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Printed Pages:02

Paper Id: 1 0 0 8 1 9

Sub Code: NCE 801

Roll No. 1 4 0 8 2 0 0 1 1 3

B TECH
(SEM VIII) THEORY EXAMINATION 2017-18
TRANSPORTATION ENGINEERING - II

Time: 3 Hours

Total Marks: 100

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief. 2 x 10 = 20
- a. Write a short note on MRTS.
 - ~~b.~~ List the merits of electric traction?
 - ~~c.~~ When would you recommend 'Pusher Gradient' in Railway tracks?
 - d. What do you understand by Littoral Drift?
 - ~~e.~~ What do you understand by Sleeper Density?
 - ~~f.~~ State the purpose of shunting signals.
 - ~~g.~~ What do you understand by the term 'dry dock'?
 - ~~h.~~ What is the function of breakwaters in a harbour?
 - ~~i.~~ List the components of an airport?
 - ~~j.~~ List any four factors considered in site selection for an airport.

SECTION B

2. Attempt any three of the following: 10 x 3 = 30
- ~~a.~~ What do you understand by permanent way explain its components with neat diagram.
 - b. Calculate the super elevation and maximum permissible speed for a 2^o BG transitioned curve on a high speed route with a maximum sanctioned speed of 110 kmph. The speed for calculating the equilibrium super elevation as decided by the chief engineer is 80 kmph and the booked speed of goods trains is 50 kmph.
 - ~~c.~~ What are the different systems of controlling the movement of trains in India? Give the advantages of CTC system.
 - ~~d.~~ At an airport site at sea level with standard atmospheric conditions, the runway lengths required for takeoff and landing are 2000 m and 2400 m respectively. The proposed airport is situated at an altitude of 150 m. If the airport reference temperature is 25°C and if the effective runway gradient is 0.35 %, calculate the length of runway to be provided.
 - e. What is the role of the following processes in harbor layout and suggest remedies
 - i. Wind wave
 - ii. Tidal current

SECTION C

3. Attempt any one part of the following: 10 x 1 = 10
- (a) Give the list of various types of track fittings and fastening. What is fish plate? Write the requirement of fish plate.
 - (b) Discuss the following:
 - i. Creep in Rails
 - ii. Sources of water on Track drainage
 - iii. Negative Cant & Cant deficiency
 - iv. Location of reception signals (with diagram)
4. Attempt any one part of the following: 10 x 1 = 10
- (a) Illustrate with neat sketches the function and working principle of Marshalling Yard.
 - (b) Calculate all the elements required to set out a 1 in 12 turnout taking off from a straight BG track with its curve starting from the toe of the switch i.e. tangential to the gauge face of the outer main rail and passes through TNC. given the heel divergence as 11.4 cm.
5. Attempt any one part of the following: 10 x 1 = 10
- (a) How the signals are classified? Explain the different types of signals used in station yards.
 - (b) What are the essentials of interlocking? Distinguish between direct and indirect interlocking. What purposes does the lock bar serve?
6. Attempt any one part of the following: 10 x 1 = 10
- (a) Explain the types of parking system of aircrafts and state the advantages and disadvantages of Nose-In / Nose out parking.
 - (b) An airport is proposed at an elevation of 600 m above Mean Sea Level where the mean of maximum and mean of average daily temperatures of the hottest month are 45.6° C and 28.2°C respectively. The maximum elevation difference along the proposed profile of the runway is 6.3 m. If the basic length of the runway is 1550 m, determine the actual length of runway to be provided.
7. Attempt any one part of the following: 10 x 1 = 10
- (a) What are a Harbour and a port? Briefly explain Harbour site investigation and site analysis.
 - (b) Explain the following coastal protection works with neat sketches.
 - i. Sea walls
 - ii. Riprap
 - iii. Groins
 - iv. Dolphins

Printed Pages: 02
Paper Id: 100815

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Sub Code: ECE 061 / NCE 061
Roll No. 1408200008

B.TECH
SEM VIII THEORY EXAMINATION 2017-18
GROUND IMPROVEMENT TECHNIQUES

Time: 3 Hours

Total Marks: 100

Note: Attempt all Sections. If require any missing data, then choose suitably.

