FACULTY OF ENGINEERING

B.E. 2/4 (Civil) II – Semester (Suppl.) Examination, December 2017

Subject: Fluid Mechanics – I

Time: 3 Hours   Max.Marks: 7 5

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

PART – A (25 Marks)

1 Differentiate between liquids and gases, specific weight and specific volume.   3

2 The standard atmospheric pressure is 760 mm of Hg. At a certain location barometer reads 710 mm of Hg. At that location on absolute pressure of 360 mm of Hg correspond to a gauge pressure in mm of Hg _____.   2

3 A two dimensional flow field is represented by $y=x^2 y^2$, the velocity at a point P (1,1) is _____.   2

4 The coefficient of discharge c_d in terms of c_u and c_c is given by _____.   2

5 Error in discharge due to error in head measurement over a rectangular notch is given by $(dQ/Q) =$ _____.   2

6 In an air flow $x =1.4$ in a duct, the ambient temperature is 30^oC and measured stagnation temperature is 59.7^oC. Find the Mach number of the flow.   3

7 Write the differential form of energy equation for adiabatic flow.   3

8 Name the minor and major losses during a flow of liquid through a pipe line.   2

9 The reservoir is connected by two pipes A & B having same length and f in series. If the diameter of A is 30% greater than B the ratio of head loss in A to B is _____.   3

10 The glycerin of μ 8.35 poise is flowing with a maximum velocity of 1 m/s through a gap of 7.5 cm between two fixed parallel plates. Calculate the shear stress at the plates.   3

PART – B (5x10 = 50 Marks)

11 The velocity profile of a flowing fluid on a flat plate is parabolic and is given by $U = ay^2+by+c$. The velocity of fluid is 1.2 m/s at 20 cm from the plate which is vertex point of velocity distribution. Find out velocity gradients and shear stress at y = 0,10,20 cm. take μ=8 poise.   10

12 What do you understand by continuity equation? Derive continuity equation for unsteady three dimensional and compressible flow in rectangular and cylindrical coordinates.   10

13 Develop Euler's equation and derive Bermoulli's equation and list out some practical applications. What are the limitations of Bernoulli's equation?   10

14 A venturimeter of 2.5 cm in diameter is installed in a pipe of 7.5 cm diameter carrying air. The inlet and throat pressure are 130 kN/m^2 and 104 kN/m^2. Find the loss of flow rate through venture assuming the flow is adiabatic. Take temperature = 20°C, x = 1.4 and R=287 Nm/kg-k. 10

15 Derive a formula developed by Darcy for loss of head due to friction for the flow through the pipe. 10

16 A pipe line 1500 m length and 60 cm diameter is used. To increase discharge, it is proposed to keep another line of same diameter parallel to the first line, in the second half of the length neglecting minor losses and taking f=0.01 for all pipes, find increase in discharge assuming the head available in the tank is 30 m. 10

17 Answer any two:
   a) Stream line, streak line 5
   b) Bourdan gauge 5
   c) Reynold's experiment. 5

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B.E II/IV (EEE) II-Semester (Supply) Examination Dec, 2017

Subject: ELECTRO MAGNETIC FIELDS

Time : 3 hours **Max. Marks : 75**

Note: i) Answer All Questions in part-A and any five questions from part-B
ii) Answer to the questions of part-A must be at one place and in the same order as they occur in the question paper.
iii) Missing data, if any, may suitably be assumed.

