Code No. 2558 / CBCS

FACULTY OF ENGINEERING

B.E. (Civil) IV-Semester (CBCS) (Supplementary) Examination, December 2019

Subject : Fluid Mechanics – II

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	Define Reynolds number.	2
2	What are the major and minor losses in a pipe flow?	2
3	State whether the closure is gradual or instantaneous for a flow in a pipe of length 3000m if the valve is closed in 20 seconds. Assume velocity of pressure wave C = 1500 m/s.	2
4	Determine the head lost due to contraction in the two pipes connected in series in which the velocities are 0.8 m/s and 3.4 m/s respectively. Take coefficient of contraction as 0.33.	2
5	Determine the terms boundary layer and boundary layer thickness.	2
6	What is drag and lift?	2
7	Determine the slope of water surface for a rectangular channel, with depth of flow 1.5m and velocity of flow 1 m/s. The channel bed slope is 1 in 4000 and slope of energy line is 0.00004.	2
8	Define hydraulic jump and critical depth.	2
9	Find the discharge for the most economical rectangular channel section of width 4m and bed slope 1 in 1500. Take Chezy's C = 50.	2
10	What is a specific energy curve?	2

PART – B (50 Marks)

11	a)	Explain the Reynolds experiment with a neat sketch and state its purpose.	5
	b)	A fluid of viscosity 0.8 Ns/m^2 and specific gravity 1.2 is flowing through a circular pipe of diameter 100mm. The maximum shear stress at the pipe wall is 210 N/m^2. Find i) the pressure gradient ii) the average velocity and iii) Reynolds number of flow.	5

..2

12 a) Prove that $p = V\sqrt{\frac{\circ}{\left(\frac{1}{k}+\frac{D}{Et}\right)}}$ where $\circ$ is increase of pressure due to water hammer, E is modulus of elasticity of pipe material, $\frac{1}{m}$ is Poisson's ratio for pipe material, t is time of closure of valve and D is the diameter of the pipe. 5

b) Explain the different types of pipes, based on pipe materials. 5

13 a) Derive the expressions for the displacement, momentum and energy thickness. 5

b) A smooth pipe of diameter 80mm and 1000mm long is carrying water at 8 litres/sec. If v= 0.015 stokes for water and f is given $f = \frac{0.0791}{(Re)^{1/4}}$, where Re=Reynolds number. Calculate i) Loss of Head ii) Wall Shear stress iii) Shear stress at 20mm from pipe wall. 5

14 a) Derive the condition for the most economical circular channel section for the condition of maximum discharge. 5

b) A trapezoidal channel with side slopes of 1 : 1 has to be designed to convey 10 m3/s at a velocity of 2 m/s, so that the amount of concrete lining for the bed and the sides is minimum i) Calculate the area of lining required for one metre length of the canal. ii) If the rugosity coefficient N = 0.015, calculate the bed slope of the canal for uniform flow. 5

15 a) Explain in detail, the various gradually varied flow profiles and their characteristics. 5

b) The discharge of water through a rectangular channel of width 8m is 15 m^3/s when depth of flow of water is 1.2m. Calculate specific energy, critical depth, critical velocity and value of minimum specific energy. 5

16 a) A 3.6m wide rectangular channel conveys 9 m^3/s of water with a velocity of 6 m/s. i) Is there a condition for hydraulic jump to occur? If so calculate the height and length of the jump ii) Calculate the loss of energy. 5

b) What is an airfoil? Define and explain the following terms of airfoil. i) Chord length ii) Angle of attack iii) Aspect ratio 5

17 Write short notes on 10

i) Methods of control of boundary layer
ii) Surges
iii) Significance of most economical channel sections

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Code No. 2565/CBCS

FACULTY OF ENGINEERING

B.E (EEE/Inst) IV-Semester (CBCS) (Suppl.) Examination, December 2019

Subject : Linear Integrated Circuits

Time : 3 Hourse **Max. Marks : 70**

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

Part-A (20 MARKS)