SECTION A

1. Attempt all questions in brief.

2 x 10 = 20

- ~~a~~ Explain quality control in compaction.
- ~~b~~ What are in-situ densification methods?
- ~~c~~ Explain ground suitability for vibro floatation.
- ~~d~~ What are vertical drains?
- ~~e~~ Explain pre loading methods.
- ~~f~~ Explain suspension grout.
- ~~g~~ What are granular piles?
- ~~h~~ What do you mean by ultimate bearing capacity of soil?
- i. What are the importances of underpinning?
- j. What are geotextiles?

SECTION B

2. Attempt any three of the following:

10 x 3 = 30

- ~~a~~ How a soil-cement mix is designed? Describe the stages in construction of soil-cement base with the help of sketches.
- b. What is the different type of limes used for soil stabilization? What is pozzolanic action of cement? How does it differ from the Chemical action of lime with soil? Compare the stabilization potentials of lime and cements
- ~~c~~ Write a note on the factors influencing a soil-bitumen mix. State the known types of soil-bitumen mixes and their utility.
- ~~d~~ Comment on the use of vibrator techniques in improving the bearing capacity of cohesive soils in-situ.
- e. Discuss the use of different vibratory rollers for surface compaction of granular soils. Why is sheep foot rollers not preferred in this case

SECTION C

3. Attempt any one part of the following:

10 x 1 = 10

- ~~(a)~~ Write a note on Mueller Resonance Compaction and the various factors affecting it. Also write the advantages and limitations of this method.
- (b) Sand drains, sand wicks and geo-drains are used under similar soil conditions for ground improvement. Compare their relative merits and demerits. Which do you prefer?

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4. Attempt any *one* part of the following:

10 x 1 = 10

- (a) State the feasibilities and limitations of various thermal stabilization techniques.
- (b) State the feasibilities and limitations of various electrical stabilization techniques.

5. Attempt any *one* part of the following:

10 x 1 = 10

- (a) State the principle underlying suspension grouting. Discuss the limitations of suspension grouts with respect to varying soil conditions.
- (b) Design the size of the steel strip ties to be laid at 1.5 m c/c with a factor of safety of 1.75 against pull – out in a reinforced earth wall with the following particulars : $\gamma = 1.6 \text{ kN/m}^3$ Back-fill soil is GP-Sw with $\phi = 34^\circ$. working stress in steel, $\sigma = 1400 \text{ kN/m}^2$ and height of the wall = 3 m.

6. Attempt any *one* part of the following:

10 x 1 = 10

- (a) With the help of an example, briefly explain the importance for underpinning of foundations. Also describe its methodology in brief.
- (b) Compare the effectiveness of bio-degradable and non biodegradable materials in soil reinforcement to improve its properties for better performance. (c) Explain the use of geotextiles in erosion.

7. Attempt any *one* part of the following:

10 x 1 = 10

- (a) Explain the use of geotextiles in erosion control, separation, filtration and drainage.
- (b) Write a note on the importance of grout monitoring and the methods of grout control.

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B. TECH
(SEM VII) THEORY EXAMINATION 2017-18
WATER RESOURCES ENGINEERING

Time: 3 Hours

Total Marks: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably

SECTION A

1. Attempt all questions in brief. 2 x 10 = 20
- a. What is hydrologic cycle? Write different components of hydrologic cycle.
 - b. What is transpiration? What are different factor that affect transpiration?
 - c. Write short note on Standard project flood (SPF).
 - d. What is Phreatic line? What is its use?
 - e. What is crop rotation?
 - f. Discuss the economic viability of lining of canal.
 - g. What are the basic principles of regulation of a canal system?
 - h. Write short note on well loss and well efficiency.
 - i. What is water logging?
 - j. What is Dupit's theory?

