERING

B.E. VI Sem. (CBCS) (A.E.) (Main) Examination, November 2020

Subject: Performance of Testing of Automotive Vehicles

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

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

PART–A (5 x 2 = 10 Marks)

1. What are the factors affecting the value of $C_{d?}$
2. Define tractive effort.
3. Explain clamping force in the clutch assembly.
4. Show the location of fluid coupling in the transmission system?
5. Draw a neat sketch of anti-roll bar.
6. What is DIN rating?
7. Name the four different types of steering linkage.
8. Explain roll centre.
9. Explain any six engine testing noises.
10. Explain how the clutch is to be tested.

PART – B (4 x 15 = 60 Marks)

11. a) Explain the relation between engine revolution and vehicle speed.
    b) Explain power required for propulsion.

12. a) Explain with a neat sketch of epicyclic gear box with gear ratios.
    b) Describe the construction and working of single plate clutch.

13. a) Explain effect of vehicle condition by tyre and road conditions on fuel economy.
    b) Explain ideal air standard efficiency and relative efficiency of an engine.

14. a) State five suspension system troubles and their causes.
    b) What is the function of damper in suspension system.

15. a) Explain with neat sketch cylinder leakage test.
    b) Explain the testing procedure for steering system.

16. a) Explain briefly forces and moments acting on a car body.
    b) Explain brake thermal efficiency, ideal air standard efficiency and relative efficiency.

17. a) State five braking system trouble and their causes.
    b) Explain the testing procedure for Braking system.

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Code No. 2718/CBCS/M

FACULTY OF ENGINEERING

B. E. (CSE) VI – Semester (CBCS) (Main) Examination, November 2020

Subject: Software Engineering

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

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

PART–A (5 x 2 = 10 Marks)

1. Mention about Software myths.
2. Define Project Plan.
3. Define requirement engineering and list its tasks.
4. What are software process framework activities?
5. What are risk management activities?
6. What are design concepts?
7. What is testing and write about purpose of testing.
8. Define user interface analysis.
9. What are characteristics of good design?
10. What are prescriptive process models?

PART – B (4 x 15 = 60 Marks)

11. (a) Explain CMMI level.
    (b) Explain software process.
12. Describe requirement engineering and tasks.
13. (a) How are verification and validation important individually.
    (b) Describe effort estimation.
14. What are requirement engineering tasks? Explain validating requirements.
15. Discuss various analysis modelling approaches in detail.
16. Explain the concepts of object oriented analysis.
17. Write short notes on
    (a) Glass box testing.
    (b) Debugging.
    (c) Fault-based testing.

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Code No: 2725/CBCS/M

FACULTY OF ENGINEERING

B.E VI – Semester (CBCS) (I.T.) (Main) Examination, November 2020

Subject: Web Application Development

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

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

PART–A (5 x 2 = 10 Marks)

1 Describe the general form of http request and response.
2 Write about <main>, <header>&<footer> elements of html5.
3 What is a Well Formed XML Document?
4 Define complex type element in xml schema?
5 Compare XML and JSON.
6 Define JSON and its Syntax rules.
7 What are Angular JS Filters? List out some of the inbuilt filters.
8 What are the two types of bootstrapping in Angular JS?
9 What is the Full Stack JavaScript Development?
10 What is REPL? What purpose it is used for?

PART – B (4 x 15 = 60 Marks)

11 a) Illustrate the following CSS Selectors:
i) Type selector ii) Universal Selector iii) Descendant Selector
iv) Class Selector v) ID Selector vi) Attribute Selector
b) Create an HTML document to Explain How CSS Overriding works.

12 Develop an XML instance for storing students details like his name, roll no and SGPA along with an internal DTD describing its structure.

13 Design and develop an html document to demonstrate the following JQuery html methods
a. text() b. html() c. val () d. attr() e. remove()

14 What is Routing in Angular JS? Design a Single Page Web Application that displays the data of at least three pages on a single view.

15 a) Create a simple http Server in Node.js that returns a welcome string for every request.
b) Enumerate the Modern Data Processing Challenges.

16 a) Create an HTML5 document and JavaScript to take input for login name, password, birth date, email address, phone no. and validate them.
b) Explain XML Schema with an example.

17 Write about the following
a) Aapche Spark.
b) AngularJS Directives.
c) jQuery Sliding Effects.

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