1	Define following terms Input offset voltage and output offset voltage.	2M
2	Draw circuit diagram of V to I Converter.	2M
3	Explain offset balancing techniques.	2M
4	Write the applications of Peak Detector.	2M
5	Write the advantages and disadvantages of Instrumentation Amplifier.	2M
6	Write the conditions for sustained oscillation.	2M
7	Draw the neat diagram of Instrumentation Amplifier.	2M
8	Draw the circuit diagram of dual tracking voltage regulators.	2M
9	Draw the ideal and practical characteristics of low pass and high pass.	2M
10	In what way current fold back feature is different from current limiting. Explain.	2M

PART-B (50 MARKS)

11	(a) Derive the expression for gain, input resistance, ouput resistance and band width of a feed back inverting amplifier.	5M
	(b) Explain the operation of I to V converter.	5M
12	(a) Explain how division of two voltages can be done using Op-amp.	5M
	(b) Derive an expression for the output of an Bistable multivibrator.	5M
13	(a) Explain operational amplifier working as zero crossing detector. Draw and explain the Voltage controlled oscillator.	5M
	(b) Explain principle of wein brigdge oscillator using op-amp with necessary derivations.	5M
14	(a) Draw the block diagrams of Hybrid Voltage regulator.	5M
	(b) What are the fixed voltage regulator IC's? Explain the operation of 723 regulator IC with the help of its block diagram	5M
15	(a) Design a Butter worth filter of second order LPF for 1 Khz cut off.	5M
	(b) Compare the characteristics of Butterworth, Chebyshev and Bessels filters. What is a State variable filter	5M
16.	Explain the Functional block diagram of 555 Timer and working as Asable multivibrator	10M
17	Write about the following	
	(a) Switched Capactitor filters	5M
	(b) Write about op-amp precision rectifiers.	5M

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Code No: 2574/CBCS

FACULTY OF ENGINEERING

B.E IV – Semester (CBCS) (ECE) (Suppl.) Examination, December 2019

Subject: Pulse Digital and Integrated Circuits

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

Note*:* Answer all questions from Part-A, & any Five questions from Part-B.

PART – A (20 Marks)

1. Why does a resistive attenuator need to be compensated? [2]
2. If the output of an attenuator is 1/10 of its input, what is the rise time of the output? [2]
3. What is clamper? How it is used in Non-linear wave shaping? [2]
4. Compare series diode clipper and shunt diode clipper. [2]
5. Compare the Miller and Bootstrap circuits. [2]
6. Define the terms UTP and LTP of a Schmitt trigger and explain how these are varied? [2]
7. What is the function of transmission gate? Explain it. [2]
8. Define the following terms: [2]
   a. Noise margin
   b. Fan out
9. State the advantages of CMOS logic over NMOS and PMOS logic gates. [2]
10. State the advantages of open collector TTL NAND gates. [2]

PART-B (50 Marks)

11. a) Derive the output equation(s) and draw the output wave forms of a RC low pass circuit for the pulse input. [6]
    b) Draw the response of a High pass circuit with small, medium and large time constants when input is square wave. [4]

12. a) A 100V peak square wave with an average value of 0V and a period of 20ms is to be negatively clamped at 25V. Draw the input and output waveforms and necessary circuit diagram. [5]
    b) Explain the operation of transistor clippers with neat sketches. [5]

13. a) With the help of neat circuit diagram explain the working of a collector coupled Monostable multivibrator. [6]
    b) How the slope error, displacement error and transmission error are related for an exponential sweep circuit? [4]

14. a) Draw the circuit of a totem pole TTL NAND gate. What is the purpose of using a diode at the output stage? Explain its operation. [6]
    b) What is Debounced switch? Explain it. [4]

15. a) Explain IC interfacing for TTL driving CMOS and CMOS driving TTL. [5]
    b) Draw circuit diagram of a 3 input TTL NAND gate and explain its operation. [5]

16. a) Draw the circuit diagram of compensated attenuator and derive the necessary conditions for perfect attenuation of the compensated attenuator. [5]
    b) State and prove the clamping circuit theorem. [5]

17. a) What is blocked condition in an astable multivibrator? How to overcome it? [5]
    b) Explain current transients when totempole TTL output from low to high. [5]