SECTION B

2. Attempt any three of the following: 10 x 3 = 30
- a. What is S-hydrograph? How would you derive a S-hydrograph? Discuss the procedure of derivation of the unit hydrograph from a S-hydrograph
 - b. Determine the optimum number of rain gauges for the a basin with the following data:
Number of existing gauges=6
Allowable percentage error= 8%
The average rainfall at the existing gauges = 90, 100, 85, 65, 55 and 46 cm.
 - c. Design an irrigation channel to carry a discharge of 30 cumec by Kennedy's theory. Take B/D ratio as 8.0, N= 0.0225 and m = 1.0
 - d. What are different types of pumps used for tube wells? What are their limitations and relative advantages and disadvantages?
 - e. What are the various purposes for which river training work is required? What are different types of river training works?

SECTION C

3. Attempt any one part of the following: 10 x 1 = 10
- (a) What is infiltration capacity? What are the different factors affecting infiltration rates? Describe infiltration indices which are commonly used.
 - (b) What do you understand by the rainfall intensity? Explain the methods for the preparation of the intensity duration curves and the intensity duration curves. What are their uses?
4. Attempt any one part of the following: 10 x 1 = 10
- (a) The ordinate of a 4 hour unit hydrograph are given below. Using the principle of superposition construct an S hydrograph and calculate the discharge at equilibrium stage and the time of its occurrence from the beginning of direct runoff.

Time (hour)	0	4	8	12	16	20	24
cumec	0	4	12	6	3	1	0

100

(b) What do you understand by consumptive use of water? How is it different from evapotranspiration?

5. Attempt any one part of the following: 10 x 1 = 10
(a) Describe different methods of irrigation in brief. What are the advantages and disadvantages of irrigation?

(b) The ordinates of a 3 hour unit hydrograph are following:

Time (hr)	0	3	6	9	12	15	18	21	24	27	30
Discharge (cumec)	0.0	3.08	4.94	8.64	9.88	7.41	4.94	3.70	2.47	1.23	0.0

Develop a unit hydrograph of 6 hour unit hydrograph.

6. Attempt any one part of the following: 10 x 1 = 10

(a) What are the basic principles of regulation of a canal system? Explain the various method of regulation of canal system.

(b) Explain semi-module, rigid module and their types. Describe a semi-module consisting of a submerged pipe.

7. Attempt any one part of the following: 10 x 1 = 10

(a) Derive the basic equation of unsteady flow. What are the various assumptions? What are advantages of non equilibrium equation over the steady flow equation?

(b) Differentiate between open wells and tube well. What are the advantages of tube well over open well?

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Paper Id: 1 0 0 8 1 2

Sub Code: NCE 052

Roll No. 1408200008

B.TECH

(SEM VIII) THEORY EXAMINATION 2017-18
ANALYSIS AND DESIGN OF HYDRAULIC STRUCTURES

Time: 3 Hours

Total Marks: 100

Note: Attempt all Sections. If require any missing data, then choose suitably.

SECTION A

1. Attempt all questions in brief.

2 x 10 = 20

- Explain with neat sketch various type of cross drainage works. Also write the necessity of cross drainage works.
- What do you mean by fall and where are they located.
- Explain the term Level Crossing, Inlets and Outlets.
- Why the silt control is essential at headworks? Explain with neat sketches the functions and working of silt excluder.
- Explain the various storage zones of a multipurpose reservoir with neat sketch.
- Explain with neat sketch the difference between weir and barrage.
- What are the various types of galleries in gravity dam?
- Enlist the various forces acting on a gravity dam?
- Differentiate between load factor, plant factor and utilization factor in connection with hydropower.
- What are the spillways and where are they provided?

SECTION B

2. Attempt any three of the following:

10 x 3 = 30

- Explain the procedure of designing Sarda Type Fall.
- Explain (i) Aqueduct, (ii) syphon aqueduct, (iii) canal syphon and level crossing. With neat sketches.
- Explain the mass curve method that can be used for determining:
 - Reservoir capacity for fulfilling given demand.
 - Demand rate from a reservoir of a given capacity.
- Explain various forces causing instability in gravity dam, indicate their magnitude, direction and locations. What should be maximum depth of elementary profile of a dam if the safe limit of stress on the masonry should not exceed 1500 kN/square meter?
- A run-off river plant is installed on a river having a minimum flow of 20 cumecs. If the plant is used as a peak load plant operating only for 8 hours daily. Compute firm capacity of plant. (i) Without pondage (ii) with pondage but allowing 7% water lost in evaporation and other losses. Net head is 16m at plant. Taking plant efficiency 80%.