PART-A (25 Marks)

1. Determine the force on a point charge of 10nC at (0,0,5) due to uniformly distributed charge of 5 mC over a circular disc of radius ρ=1m in z=0 plane. [3M]

2. Define Electric Field Intensity. [2M]

3. A certain linear, homogeneous, isotropic, dielectric material has a relative permittivity of 1.8 . If V=-4000y V in the material. Find Polarization. [3M]

4. What is limitation of Uniqueness Theorem. [2M]

5. What is Uniform and Non Uniform Polarization. [3M]

6. State Continuity equation. [2M]

7. What is the significance of Ampere's Critical Law. [2M]

8. Establish a relationship between conduction current density (J) and volume charge density (ρ_v). [2M]

9. What is Poynting vector? [3M]

10. What is an EM Wave and how is it characterized. [3M]

PART – B (50 Marks)

11.a) What is Open surface and closed surface? Which surface is used in divergence theorem and why? [5M]
b) Determine the workdone in carrying a 5nC charge from R(2,1,-2) to S(8,2,-2) in the Field **E= y a$_x$+ xa$_y$** V/m along a parabola x=2y^2 . [5M]

12. a) State Gauss Law and use it to determine the field intensity due to an infinitely long line charge. [5M]
b) Three point charges +2μC, 4μC and 8μC are located at (0,0,0), (0,0,1) and (1,0,0) respectively. Find the energy in the system. [5M]

13. a) Derive an expression for the field due to a straight current carrying conductor of finite length using Biot-Savart law. [5M]
b) If I=3mA and a=2cm find H and B at (0,1,0),(0,4,0). [5M]

14. List all Maxwell's equations in following forms.
   i) differential form   ii) Integral form
   iii) Phasor form   iv) for time varying and time invariant fields…   [10M]

15. a) What is standing Wave and explain how it is produced?   [5M]
   b) State and explain Poyntng theorem.   [5M]

16. a) Distinguish between the TWO i.e. method of moments and method of images.   [5M]
   b) Bring out the analogy of magnetic circuits with electric circuits.   [5M]

17. Give a brief notes on the following.
   a) Propagation of EM wave in good conductors (highlight α and β)   [5M]
   b) Self and Mutual Inductance.   [5M]

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BE. 2/4 (ECE) II – Semester (Supply) Examination, December 2017

Subject: Networks & Transmission Lines

Time: 3 Hours   **Max. Marks: 75**

Note: Answer all Questions from Part A and any Five Questions from Part B

PART – A (25 Marks)

1. Define propagation constant and characteristic impedance of a symmetrical network (3)
2. Draw the T and   networks and Write the conversion equations of T –   networks (3)
3. What are the advantages of m – derived filters over constant k filters (2)
4. Bring out the characteristic of Notch filter. Give an application (3)
5. What are the types of Network synthesis (2)
6. What are Impedance matching networks (2)
7. What is the condition of distortion less transmission line (3)
8. List out the Specifications of telephone cable (2)
9. Define VSWR, Reflection Coefficient of a Transmission Line (3)
10. Mention few applications of a Smith Chart. (2)

PART- B (50 MARKS)

11. a) Write on electrical characteristics of symmetrical and asymmetrical networks (4)
    b) Calculate the image and iterative impedance of a asymmetrical network with series impedance of 200 ohms & 400 ohms and shunt impedance of 500 ohms (6)

12. a) Explain the frequency characteristics of Low, High, Band – pass and Band elimination filters (4)
    b) Design a low pass constant – k type filter with fe=10 Khz and Rk = 600 ohms. (6)

13. a) Design an m – derived T section low pass filter with fe = 1000 Hz, F = 1050 Hz and RK = 600 Ohms (6)
    b) Derive the relation for conversion of T –   network (4)

14. a) What are type of Attenuators. Write the relation between Decibel and neper (4)
    b) Design a symmetrical T net work attenuator with D = 40 dB and Ro = 600 ohms (6)

15. a) prove that an Infinite line is equivalent to a finite line terminated in its Zo (5)
    b) Derive the relation between wavelength, Velocity of propagation and Group velocity (5)

16. a) Why is loading of cables required. Discuss methods of loading practices (5)
    b) What is distortion less line? Derive the condition (5)

17. a) Write on Characteristics of 1/8, ¼ and ½ wavelength transmission lines (4)
    b) A RF transmission line with Zo = 300 is terminated in an normalized admittance y_r = 2.12 + j2. 12. This load is to be matched to the Transmission line using a short circuited stub. With the help of Smith chart find the length of the Stub and its distance from the load (6)

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B.E 2/4 (M/P) II – Semester (Suppl) Examination, December, 2017

Subject : Basic Electronics

Time : 3 Hours   **Max Marks : 75**

Note: Answer all questions from Part – A & Any five questions from Part – B.