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Code No. 2578 / CBCS

FACULTY OF ENGINEERING

B.E. (M/P) IV – Semester (CBCS) (Suppl.)) Examination, December 2019

Subject: Basic Electronics

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 Define Diffusion current and Drift current.
2 Distinguish between Zener breakdown & Avalanche breakdown Mechanism in reverse biased P-N junction.
3 Define β. Show that $\beta = \alpha/1-\alpha$.
4 Write about pinch-off voltage. Sketch the basic structure of an N-channel JFET.
5 What is meant by feedback? What is the purpose of feedback?
6 Give the conditions for Barkhausen Criteria?
7 Draw the symbol and give the truth table for EX-OR and AND gates.
8 What is an Op-Amp? Mention some of its applications.
9 Draw V-I Characteristics of UJT and SCR.
10 What are the applications of CRO?

PART – B (50 Marks)

11 a) What is Hall Effect? What are the applications of Hall Effect? 3
b) Draw and Explain P-N junction diode operation and V-I characteristics under forward and reverse bias conditions. 7

12 a) Analyze Common Emitter Amplifier with its h-parameter equivalent model and derive A_I, A_V, Z_i, Y_o. 5
b) Explain the construction and Working of N-Channel JFET with neat diagram.

13 a) Draw a neat sketch of LC type oscillator and explain its operation. 5
b) In the Wien Bridge Oscillator $R_1=R_2= 220K\Omega$ and $C_1=C_2= 250PF$. Determine the frequency of Oscillations. 5

14 a) Describe the principle of operation of an Instrumentation Amplifier. 5
b) Explain the operation of the Full Adder circuit with its truth table and Logic circuit. 5

15 a) Draw and Explain Linear Variable Differential Transformer. 5
b) Explain the working of UJT with its characteristics. 5

16 a) Explain the Integrator using Op-Amp and derive its required equation. 5
b) Explain the operation of Photo Transistor with its characteristics. 5

17 Write short notes on the following:
a) Intrinsic and Extrinsic semiconductors using Energy Band diagrams. 3
b) Applications of negative feedback. 2
c) Explain the Operation of CB configuration with its Characteristics. 5

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Code No.2584/CBCS

FACULTY OF ENGINEERING

B. E. IV – Semester (CBCS) (A.E) (Suppl.) Examination, December 2019

Subject: Automotive Chassis components

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

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

PART – A (Marks 20)

1 Sketch the layout of the power flow for a centre engine and rear wheel drive vehicle and mark the Main components
2 Draw the chassis of unit construction vehicle and mark the main components.
3 Distinguish dead Axle and live axle.
4 Draw any one type of Front Axle and name the parts.
5 With a neat sketch show how the power from far front wheel drive.
6 List out the types of final draves.
7 Distinguish between Independent and dependent suspension system.
8 List out the types of suspension system.
9 Differentiate between Air brakes and Mechanical Brakes.
10 List out the types of brakes used in car.

PART – B (50 Marks)

11 Explain about the various types of loads acting on vehicle frame with neat sketches.

12 Draw and explain different layout of automotive vehicle reference to power plant location drive and explain the salient features of each one.

13 List out the different types of cross sections used for construction of frames of automobile vehicles and with the aid of sketches explain the salient features of each.

14 (a) Explain briefly steering geometry.
(b) Draw and explain anti-rolling bar.

15 Explain briefly Hotchkiss drive with the aid of sketches.

16 List out the types of differential housings and explain the working principle of simple differential.

17 a) Explain in detail the working principle of Air brakes with a suitable sketch.
b) Draw and explain exhaust Brakes.

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Code No: 2588/CBCS

FACULTY OF ENGINEERING

BE IV Semester (CSE) (CBCS) (Suppl.) Examination, December 2019

Subject: Computer Organization

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

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

Part – A (20 Marks)

1 What is Data type? What are the different data types used in a computer system? Convert 1231, 675, 1998 to Binary.
2 Draw Von Neumann architecture.
3 What is the difference between Direct and indirect address Instruction?
4 Draw the control inputs required for R flip flop using logic gates.
5 Classify computer Instructions.
6 List out types of Interrupts.
7 Differentiate between RAM and ROM.
8 Explain Memory hierarchy.
9 Define peripheral devices and list them.
10 Write the functions of IOP.