SECTION C

3. Attempt any one part of the following: 10 x 1 = 10

- (a) Differentiate between a Silt Extractor and a Silt Exclude. Draw neat sketches and discuss the principles involved in designing components
- (b) Design a Sarda type fall across a canal for the following data:
 - Full supply discharge = 12 cumecs
 - Drop = 1.0 m
 - Full supply level = 104.5 m
 - Full supply depth = 1.5 m
 - Bed width = 10 m

4. Attempt any one part of the following: 10 x 1 = 10

- (a) A weir with a vertical drop has the following data
 - Nature of bed : coarse sand with value of Bligh's C=12
 - Flood discharge : 300 cumecs
 - Length of weir : 40 m
 - Height of weir : 2 m
 - Height of falling water : 0.6 m
 - Top width of weir : 2.0 m
 - Bottom width of weir : 3.2 m
 Design the length and thickness of aprons and draw the cross-section of the weir.

- (b) Enumerate the different methods which may be used for designing the canal transition for flumed canal, and condition under which can be used. Describe in details a method of designing canal transitions when water depth may or may not remain constant

5. Attempt any one part of the following: 10 x 1 = 10

- (a) A flow net is plotted for a homogenous earthen dam of 30m height with a free board of 5m. The numbers of potential drops are 10. The permeability in horizontal and vertical direction are 3×10^{-4} cm/sec and 2×10^{-4} m/sec. Determine the number of flow channels for the given discharge of 72×10^{-6} m³/sec per meter run of dam. How will you determine the phreatic line for homogenous dam provided with a horizontal filter.
- (b) What is flood routing? Explain the basic flood routing equation and summarize its method of solution

6. Attempt any one part of the following: 10 x 1 = 10

- (a) Explain how uplift considerations affect the design of gravity dam. What measures can be adopted to reduce the undesirable effects due to uplift in such cases? Differentiate between rigid dams and non rigid dams.
- (b) What do you understand by elementary profile of a gravity dam? Explain step by step method of scheming a high gravity dam and low gravity dam.

7. Attempt any *one* part of the following:

- (a) Give the classification of Hydro-power plant on the basis of discharge. And calculate (i) Total installed capacity, (ii) Load factor, (iii) Plant factor, (iv) Utilization factor.

If three generators each of capacity 6000kw have been installed at a hydel power station. During a certain period of year the load on the plant varies from 12000kw to 20000kw.

- (b) What should be the minimum discharge of the stream so that it may serve as a peak load station? If a runoff-river project of an installed capacity of 18000 kW and operates at 30% load factor when it serves as a peak load station. The plant efficiency may be taken as 82% when working under a head of 30 m. If the daily load pattern indicates 16 hours average load and 4 hours peak load, determine the pondage to be provided to supply daily demand.

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Printed Pages: 02
Paper Id: 210311