Part - A (25 Marks)

1. Define Hall effect   (2)
2. What is meant by avalanche breakdown?   (3)
3. Classify the regions of operation of FET?   (2)
4. Draw the symbol of p-channel FET?   (3)
5. What is meant by feed back? Mention the application of negative feedback?   (3)
6. What is meant by Barkhausen criteria? Why it is required?   (2)
7. What are the ideal characteristics of OP-AMP?   (2)
8. Give the truth tavble of full adder   (3)
9. Draw V-I characteristics of UJT   (2)
10. Differentiate photo diode and photo transistor   (3)

Part - B (50 Marks)

11. a) Explain the bridge rectifier with its wave forms.   (5)
       Derive ripple factor for bridge rectifier with series inductor filter.
    b) Explain how zener diode works as voltage regulator with its circuit?   (5)

12. a) Explain the input and output characteristics of CB configuration.   (5)
    b) Draw and explin p channel FET V-1 characteristics   (5)

13 a) Show how the input and output impedence of volt-series feedback varies, using block diagram.   (5)
    b) Derive the general equation for LC oscillator.   (5)

14. a) Explain the applications of Op Amp with its proper equations.   (5)
    b) Draw the full subtractor with its truth table. Draw it only using NAND gate   (5)

15. a) Explain the construction and working of CRO.   (5)
    b) Explain the construction of photo transistor and its working.   (5)

16. a) Draw and explain the band diagram of p and n type semiconductors   (5)
    b) Explain Transistor as an amplifier.   (5)

17 Write short notes on
    a) LED   b) Crystal oscillator   c) INSTRUMENTATION AMPLIFIER   (3+3+4)

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FACULTY OF ENGINEERING

B.E. 2/4 (AE) II - Semester (Suppl.) Examination, December 2017

Subject : Thermal Engineering

Time : 3 Hours **Max. Marks: 75**

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

PART – A (25 Marks)

1 Define thermodynamic process and cycle.

2 Explain PMM-I.

3 Define Carnot theorem.

4 Differentiate between Refrigerator and Heat Pump.

5 What is meant by Intercooling & Reheating?

6 Define enthalpy of fluid, latent heat & enthalpy of gas.

7 Define the term Free Air Delivered in reciprocating air compressor.

8 Mention desirable properties of an ideal refrigerant.

9 What is overall heat transfer coefficient?

10 What is Wein's displacement law?

PART-B (50 Marks)

11 (a) What is steady flow energy equation?

(b) 10 kg of fluid per minute goes through a reversible steady flow process. The properties of fluid at inlet are P_1=1.5 bar, $_1$=26kg/m^3, C_1=110m/s and u_1=910kJ/kg and at the exit are P_2=5.5 bar, $_2$=5.5kg/m^3, C_2=190m/s and u_2=710kJ/kg. During the passage, the fluid rejects 55kJ/s and rises through 55m. Determine the work done during the process.

12 (a) What is Clausius inequality? What is its significance?

(b) A heat engine receives heat at the rate of 1500kJ/min and gives an output of 8.2kW. Determine thermal efficiency.

13 In a Rankine cycle , the steam at inlet to turbine is saturated at a pressure of 35bar and the exhaust pressure is 0.2 bar. Determine (i) The pump work (ii) The turbine work (iii) The Rankine efficiency. Assume flow rate is 9.5kg/s.

14 (a) What are the advantages of Multistage compression?

(b) Explain the working of simple Vapour compression refrigeration system.