Part – B (50 Marks)

11 a) What is Bus transfer? Explain different mechanisms to construct buses. 4
b) A digital computer has a common bus system for 16 registers of 32 bits each. The bus is constructed with multiplexers.
(i) How many selection inputs are there in each multiplexers? 6
(ii) What size of multiplexers is needed?
(iii) How many multiplexers are there in the bus?

12 a) Design Arithmetic, logic and shift unit. Write function take. 6
b) Differentiate hard wired and micro programmed control unit. 4

13 a) Draw 16 bit common bus system. 6
b) Write memory reference Instructions. 4

14 a) Explain different addressing modes with as numerical examples. 6
b) Explain the characteristics of RISC and CISC. 4

15 Describe with the help of a block diagram how the match logic is implemented in Associative memory. 10

16 a) Differentiate between direct mapping and set Associative mapping with an example. 8
b) What is cache hit ratio? Explain how it is computed. 2

17 a) Differentiate between isolated I/O and memory mapped I/O. What are the advantages and disadvantages of each. 5
b) A DMA controller transfers 16 bit words to memory using cycle stealing. The words are assembled from a device that transmits characters at a rate of 2400 characters per second. The CPU is fetching and executing instructions at an average rate of 1 million instructions per second. By how much will the CPU down because of DMA transfer? 5

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Code No. 2594 / CBCS

FACULTY OF ENGINEERING

B.E. (I.T) IV – Semester (CBCS) (Suppl.) Examination, December 2019

Subject: Scripting Languages

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 How scripting language is differ from non-scripting languages?

2 Define origin of scripting.

3 Mention the Environment setup.

4 List the control structures of python

5 What is use of range() in for loop?

6 What are the standard I/O operations. Give example for each.

7 Define lists. Give examples for indexing and slicing in list.

8 Mention Doc strings.

9 Sketch the remove () method.

10 What are file handling functions in python.

PART – B (5x10 = 50 Marks)

11 a) Why python is a useful scripting language for developers? Discuss. 5
b) What are the characteristics of scripting languages? 5

12 a) Write a python program to print the sum of 'n' given numbers. 5
b) Discuss expressions in python with example. 5

13 a) Define continue. Discuss use of pass statement. 5
b) Explain formatting string with format (). 5

14 a) Write a python program to print the sum of two 2x2 matrices. 5
b) Write about the Numpy and Scipy packages. 5

15 a) What are the python file object methods? Explain. 5
b) Discuss the rename () method in python with example. 5

16 a) Write a python program to print the list of 'n' numbers in the reverse order. 5
b) Write a python program using functions to print factorial of a given number. 5

17 Write a python program:
a) To find the number of occurrences of a given word. 5
b) To print the fibonacii numbers. 5

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Code No: 2046

FACULTY OF ENGINEERING

B.E. 2/4 (Civil) II – Semester (Backlog) Examination, December 2019

Subject: Surveying – II

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 the following terms. 2
a)Transiting b) Deflection angle

2 State and explain briefly temporary adjustments of a theodolite. 3

3 Explain in detail about consecutive and independent co-ordinates. 2

4 List out the conditions for a closed traverse. 3

5 Derive the relationship between the degree of curve and its radius. 2

6 Define the following terms. 3
a) Forward tangent b) Long chord c) Compound curve

7 List out the various angular methods for setting circular curves. 2

8 If the radius of curve is 400m and angle of the deflection is 50^o, calculate 3
a) Length of a curve b) Length of a forward tangent c) Length of long cord 2

9 Mention the different methods of tacheometry? Explain in brief. 3

10 What are the advantages and disadvantages of tacheometry?

PART – B (50 Marks)

11 a) How do you measure horizontal angle by reiteration method? Explain in detail. 5

b) What are the fundamental lines of a theodolite? State the relationship between them. 5

12 a) The lengths and bearing of a closed traverse ABCDE were taken with a theodolite. Computer the lengths of the two sides BC and CD. 5

Line	Length(m)	Bearing
AB	730.00	$S\ 60^0\ 00'E$
BC	?	$N\ 62^0\ 18'\ \mathrm{E}$
CD	?	$N\ 37^0\ 42'\ \mathrm{W}$
DE	940.00	$S\ 55^0\ 24'W$
EA	575.00	$S2^0\ \ 24'W$

b) The following observations were made while determining the elevation of a church spire A: 5

Inst at	Sight to	Vertical Angle	Remarks
B	A	$+25^0\ 23'$	Staff reading on B.M. 1.350 m
C	A	$+16^0\ 40'$	Staff reading on B.M. 1.225 m
			R.L. of B.M. = 152.260 m BC = 30 m

If A, B, C are in the same vertical plane, find RL of A.