Roll No.
 Seat Code: NCS 801

B.TECH
(SEM-VIII) THEORY EXAMINATION 2017-18
DIGITAL IMAGE PROCESSING

Time: 3 Hours

Total Marks: 100

Note: 1. Attempt all Sections. If require any missing data, then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20
- (a) Define Image. What is range?
 - (b) What is meant by reflectance?
 - (c) What is meant by binary image, color image, grey-scale image?
 - (d) Explain Harmonic mean filter
 - (e) What is contrast stretching?
 - (f) What do you mean by dilation and erosion?
 - (g) Explain counter predictive coding.
 - (h) List edge detection operators.
 - (i) Explain affine transform.
 - (j) Explain the concept of thresholding.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30
- a). What do you mean by digital image representation.
 - ~~b). Compare and contrast between linear spatial filtering and non linear spatial filtering.~~
 - c). What is image restoration? Draw and explain the basic block diagram of the restoration process. Give two areas where restoration process can be applied?
 - d). What do you understand by Hit-Miss Transform and why they are used explain in brief?
 - e). Prove that prewitt and sobel operator act as a low pass and high pass filter.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10
- ~~a). Explain region based segmentation with an example.~~
 - b). Explain intensity transformations in details. What would happen to the dynamic range of an image if all the slopes in the contrast stretched algorithm (l, m, n) are less than 1? Answer using illustration.
4. Attempt any *one* part of the following: 10 x 1 = 10
- a). Explain intensity transformations in details. What would happen to the dynamic range of an image if all the slopes in the contrast stretched algorithm (l, m, n) are less than 1? Answer using illustration.
 - b). Explain the Hough Transforms to join the points. And also explain the problem of HT with their solutions. Given the four points in the x-y plane with the following coordinates (1,1), (2,2), (3,3), (4,4). Use Hough Transform to join these points.

5. Attempt any *one* part of the following:

10 x 1 = 10

- a) What is Histogram Equalization ?
- b) Explain Laplacian Filter

6. Attempt any *one* part of the following:

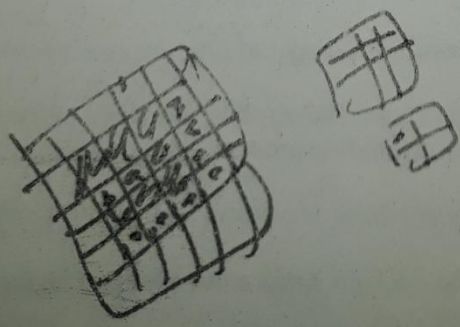
10 x 1 = 10

- a) Explain opening and closing operation for gray scale image processing.
- b) describe fundamental operations of morphological image processing.

7. Attempt any *one* part of the following:

10 x 1 = 10

- a) Write short note on following
 - i- Region Extraction
 - ii- Image Registration
- b) Write short note on following
 - i- Edge detection Algorithm
 - ii- Line detection Algorithm



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Printed Pages: 02
Paper Id: 110523

Sub Code: NC S-092
Roll No. _____

B. Tech.
(SEM. VIII) EVEN SEMESTER THEORY EXAMINATION 2017-18
REAL TIME SYSTEM

Time: 3 Hours

Total Marks: 100

Attempt all Sections. If require any missing data, then choose suitably

SECTION A

1. Attempt all questions in brief. 2 x 10 = 20
- a. Difference between hard and soft Real time systems?
 - b. How to overcome the blocking of lower priority by higher priority task?
 - c. Define Byzantine failures?
 - d. How to map perfect clock and actual clock for real time system?
 - e. What is the drawback of AED algorithm?
 - f. What is MISS and HIT?
 - g. What are the Issues in Real time computing?
 - h. Write short notes about Task scheduling.
 - i. What is CAN?
 - j. List the timing specifications for good real time language.

SECTION B

2. Attempt any three of the following: 10 x 3 = 30
- a. What are the characteristics of 'Real Time System'? Also explain the timing constraints of real time system.
 - b. Explain periodic task and aperiodic task with suitable example. What are the differences between fixed priority and dynamic priority scheduling approach? Explain which one is more suitable for periodic tasks.
 - c. When DM algorithm fails RM always fails and when DM finds a feasible schedule then sometimes RMA fails. Explain this with example?
 - d. Discuss the real time characteristics of aircraft monitoring system in terms of embeddedness, concurrency and reliability.
 - e. What are the contentions based protocols? Describe the virtual time carrier sense multiple access (VTCSMA) algorithm.

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Printed Pages: 02
Paper Id: 110523

Sub Code: NC S-092
Roll No. _____

B. Tech.
(SEM. VIII) EVEN SEMESTER THEORY EXAMINATION 2017-18
REAL TIME SYSTEM

Time: 3 Hours

Total Marks: 100

Attempt all Sections. If require any missing data, then choose suitably

SECTION A

1. Attempt all questions in brief. 2 x 10 = 20
- a. Difference between hard and soft Real time systems?
 - b. How to overcome the blocking of lower priority by higher priority task?
 - c. Define Byzantine failures?
 - d. How to map perfect clock and actual clock for real time system?
 - e. What is the drawback of AED algorithm?
 - f. What is MISS and HIT?
 - g. What are the Issues in Real time computing?
 - h. Write short notes about Task scheduling.
 - i. What is CAN?
 - j. List the timing specifications for good real time language.