15 Water enters a counter flow double pipe heat exchanger at 15^0C, flowing at the rate of 1300kg/hr. It is heated by oil (C_p=2000J/kg.K) flowing at the rate of 550kg/hr from a temperature of 94^0C. For an area of $1m^2$ and an overall heat transfer coefficient of 1075W/m^{2}K, determine the total heat transfer and the outlet temperatures of water and oil. (Take specific heat of water as 4186J/kg.K).

16 (a) Define thermodynamic system. What are types of systems.

(b) What are limitations of First law of thermodynamics?

17 (a) Indicate the process of intercooling & Reheating on Brayton Cycle.

(b) What are the uses of Compressed air?

(c) What are dimensionless numbers?

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FACULTY OF ENGINEERING

BE. 2/4 (C.SE) II – Semester (Supply) Examination, December 2017

Subject: Microprocessor & Interfacing

Time: 3 Hours   **Max. Marks: 75**

Note: Answer all Questions from Part A and any Five Questions from Part B

PART – A (25 Marks)

1 Define microprocessor and microcomputer.	(2)
2 Write a short note on I/O interface.	(2)
3 Describe the LDA and STA instructions.	(2)
4 Write an ALP to find the greatest of two numbers using 8085.	(3)
5 Write the differences between peripheral mapped I/O and memory mapped I/O.	(3)
6 Define DMA.	(2)
7 Write a short note on interrupts.	(3)
8 Draw the PSW of 8086 microprocessor.	(3)
9 List the rotate instructions of 8051 microcontroller.	(2)
10 Write an ALP to add two 16-bit numbers using 8051.	(3)

PART – B (50 Marks)

11 Draw and explain the architecture of 8085 microprocessor. With specific focus on functionality provided by various units.   (10)

12 a) Explain the A to D converter using 8085 microprocessor.   (6)
  b) Describe stack instructions with examples.   (4)

13 Draw and explain the functional block diagram of 8279.   (10)

14 Explain the 8259 with a neat diagram.   (10)

15 a) Describe the interfacing of stepper motor using 8051.   (6)
  b) State the 8051 addressing modes.   (4)

16 Explain the architecture of 8086 microprocessor.   (10)

17 Write a short note on the following
  a) 80386 microprocessor   (5)
  b) RS 232C   (5)

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FACULTY OF ENGINEERING

BE. 2/4 (I.T) II – Semester (Supply) Examination, December 2017

Subject: Computer Organization and Microprocessors

Time: 3 Hours   **Max. Marks: 75**

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

PART – A (25 Marks)

1) Define multiprocessor and multicomputer.   3M

2) Define software and hardware interrupts.   2M

3) Write about CISC and RISC.   2M

4) What is average memory access time?   2M

5) Distinguish between direct addressing mode and indirect addressing mode with example.   3M

6) List the major components of 8251A programmable communication interface.   2M

7) Write the control word format in the BSR mode.   3M

8) What is the purple of 'TLB'?   2M

9) Explain the address capability of 8085 as 64 KB.   3M

10) Define baud rate. Does it affect the transmission of data? Give reason.   3M

PART – B (50 Marks)

11 a) Write about DMA controller   4M

  b) What is Bus Arbitration? And explain its types.   6M

12) Illustrate interface keyboard and seven-segment display.   10M

13) Write in detail about 8255 in I/O mode   10M

14) a) Write Short Notes On A/D & D/A Converters   7M
   b) Write about DRAM.   3M

15) Explain different data transfer instructions with examples.   10M

16) Discuss internal Architecture of 8085 with neat diagram   10M

17) Write in detail about 8279 display controller   10M

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FACULTY OF ENGINEERING

B.E II-Semester (Main) Examination, December, 2017

Subject : Business Communication & Presentation Skills

Time : 3 Hours   **Max Marks : 70**

Note: i)   Answer ALL questions in Part -A and any FIVE questions from Part -B.
    ii)   Answers to the questions of Part -A must be in one place and in the same order
         as they occur in the question paper.
    iii)   Missing data, if any, may be suitably assumed

Part - A (20 Marks)