13 Two tangents intersect at chainage 1060m. The angle of intersection is 140^o. Calculate the necessary data for setting out a simple circular curve of radius 250 m by Rankine's method of deflection angles. Peg interval is 30 m. 10

..2

14 a) Under what conditions transition curve is provided? Explain in detail. 4

b) A down grade of 1.2% is followed by an upgrade of 2.4%. The R.L. of the intersection is 60.0m and its chainage is 360m. A vertical parabolic curve 120 m long is to be introduced to connect the two grades. The peg interval is 15m. Calculate the elevations of the curve by tangent corrections. 6

15. A Tacheometer is set up at an intermediate point on a traverse leg AB and the following observations are made a vertically held staff.

Staff station	Vertical angle	Staff readings
A	$+5^0\ 42'$	1.756, 2.506, 3.256
B	$+3^0\ 36'$	0.855,1.255, 1.655

The instrument is fitted with an anallatic lens and the multiplying constant is 100. Compute the length AB and the R.L. of A = 500.00. 10

16 a) State how the vertical angles are measured using a transit theodolite? 5

b) To determine the elevation of the top of an aerial pole. The following observations were made.

Ins. Station	Reading on B.M.	Angle of elevation	Remarks
A	1.375	$11^0\ 53'$	R.L. of B.M.
B	1.260	$8^0\ 05'$	30.150

Station A and B and the top of the aerial pole are in the same vertical plane. Find the elevation of the top of the aerial pole if distance between A and B is 30m. (Assume staff readings are obtained with lines of sight horizontal). 5

17. Answer any two questions from the following 10

a) Two theodolite method

b) Explain method of finding R.L. top of the building using theodolite and tape.

c) Applications of GPS and GIS

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Code No: 2052

FACULTY OF ENGINEERING

B.E. 2/4 (EEE\Inst.) II Semester (Backlog) Examination, December 2019

Subject: Solid Mechanics

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 Hooke's Law	2
2	Draw the stress-strain curve for mild steel and explain.	3
3	Give the relationship between shear force and bending moment.	3
4	Define point of contra flexure	2
5	Define Flexural rigidity.	2
6	Explain pure bending theory	3
7	Define slope and deflections	3
8	Explain regilence and Proof regilence.	
9	Define for signal rigidity.	2
10	Define helix and its angle	2

PART – B (10x5=50 Marks)

11 Obtain the relationships between three elastic constants and explain them. 10

12 Draw the shear force and bending moment diagrams and explain their magnitudes with coordinates. 10

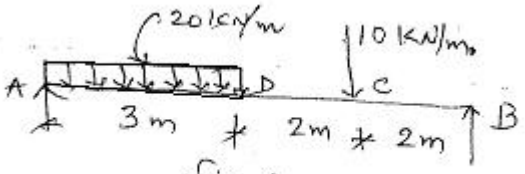

fig.1.

13 A Contilever of square section 200 mmx200 mm, 2m long, just fails in flexure when a load of 12KN is placed at its free end. A beam of the same material and having a rectangular cross-section 150 mm wide and 300 mm deep is simply supported over a span of 3m. Calculate the remaining central concentrated load required to break the beam. 10

14 A hallow cast iron column of rectangular section 600 mm deep x300 mm wide, overall thickness of metal 50 mm carries a load 'W' in the vertical plane bisecting the width at an eccentricity 'e' if the extreme intensities of stress induced in the section are 8 MN/m^2 at the other, both compressive, evaluate 'W' and 'e' . 10

..2

15 Obtain the maximum deflection of the beam for the figure shown in 2. Take 'EI' as constant. 10

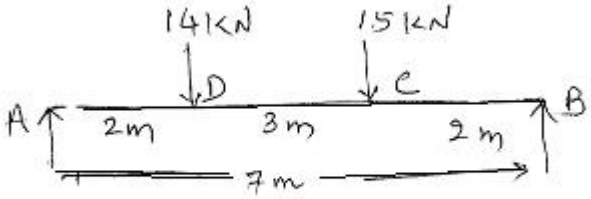

fig.2.