SECTION B

2. Attempt any three of the following: 10 x 3 = 30
- a. What are the characteristics of 'Real Time System'? Also explain the timing constraints of real time system.
 - b. Explain periodic task and aperiodic task with suitable example. What are the differences between fixed priority and dynamic priority scheduling approach? Explain which one is more suitable for periodic tasks.
 - c. When DM algorithm fails RM always fails and when DM finds a feasible schedule then sometimes RMA fails. Explain this with example?
 - d. Discuss the real time characteristics of aircraft monitoring system in terms of embeddedness, concurrency and reliability.
 - e. What are the contentions based protocols? Describe the virtual time carrier sense multiple access (VTCSMA) algorithm.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10
- (a) Explain why predictability is an important requirement of a real time system. Discuss different techniques to enforce this requirement.
 - (b) What is real time system? Explain its various components with a suitable block diagram.
4. Attempt any *one* part of the following: 10 x 1 = 10
- (a) What is deferrable server? Explain the time demand analysis method.
 - (b) Explain the terms schedulers and uniprocessor scheduling.
5. Attempt any *one* part of the following: 10 x 1 = 10
- (a) Why the term avoidance blocking is given to priority ceiling protocol? How do you compute the blocking time? Explain with example.
 - (b) Discuss basic features and governing rules of Preemption Ceiling Protocol and mention its relative merits over Priority ceiling protocol.
6. Attempt any *one* part of the following: 10 x 1 = 10
- (a) Draw the real-time communication model. Identify at least two factors which contribute to delay jitter in real-time communication and explain how they cause jitter ?
 - (b) What do you mean by Temporal Distance Constraints? Explain Scheduling of Tasks with Temporal Distance Constraints.
7. Attempt any *one* part of the following: 10 x 1 = 10
- (a) Explain the time services that a Real-Time Operating System (RTOS) is expected to support. Also, briefly highlight how timer services are implemented in a real-time operating system.
 - (b) Discuss the different issues involved for the network architecture for real time communication.

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Printed Pages: 02
Paper Id: 110826

Sub Code: NC S-085
Roll No. 114

**B.TECH
(SEM VIII) THEORY EXAMINATION 2017-18
DATA COMPRESSION**

Time: 3 Hours

Total Marks: 100

Note: 1. Attempt all Sections. If require any missing data: then choose suitably

SECTION-A

1. Attempt all questions in brief. (2*10=20)
- (a) Define data compression and why we need it.
 - (b) Differentiate between compression and reconstruction.
 - (c) What are the limitations of Huffman coding?
 - (d) Write down the application of Huffman Coding in Text compression and audio compression.
 - (e) What do you mean by Binary Code? Compare Binary Code with Huffman Code.
 - (f) Define Graphic Interchange Format.
 - (g) What is rate distortion criterion?
 - (h) Differentiate between Uniform and non-uniform quantization.
 - (i) What is predictive coding?
 - (j) Write down the merits and demerits of vector quantization.

SECTION-B

2. Attempt any three parts of the following: (10*3=30)
- (a) What do you understand by information? Give an alphabet $A = \{a, a_2, a_3, a_4, a_5\}$, find the first order entropy of the following:
 $P(a_1) = 1/2, P(a_2) = 1/4, P(a_3) = P(a_4) = 1/8, P(a_5) = 1/2$.
 - (b) For an alphabet $A = \{a_1, a_2, a_3, a_4, a_5\}$ with probabilities $P(a_1) = 0.15, P(a_2) = 0.04, P(a_3) = 0.26, P(a_4) = 0.05$ and $P(a_5) = 0.50$
 - (i) Calculate the entropy of this source
 - (ii) Find a Huffman Code for this source.
 - (iii) Find the average length of the code
 - (c) What is the basic difference between Adaptive and Statistical Compression scheme? Discuss with the model of Adaptive Compression.
 - (d) Discuss the steps involved in Basic Algorithm for Prediction with Partial Match (PPM).
 - (e) What is Vector Quantization? Explain procedure for vector Quantization.