1. A) State whether the following statements are TRUE or FALSE   (1/2 x 2 = 1)
   1. Communication between people of the same rank is called Downward
      Communication
      (a) True   (b) False
   2. Passive communication is the opposite of aggressive communication.
      (a) True   (b) False

   B) Choose the best answer from the given options   (1/2 x 2 = 1)
      1)Writing that is concise and avoids wordiness and repetition is an example of
      a. accuracy   b. brevity   c. clarity   d. none of the above

2.   An Agenda is a list of
      a. items to be purchased   b. topics to be discussed in a formal meeting
      c. items to be sold   d. things on a to-do list

3. State whether the following statements are TRUE or FALSE   (1/2 x 2 = 1)
   1. In a Resume, one should keep the most important or impressive sections closer to
      the top of the page.
         (a) True   (b) False
   2. In a Report, one should maintain consistency and follow prescribed conventions.
         (a) True   (b) False

4. Fill in the blanks from the given options.   (1 x 3 = 3)

   1.Acknowledgements in a formal report refers to
   a. acknowledging by whom the report is written
   b..mentioning contributors and nature of contributions
   c. acknowledging to whom the report is submitted
   d. none of the above

   2. While participating in a Group Discussion it is useful to
   a. speak clearly, concisely and accurately
   b. speak in a vague and ambiguous manner
   c. talk to only one or two persons in the group
   d. none of the above

3 A sales letter
a. is designed to persuade the reader to purchase a particular product or service
b. forces and manipulates the reader to purchase a product or service
c. is not sent to potential customers
d. none of the above

5. Keeping telephone etiquette in mind, write a brief note listing at least six guidelines one should follow when making or receiving business calls. (1 x 3 =3)

6. Choose the correct option from the choices given. (1 x 3 = 3)
   1.The Statement of Purpose seeks to understand
   a. the candidate's life, academic progress, motivations for the chosen career path and his/her goals.
   b. each and every achievement of the candidate
   c. all the minute details of the family history of the candidate
   d. none of the above

   2. Important strategies of Time Management include.
   a. following a schedule, setting goals, avoiding procrastination
   b. procrastinating, postponing taking action
   c. no belief in planning preparing
   d.all of the above

   3. Bruce Tuckman identified distinct phases of team development:
   a. farming, streamlining, normalizing, performance
   b. forming, storming, norming, and performing
   c. framing, starting, naming, performing
   d. none of the above

7. State whether the following are TRUE or FALSE (1 x 3 = 3)
   1. Mark Knapp's Relationship Development model is split into two sections: "Coming together" and "Coming Apart."
      a. True   b. False
   2. Persuasion skills are useful but they cannot help us to change people's minds to do or believe something.
      a. True   b. False
   3. AIDA which helps to write effective Sales letters stands for Attention, Interest, Desire and Action
      a. True   b. False

8. Write short notes on the following (3 x 1= 3)
    Mention and briefly explain at least three features of an effective Group Discussion.

9. State whether the following are TRUE or FALSE (2x 1= 2)
a. When writing an Email one should follow the rules of English grammar, capitalisation and punctuation as in any other document.
b. Minutes of a Meeting need not mention the names of the participants or the decisions taken by them.

Part - B (50 Marks)

11. What is Business communication? Why is it important in an organization?

12. Comment on the basics of technical communication and explain how it is different from general communication.

13. Explain the Johari Window Model of interpersonal development with the relevant diagram and with examples.

14. a) Write a job application letter in response to an advertisement in a local newspaper, for the post of junior engineer, keeping in mind the appropriate language, style and format.

    b) Write an effective, convincing Resume to accompany the above letter, to motivate the prospective employer to contact you for an interview.

15. Why is it important to develop persuasion skills? Describe at least five persuasion techniques that could be used effectively in one's personal and professional life.

16. a) Briefly explain the various elements of a formal report, taking care to list these elements in the proper order.
    b) Describe the writing style that has to be used when writing a report.

17. What is a Job Interview? How does a candidate plan and prepare in order to succeed in such an interview?

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