16 Determine the diameter of solid shaft which will transmit 440 KW at 280 rpm. The angle of twist must not exceed one degree per meter length and maximum torsional shear stress is to be limited to 40 M/mm^2. Assume G = 84 KN/mm^2 10

17 A closed coil helical spring is made with 12 mm diameter wire and is having mean diameter of 150 mm and 10 complete turns. The modulus of rigidity of the material of spring is 80 KN/mm^2. When a load of 450 'N' is applied, find maximum shear stress, strain energy stored deflection produced and stiffness of spring. 10

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Code No. 2060

FACULTY OF ENGINEERING

B.E. 2/4 (ECE) II – Semester (Backlog) Examination, December 2019

Subject: Analog Electronic Circuits

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 What is the effect of cascading on gain and bandwidth of Amplifiers? (2)

2 Why frequency response of transformer coupled amplifier is poor at high frequency? (3)

3 Explain how stability of gain of amplifier is improved with negative feedback. (2)

4 What is the effect on R_i & R_o of trans-conductance feedback amplifier? (3)

5 Give classification of oscillators. (2)

6 What is a crystal? How it is used in oscillators? (3)

7 What are the advantages of complimentary symmetry class-B power amplifier? (2)

8 What is cross-over distortion in power amplifiers-how it can be eliminated? (3)

9 What are the features of RF voltage amplifiers? What are its applications? (2)

10 What is a staggered tuned amplifier? Explain. (3)

PART – B (50 marks)

11 Evaluate the effects of coupling capacitor and emitter bypass capacitor on low frequency response of a single stage RC coupled BJT amplifier? (10)

12 a) Obtain expressions for R_{if} & R_{of} of voltage series negative feedback amplifier. (5)

b) Prove that bandwidth increases with –ve feedback. Derive the relevant equation. (5)

13 Obtain expressions for condition of oscillations and frequency of oscillations of a Hartley oscillator? Explain its working. (10)

14 a) What are the design considerations of class-A power amplifier? (5)

b) Explain class-D operation with a circuit. (5)

15 a) What is neutralization and unilaterisation in RF voltage amplifiers? (5)

b) What is the effect on bandwidth when (i) single tuned stages are connected in cascade (ii) Double tuned stages are connected in cascade. (5)

16 a) Obtain high frequency response of FET RC coupled amplifier. (5)

b) Discuss local vs global feedback. (5)

17 Writ short notes on: (10)

a) Series voltage regulator

b) Class-B push-pull power amplifier

c) Crystal oscillator.

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Code No: 2066

FACULTY OF ENGINEERING

B.E. 2/4 (M/P) II-Semester (Backlog) Examination, December 2019

Subject : Fluid Dynamics

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

Note: Answer All Questions From Part-A, & any FIVE Questions From Part-B.

PART – A (25 Marks)

1. Distinguish between uniform flow and steady flow 2
2. A liquid has a specific gravity of 1.9 and kinematic viscosity of 6 stokes. What is its dynamic viscosity? 2
3. List the assumptions which are made while deriving Bernoulli's equation 2
4 Define Impulse-Momentum equation and how it is useful in Fluid Mechanics 3
5 A differential mercury manometer is connected between two points A and B which are 3m away. Oil of relative density 0.76 is flowing in the above pipe and the manometer shows a difference of 80 mm. Compute the pressure difference between A and B in meters of water. 3
6 What is Pitot tube, how is it used to measure velocity of flow at any point in a pipe or channel. 3
7 Find the velocity of projectile if the mach angle is 42.5^o and the temperature of air is 5^oC. Take k=1.4 and R= 287J/kg^{o}k. 2
8 Obtain the expression for Bernoulli's equation in a compressible fluid when the process is Isothermal. 3
9 Define the terms Major energy losses and Minor energy losses in pipe. 2
10 An oil of viscosity 9 poise and specific gravity 0.9 is flowing through a horizontal pipe of 60 mm diameter. If the pressure drop in 100m length of the pipe is 1800kN/m^2, determine the centre line velocity 3