SECTION-C

3. Attempt any one part of the following: (10*1=10)
- (a) Explain physical, probability, Markov and composite source model in detail.
 - (b) Determine whether the following codes are uniquely decodable or not:
 - (i) $\{0, 01, 11, 111\}$ 111111
 - (ii) $\{0, 01, 110, 111\}$ 01110
 - (iii) $\{1, 10, 110, 111\}$ 110
 - (iv) $\{0, 01, 10\}$ 010

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4. Attempt any one part of the following:

(10*1=10)

- (a) Design 3-bit Tunstall code for a memory less source with the following alphabet $S = \{A, B, C\}$ with their $P(A)=0.6$, $P(B)=0.3$, $P(C)=0.1$
- (b) Design Golomb code for $m=5$ and $n=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10$.

5. Attempt any one part of the following:

(10*1=10)

- (a) What is Facsimile Encoding? Explain Run-Length Coding technique used earlier for Facsimile. Give a brief comparison of MH, M& MMR and JBIG.
- (b) Explain the JBIG standard of Bi level image compression.

6. Attempt any one part of the following:

(10*1=10)

- (a) What do you understand by Adaptive Quantization? Explain the various approaches to adapting the quantizer parameters.
- (b) What is lossy data encoding? Write down the distortion measure criteria's to check the fidelity of a reconstructed source sequence to the original one in such type of encoding techniques.

7. Attempt any one part of the following:

(10*1=10)

- (a) Explain the steps of the Linde-Buzo-Gray algorithm.
- (b) What is Quantization? Explain Additive Noise Model of a quantizer.

Printed Pages:02

Paper Id: 1 0 0 8 1 1

(110)

Sub Code: NCE051
Roll No.

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B. TECH.
(SEM VIII) THEORY EXAMINATION 2017-18
COMPUTER AIDED DESIGN

Time: 3 Hours

Total Marks: 100

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.

2 x 10 = 20

- a. Why computer as a Design Medium?
- b. Define Secondary Storage Devices.
- c. What do you understand Preventing Bugs?
- d. Define test suites.
- e. What is test –driven development?
- f. Define Primary Actor.
- g. What are error-based test techniques?
- h. Define logical cohesion.
- i. What is stamp coupling?
- j. What is the use of software's in civil engineering?

SECTION B

2. Attempt any three of the following:

10 x 3 = 30

- a. What is an operating system? What is its main function?
- b. Discuss the software architecture and what are its three main purposes?
- c. Write a program in C- to design a Column.
- d. Draw the call graphs for a non-trivial program you have written, and determine its tree impurity. Does the number obtained agree with our insetive idea about the 'quality' of the decomposition?
- e. Name the different interference mechanism used in expert systems. Discuss the features of mechanism.

SECTION C

3. Attempt any one part of the following:

10 x 1 = 10

- (a) What are the different tasks involved in engineering design? Explain each one of them in detail.
- (b) Explain the role of various software tools in Computer Aided Design

4. Attempt any one part of the following:

10 x 1 = 10

- (a) Define some undocumented design decisions.
- (b) What do you mean by Debugging? Explain.

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5. Attempt any *one* part of the following: 10 x 1 = 10

- (a) What is the difference between black box testing and white box testing?
- (b) Draw a flowchart to calculate Shear reinforcement as per IS456-2000.

6. Attempt any *one* part of the following: 10 x 1 = 10

- (a) What is the essence of information hiding?
- (b) Write the design documentation for a project you have been involved in, following IEEE 1016.

7. Attempt any *one* part of the following: 10 x 1 = 10

- (a) What are the types of problem that can be solved better using techniques offered by KBES?
- (b) Explain in brief the concept of "Engineering Design Synthesis", with an example of your choice.