PART – B (50 Marks)

11 a) Derive the equation of Newton's laws of viscosity. Also explain about kinematic viscosity along with its units. 5

b) Two concentric cylinders of 13 and 13.3 cm diameter and each of 22 cm height are filled in between with castor oil of viscosity 0.8 N-s/m2. Find the required torque to rotate the inner cylinder at 16 rpm; if the outer cylinder is stationary. 5

12 a) Derive Euler's equation of motion in 3-Dimensions 5

b) A horizontal pipe has diameters 200 mm and 100 mm at sections 1-1 and 2-2, 12m part, the flow of water being from section 1-1 to section 2-2. The pressure intensity at section 1-1 is 400 kPa, and the velocity at this section is 4.75 m/s. Find the pressure head at section 2-2. 5

13 a) Derive an expression for head of loss due to friction in turbulent flow through circular pipes 5

…2

b) In a vertical pipe conveying oil of specific gravity 0.82, a 300mm x 150 mm venturimeter is fitted in the direction of flow of water which is upward. The difference of levels between the throat section and inlet section is 1m. The oil mercury differential gauge connected to the inlet and throat shows an elevation difference of 350 mm of mercury. Calculate the rate of flow of oil neglecting losses 5

14 a) Explain the significance of boundary layer separation and also discuss about the methods to avoid separation 5

b) A kite weighing 12.26 N has an effective area of $0.9m^2$. The tension in the string is 32.37 N, when the string makes an angle of 45^o with the horizontal. For a wind of 32 kmph; calculate the coefficients of lift and drag if the kite assumes an angle of 8^o with the horizontal. Take specific weight of air as $11.8kg/m^3$. 5

15 a) Derive the expressions for stagnation pressure in compressible flow 5

b) A projectile travels in air of pressure 0.9 kg/cm^2 at - 8^oC at a speed of 1100kmph. Calculate Mach number and Mach angle. Take k=1.4 and R=28.27 $m/^oK$. 5

16 a) Distinguish between

i) Convective acceleration and Local acceleration 2.5

ii) Stream line, Path line and Streak line 2.5

b) Obtain Bernoulli's equation for Adiabatic process 5

17. Write short notes on the following:

a) Derivation of the expression for Velocity of sound in compressible fluid flows. 5

b) Reynolds number and its significance with the aid of neat sketch. 5

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Code No.2070

FACULTY OF ENGINEERING

B. E. 2/4 (AE) II – Semester (Backlog) Examination, December 2019

Subject: Fluid Mechanics & Machinery

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

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

PART – A (25 Marks)

1. Define mass density and specific volume. 2
2. The kinematic viscosity and specific gravity of a certain liquid are 5.58 x 10^4 m^2/s and 2.0 respectively. Calculate the dynamic viscosity of the liquid. 3
3. Define the stream function and velocity potential functions. 2
4. Distinguish between stream line, path line and streak line. 3
5. Distinguish between laminar flow and turbulent flow. 2
6. Explain the terms Hydraulic gradient and total energy lines. 3
7. Define degree of reaction. 2
8. Classify hydraulic turbines on the basis of specific speed. Give examples. 3
9. State the difference between closed, semi-closed and open impellers. 2
10. What do you mean by Single acting and Double acting Reciprocating Pumps? 3

PART – B (50 Marks)

11. (a) What is a fluid? How are fluids classified? 4
    (b) A U-tube manometer containing mercury was used to find the negative pressure in the pipe, containing water. The right limb was open to the atmosphere. Find the vacuum pressure in the pipe, if the difference of mercury level in the two limbs was 100 mm and height of water in the left limb from the center of the pipe was found to be 40mm below. 6
12. (a) What do you mean by one dimensional, two dimensional and three dimensional flows? 4
    (b) Derive the equation of discharge for the flow through venturimeter. 6
13. (a) Explain the concept of boundary layer theory for flow over a flat plate. 4
    (b) Obtain the condition for maximum efficiency in transmission of power through a pipe line. 6
14. Derive Euler's equation of motion along a stream line. 10
15. The velocity and pressure head at the entrance to the casing of a Francis turbine are 10 m/s and 240 m and the elevation above the tail race is 5m. The shaft is vertical and the machine discharges 15 m^3/s when running at 450 rpm. The diameter of the runner blades is 2m and the width at the inlet is 28 cm. If the discharge is to be axial, calculate (i) power output (ii) specific speed (iii) guide vane angle iv) rotor vane angle at inlet. 10
16. Explain the working principle of a Centrifugal pump with a neat sketch. 10
17. A single acting reciprocating pump has the plunger diameter of 20 cm and stroke of 30 cm. The pump discharges 0.53 m^3 of water per minute at 60 rpm. Find the theoretical discharge, co-efficient of discharge and percentage slip of the pump. Further, if suction and delivery heads are 4m and 12m respectively, work out for the power required to run the pump. 10

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Code No: 2073

FACULTY OF ENGINEERING

BE 2/4(CSE) II-Semester (Backlog) Examination, December 2019

Subject : Object Oriented Programming Using Java

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

Note: Answer all Questions from part -A & Any Five Questions from part-B

PART-A (25 MARKS)

1	Write a java program that demonstrates data encapsulation.	3
2	What is the use of super keyword?	2
3	Define exception. List out the keywords through which exception handling can be managed in java.	3
4	What is the use of isAlive() and join() methods?	2
5	When do we use the clone() method? Explain.	3
6	List out the methods defined by StringTokenizer.	2
7	What are the different controls supported by AWT?	2
8	What are the classes required to create an AWT menu?	3
9	What are the different types of streams used in java i/o?	2
10	What is the use of SequenceInputStream class? Give its syntax.	3

PART-B (50 Marks)

11	a)	Write a java program to demonstrate constructor and method overloading	5
	b)	Write a java program that achieves multiple inheritance.	5
12	a)	Write a java program that create multiple threads.	5
	b)	Write a java program to read a set of characters from console using Buffered Reader.	5
13	a)	Discuss about TreeSet class with an example.	5
	b)	Write a java program that stores some generic elements in ArrayList and iterate them using Iterator.	5
14	a)	What is the use of layout managers? Write a java program that demonstrate on BorderLayout.	5
	b)	Write a java program that adds two checkboxes and three radiobuttons on an AWT window. When a checkbox or radiobutton is selected, the selected item name should be displayed as a label.	5
15	a)	Write a java program that stores first 10 fibonacci numbers in a file using byte stream classes.	5
	b)	Explain briefly about “File” class.	5
16		Discuss in detail about inter thread communication with an example.	10
17		Write short notes on	
	a)	Legacy classes	3
	b)	BitSet	3
	c)	Access specifiers	4

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Code No. 2078

FACULTY OF ENGINEERING

B.E. 2/4 (I.T) II – Semester (Backlog) Examination, December 2019

Subject: OOP Using Java

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 Explain about Garbage collection? (2)
2 Define jvm ,jre, jdk? (3)
3 Explain about static and final keywords? (3)
4 What is an abstract class? Give an example? (2)
5 What is an Exception? Draw the hierarchy of Exception? (2)
6 Write definition of chained Exception with example? (3)
7 What is the Collections API? (2)
8 What is the purpose of transient modifier? (3)
9 Write the difference between application and applet? (2)
10 Write about Nested panels? (3)

PART – B (5x10 = 50 Marks)

11 a) Explain java buzzwords in detail. (7)
b) What are inner classes? (3)

12 a) Explain about polymorphism and dynamic dispatch method. (5)
b) Explain the procedure of importing packages with example. (5)

13 Differentiate between thread and process. Specify different methods of creating threads. Write a program for creating two threads using any one method. (10)

14 Write a program for accessing a collection via an iterator? (10)

15 a) What is Character Stream in Java? Explain any three Character Streams with examples? (5)
b) Write a program for serialization concept? (5)

16 a) Explain few AWT Controls which helps in developing GUI interface? (5)
b) What is event handling? Explain event source classes and event Listener Interfaces? (5)

17. Write short notes on the following:
a) Thread groups (4)
b) Random Access Interface (3)
c) StringTokenizer. (3)

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